School of Psychology and Speech Pathology

Testing a Causal Model of Job Insecurity and Job Satisfaction: Do Dispositions Matter?

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Declaration

To the best of my knowledge and belief this thesis contains no material previously published by any other person except where due acknowledgement has been made.

This thesis contains no material which has been accepted for the award of any other degree or diploma in any university.

Signature: ________________________________
Patrick Brennan O'Neill

Date: ________/_________/_________

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> Nothing in the world can take the place of persistence.
>
> Talent will not; nothing in the world is more common than unsuccessful men with talent.
>
> Genius will not; unrewarded genius is a proverb.
>
> Education will not; the world is full of educated derelicts.
>
> Persistence and determination alone are omnipotent.

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ABSTRACT

In the context of widespread downsizing and restructuring, job insecurity has emerged as a prolific stressor in modern working life. While previous research has linked job insecurity to diminished job satisfaction, scholars rarely examine the role of personality dispositions and have yet to establish the strength and direction of causation. To address these gaps, the present research develops and tests a causal model describing the influence of dispositional positive and negative affect (PA and NA) on the relationship between job insecurity and job satisfaction. To test this model, the author analyzes a three-wave longitudinal panel data set (n = 258) collected at one-year intervals using structural equations modelling (SEM). Prior to this investigation, two ancillary studies established a robust measurement model. The first study developed and validated a new job insecurity measure, randomly splitting the Time 1 data set (n = 1185) into two equal sub-samples, with one used for exploratory factor analysis (n = 502) and the other split into two subsamples of n = 251 each for confirmatory factor analysis with tests of measurement invariance. Results strongly supported a measurement model consisting of four correlated but distinct job insecurity dimensions: *job loss*, *job changes*, *marginalization*, and *organizational survival*. Further analyses of longitudinal invariance supported the structural invariance and stability of three of the four job insecurity scales and the intrinsic and extrinsic job satisfaction scales. The organizational survival construct was found to be unstable and was, therefore, excluded from further consideration. The second study, a psychometric meta-analysis of the job insecurity - job satisfaction relationship (K = 101; N = 70,957), showed stronger correlations between job insecurity and intrinsic (ρ = -.48) and extrinsic (ρ = -.44) job satisfaction relative to

global measures (ρ = -.40). These results provided empirical justification for measuring job satisfaction at the dimension-specific level. Finally, SEM supported a parsimonious structural model, where dispositional PA at Time 1 increased satisfaction with pay and promotions at Time 2, which led to a reduction in marginalization insecurity and enhanced intrinsic job satisfaction at Time 3. The model also included structural paths from job changes insecurity at Time 1 to not only job changes insecurity but also to job loss and marginalization insecurity at Time 2. However, this influence diminished by Time 3. All direct and indirect autoregressive paths were statistically significant over time. Partial support was found for a less robust model with autoregressive paths removed and an additional path from extrinsic job satisfaction at Time 2 to job loss insecurity at Time 3. Although previous dispositional research has primarily focused on NA, this disposition did not impact job insecurity or job satisfaction longitudinally. The author concludes by discussing theoretical and practical implications of the model as well as directions for future research.

INTRODUCTION

The past two decades have witnessed a resurgence of interest among scholars in the role of affect and emotions in organizational life (Barsade, Brief, & Spataro, 2003). Not since the study of affect began and peaked in the 1930s has so much attention been focused on the topic (Brief et al., 2001). The relative neglect in subsequent decades was perhaps due to the assumption that there is no room for emotion in the workplace, ideally considered an impassive, rational context in which emotion must be controlled or ignored (Muchinsky, 2000). As Muchinsky states, “to be ‘emotional’ reflected a proclivity for weakness and instability, an unwanted and undesirable characteristic in the organization man” (p. 802). Mowaday and Sutton (1993) claim that theory and research in organizational behaviour portrays employees “as cognitive stick figures whose behaviour is unaffected by emotions” (p. 197). Others have attributed the lack of research attention to difficulties in accurately measuring the phenomenon (Lewis & Haviland, 1993).

Propelled by an “affective revolution” in the field of organizational psychology (Barsade et al., 2003; Brief, 2001), significant theoretical and empirical advances have been made in our understanding of affect and its impact on attitudes, behaviours, and emotional reactions at work. Particular emphasis has been placed on dispositional positive and negative affect (PA and NA) — stable dispositions towards positive or negative emotionality and self-concept (Watson, Clark, & Tellegen, 1988). Within the occupational stress literature, most research has focused on the role of NA, which has evolved from a “nuisance variable” distorting self-reports of stressors and strains to a substantive variable that may have a causal impact on a variety of work attitudes (Spector, Zapf, Chen, & Frese, 2000; Staw & Cohen-Charash, 2005).

Although far less attention has been paid to the distinct disposition of PA, recent research emerging from the "positive psychology" movement suggests that PA may play an integral role in shaping positive work attitudes (Thoresen, Kaplan, Barsky, Warren, & de Chermont, 2003) and fostering success across a range of life and work domains (Lyubomirsky, King, & Diener, 2005). Further research in the fields of social cognition and neuroscience indicates that most people possess an often unrealistically positive outlook on life (an "optimism bias") that has both an evolutionary and neurological basis (Sharot, 2011; Taylor & Brown, 1994; Taylor & Brown, 1988).

While these findings have established the importance of PA and NA for individuals and organizations, more advanced longitudinal research is required to uncover the causal mechanisms linking these dispositions to work attitudes. Such is the purpose of this thesis, which aims to develop and test a theoretically grounded causal model describing the influence of PA and NA on the relationship between job insecurity and job satisfaction. Despite a considerable body of research indicating that heightened job insecurity is associated with diminished job satisfaction (Cheng & Chan, 2007), the role of dispositions is rarely examined (Näswall, Sverke, & Hellgren, 2005). An over-reliance on cross-sectional research has further prevented researchers from establishing the strength and direction of causal relations between job insecurity and job satisfaction (Probst, 2008). By testing alternative structural relationships using a three-wave longitudinal panel design, the present study converges on a robust causal model illuminating the relative impact of PA and NA and promising avenues for organizations to reduce the debilitating effects of job insecurity while enhancing job satisfaction.

Defining and Measuring Positive and Negative Affect

Affect can be thought of as an umbrella term that encompasses “the positive and negative quality of emotions and moods” (Miner, Glomb, & Hulin, 2005). Grey and Watson (2001) distinguish emotions and moods in terms of their intensity, frequency, duration, and specificity. *Emotions* are response systems provoked by certain or specific stimuli in order to prompt an individual to action. They are relatively intense, short-lived, and focused on a particular cause (e.g., fear in response to threat or danger; anger as a reaction to frustration or insult). *Moods*, on the other hand, refer to a state without a known cause that is weaker in intensity and generally longer lasting than emotions. Whereas moods are often described in terms of underlying dimensions such as positive and negative or pleasant and unpleasant (Watson, 2000), emotions tend to be placed in discrete categories. For instance, a core set of “basic” emotions identified by researchers is: sadness, anger, joy, fear, interest, surprise, and disgust (Gray & Watson, 2001).

Job satisfaction has traditionally been conceived as an affective reaction to one’s job. For instance, Locke (1976, p. 1300) defined the construct as “a pleasurable or positive emotional state resulting from the appraisal of one’s job or job experiences”. However, researchers have since established that affective states differ from attitudes such as job satisfaction in that the latter concepts reflect both a cognitive and affective component (Brief & Weiss, 2002). This more balanced treatment of job satisfaction is reflected in contemporary definitions of the construct as “judgments about the favourability of the work environment” (Motowidlo, 1996; p. 176) and “a positive (or negative) evaluative judgment one makes about one’s job or job situation” (Weiss, 2002; p. 6).

Contemporary research into the structure and measurement of affect can be traced back to Bradburn's (1969) *The Structure of Psychological Well-being*. In developing one of the first measures of affective well-being, Bradburn discovered through factor analysis that the items of his affect scale consistently formed two independent factors, which he labelled PA and NA. The finding that PA and NA are independent constructs challenged the intuitive assumption that experiencing high NA automatically entails lower PA, and vice versa. Instead, well-being is purported to result from a balance of PA and NA. Numerous studies have since corroborated and refined the two bipolar dimensions of PA and NA using more sophisticated factor analytic techniques (Brief, Burke, George, Robinson, & Webster, 1988; Russell, 1980; Watson et al., 1988).

Although there has been much debate over the predominant structure of affect (Larsen & Diener, 1992; Russell, 1980; Watson & Tellegen, 1985), research has converged on a circumplex model in which mood descriptors can be systematically arranged around the perimeter of a circle using two orthogonal dimensions: *pleasure* and *arousal* (see Figure 3.1) (Warr, 2007). Located diagonally within this space are the two separate axes of high and low PA and NA. Consistent with the bipolar conceptualization of affect, the high poles of NA and PA represent strong and profound affective states, while the low poles are relatively mild and weak (Watson, 1988a). For instance, high PA is represented by terms denoting high levels of arousal and pleasure (e.g., "enthusiastic" and "excited") while low PA is reflected in the absence of positive emotions and a lack of energy (e.g., "lethargic," "fatigued," and "depressed"). High NA, on the other hand, is tapped by terms that are unpleasant and involve high arousal (e.g., "anxious," or "upset") while low NA is assessed through low-energy emotional states and the absence of negative emotion (e.g., “contented” or “relaxed”).

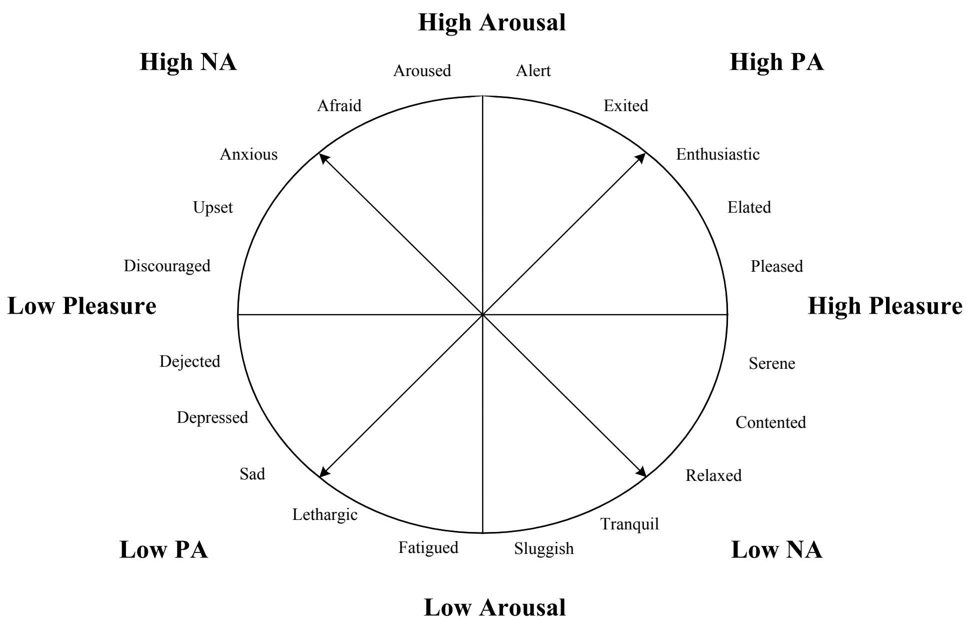


Figure 1.1. Conceptual structure of affect adapted from Feldman Barrett & Russell (1998), Larsen & Diener (1992), and Warr (2007).

Within this framework, an important distinction to be made is between *state* and *dispositional* affect. State affect represents how an individual is feeling instantly or over the period of a day to a week, and is said to be a function of both dispositional and situational factors (George, 1992). Dispositional or trait affect reflects a stable underlying tendency to experience positive and negative moods and emotions that is maintained under all conditions, even in the absence of external stimuli (Watson et al., 1988). Measures of affective dispositions typically include identical items but ask respondents to indicate how they have felt in general or over a longer time frame, such as the past few weeks or months (Watson et al., 1988). To date, the majority of empirical research on the relationship between affect and work attitudes has employed measures of dispositional rather than state affect (Thoresen et al., 2003). Dispositional affect has also been shown to have a causal influence on mood states at any given point in time (Larsen & Ketelaar, 1991; Watson, 2000). In line with the focus of this thesis, NA and PA will hereinafter refer to dispositional affect unless otherwise specified.

Tellegen (1982) originally coined the term NA to describe individuals who tend to accentuate the negative aspects of themselves, other people, and the world in general. Individuals high in NA are generally more inclined to experience acute and chronic levels of distress and negative emotions irrespective of the situation and in the absence of any objective source of stress (Watson & Clark, 1984). High NA people also demonstrate more vigilance concerning impending problems and are more pessimistic about the future (Necowitz & Roznowski, 1994; Schonfeld, 1996). By contrast, PA is a distinct disposition towards positive emotions such as energy, enthusiasm, alertness, and determination (Watson et al., 1988). High PA individuals tend to lead more active lives; are highly sociable, preferring the company of others to isolation; and adopt a more positive outlook towards their environment (Watson, 2000).

NA and PA have been shown to be generally independent dimensions (Diener & Emmons, 1985; Watson, 1988a) that are partially inherited (George, 1992; Tellegen et al., 1988); differentially related to other constructs (Watson et al., 1988); and highly stable in terms of both rank order and mean level (Roberts & DelVecchio, 2000). NA and PA also show strong convergence with the personality traits of neuroticism and extraversion, respectively (Myer & Shack, 1989; Tellegen, 1985; Watson & Clark, 1984).

The Evolving Role of Dispositional Affect

Perhaps no other disposition has received as much attention in the occupational stress literature as NA, which has largely been treated as a methodological confound or "nuisance variable" (Spector, Zapf et al., 2000). Watson, Pennebaker and Folger (1987) observed that since high NA individuals are more predisposed to experience distress and negative emotions, NA might bias self-report measures of work attitudes and affective reactions. If these biases are common across measures, they contribute to common method variance (CMV) or "variance that is attributable to the measurement method rather than to the constructs the measures represent" (Podsakoff, Mackenzie, Lee, & Podsakoff, 2003, p. 879). By providing an alternative explanation for the observed relationships between work attitudes, the biasing effect of NA can have a serious confounding influence on empirical results, yielding potentially misleading conclusions (Campbell & Fiske, 1959; Lance, Dawson, Birkelbach, & Hoffman, 2010). As Watson and colleagues (1987) state,

> to the extent various self-report measures all tap the same underlying NA construct, presumed 'independent variables' and 'dependent variables' in many stress studies may represent little more than different measures of the same thing — and that *thing* is not necessarily the construct of stress, but perhaps merely the predisposition to respond negatively. (p. 155)

Issues of CMV have long been a concern for psychologists (Campbell & Fiske, 1959; Lance et al., 2010) particularly with respect to cross-sectional studies measuring multiple variables with the same method (e.g., self-reports). Several studies have shown that CMV accounts for approximately 30% of the total variance in social science surveys

(Cote & Buckley, 1987; Doty & Glick, 1998; Ostroff, Kinicki, & Clark, 2002). Although CMV is by no means automatic, and attenuation of true associations can occur as well (Spector, 2006; Williams & Brown, 1994), it may nonetheless distort true associations. In theory, a longitudinal research design should minimize these threats, as temporal separation should break up the influence of transient moods and response styles (Podsakoff & Organ, 1986).

Several studies have demonstrated that NA can significantly inflate the relationship between self-reports of stressors and strains (Brief et al., 1988; Burke, Brief, & George, 1993; Payne, 1988; Williams, Cote, & Buckley, 1989). While some conflicting studies have found that NA did not significantly influence job stress-strain relationships (Chen & Spector, 1991; Jex & Spector, 1996), the collective research supports the need to account for NA as a potential confound in self-report studies of affective and attitudinal variables (Lance et al., 2010; Podsakoff et al., 2003).

Although less emphasis has been placed on the potential biasing effect of PA (Schaubroeck, Ganster, & Fox, 1992; Williams & Anderson, 1994), the high energy, optimism, engagement, and social interest inherent in this disposition suggest it may have an equally powerful effect by attenuating the relationship between stressors and strain (Brief & Roberson, 1989; George, 1989; Roskies, Louis-Guerin, & Fournier, 1993). There is also evidence to suggest that PA is associated with positive outcomes in the same way that NA is associated with negative outcomes (Burke et al., 1993; Cropanzano, James, & Konovsky, 1993; Munz, Huelsman, Konold, & McKinney, 1996). As such, "a complete understanding of affectivity-attitude relationship would need to account for PA" (Cropanzano et al., 1993, p. 597).

Since the mid-1980s, a substantial body of research has accumulated demonstrating that dispositional affect can account for a considerable portion of variance in work attitudes and behaviours (Connolly & Viswesvaran, 2000; George, 1992; Judge & Locke, 1993; Watson & Slack, 1993) and that over time and irrespective of situational factors, job satisfaction tends to remain stable (Dormann & Zapf, 2001; Gerhart, 1987; Staw, Bell, & Clausen, 1986; Staw & Ross, 1985; Steel & Rentsch, 1997). Further evidence of similar levels of job satisfaction and affect for twins reared apart led some researchers to argue that job satisfaction may be genetically determined (Arvey, Bouchard, Segal, & Abraham, 1989; Staw et al., 1986; Tellegen et al., 1988). Arvey and colleagues (1989), for example, studied 34 monozygotic (identical) twins separated since early childhood and found approximately 30% of the variance in overall job satisfaction was accounted for by genetic factors. Collectively, these results called into question the dominant view for over half a century that work attitudes were largely a function of situational factors (Thoresen et al., 2003).

In light of these findings, several researchers began to argue that NA and PA may play a more substantive, theoretically meaningful role in the organizational sciences (e.g., Moyle, 1995; Munz et al., 1996; Schaubroeck et al., 1992; Spector & O'Connell, 1994; Williams & Anderson, 1994; Williams, Gavin, & Williams, 1996). That is, rather than a source of measurement distortion of no particular theoretical interest, the underlying constructs of PA and NA may have a causal influence on other attitudinal and affective constructs. NA took centre stage in this debate, prompting an entire issue of the *Journal of Organizational Behaviour* devoted to the question of whether NA should be treated as a source of bias or a substantive variable in future research (Cooper, 2000; Judge, Erez, &

Thorensen, 2000; Payne, 2000; Spector, Zapf et al., 2000). Despite some disagreement among the commentators as to the distinction between a bias and substantive effect, the overall consensus was that "NA should not be treated as simply a statistical 'nuisance factor', but should be substantively investigated in its own right" (Judge et al., 2000, p. 109). As Spector and colleagues (2000) concluded, "assuming NA has only a biasing effect and partialling it from stressor-strain relations is 'throwing out the baby with the bath water'" (p. 91).

Compelling evidence was cited by Spector and colleagues supporting the feasibility of several substantive mechanisms through which dispositions in general, and NA in particular, might have a causal impact on work attitudes. First, dispositions may predispose workers to perceive or interpret their environment in a favourable or unfavourable light (Caspi & Roberts, 1999; Levin & Stokes, 1989; Spector, Fox, & Van Katwyk, 1999). Second, employees have been shown to self-select into environments that are more or less favourable depending on their affective disposition (Judge et al., 2000; Spector, Jex, & Chen, 1995a). Third, individuals may actively shape their work environments to be more or less stressful based on their affective predisposition (Brief et al., 1988; Depue & Monroe, 1986). Finally, research has shown evidence of a "hyper-responsivity" mechanism, indicating that a person's receptivity to positive or negative information and their tendency to recall such information may be mediated by their mood (Brief, Butcher, & Roberson, 1995; Schwarz & Clore, 1983). In order to shed light on these causal processes, researchers have called for more advanced longitudinal research designs (Lance et al., 2010; Spector, Zapf et al., 2000).

Longitudinal studies directly examining the relationship between dispositional affect and work attitudes are relatively sparse (e.g., Bowling, Beehr, & Lawrence, 2006; De Jonge et al., 2001; Hellgren, Sverke, & Isaksson, 1999; Judge & Hulin, 1993; Schaubroeck, Ganster, & Kemmerer, 1996; Spector, Chen, & O'Connell, 2000; Watson & Slack, 1993). Most of these studies have used correlational analyses or multiple regression to test whether dispositions at one point in time are associated with subsequent job satisfaction at a second point in time. Although the balance of evidence indicates that dispositional affect predicts work attitudes, considerable variance remains unaccounted for, suggesting that these attitudes also depend on situational factors in the work environment.

An important limitation of these longitudinal studies is that more complex mediation effects of PA and NA cannot be explicitly tested unless at least three waves of longitudinal data are analysed using appropriate statistical procedures, such as structural equations modelling (SEM) (Ployhart & Vandenberg, 2010). Moreover, not all studies employed a design in which variables were measured at all occasions for the same panel of respondents. By allowing for changes in variables and in associations between variables to be examined over time, this panel design enables reverse and reciprocal causal relationships to be examined.

A far greater number of cross-sectional studies have correlated NA and PA with job satisfaction and, to a lesser extent, other work attitudes (Bruk-Lee, Khoury, Nixon, Goh, & Spector, 2009; Connolly & Viswesvaran, 2000; Thoresen et al., 2003). Thoresen and colleagues' (2003) meta-analysis of 205 studies (N = 62, 527) demonstrated through multiple regression that PA and NA uniquely contributed to the prediction of several work-related attitudes and in some cases PA had an opposite but even more powerful association with certain work attitudes. Their analysis of studies measuring trait PA and NA reported substantial mean corrected correlations for job satisfaction (PA = .33; NA = -.37), emotional exhaustion (PA = -.32; NA = .52), depersonalization (PA = -.32; NA = .39), and personal accomplishment (PA = .47; NA = -.27). Combined analyses of studies measuring state and trait affect found small to moderate correlations for organizational commitment (PA = .35; NA = -.27), and turnover intentions (PA = -.17; NA = .28).

Strikingly, this meta-analysis uncovered 176 correlations between trait NA and job satisfaction compared to only 79 for trait PA with similar ratios reported for other work attitudes. This disproportionate emphasis on NA in the organizational sciences is consistent with the dominant trend in psychology, where Myers (2000) reports a 14:1 ratio of articles on negative emotions relative to positive emotions based on a review of psychological abstracts since 1887.

The emerging field of positive psychology has attempted to address this negativity bias by offering an alternative paradigm for understanding and enhancing affective well-being. Defined as "a science of positive subjective experience, positive individual traits and positive institutions" (Seligman & Csikszentmihalyi, 2000, p. 5), positive psychology seeks to compliment, rather than displace, the historical focus of clinical psychology on mental illness by emphasizing "states of optimal human functioning and fulfilment, and the facilitation and promotion of well-being" (Emmons, 2006, p. 3). While the basic premise of positive psychology is not new, it addresses a need for more focused theory, research, and effective application of positive human traits, states, and behaviours (Seligman & Csikszentmihalyi, 2000).

The related fields of positive organizational behaviour (POB; Luthans, 2002; Luthans & Youssef, 2007) and positive organizational scholarship (POS; Cameron, Dutton, & Quinn, 2003) apply the principles of positive psychology to the organizational context. Luthans (2002) defines POB as “the study and application of positively oriented human resource strengths and psychological capacities that can be measured, developed, and effectively managed for performance improvement in today’s workplace” (p. 59). While POB emphasizes individual human strengths, POS “draws from the full spectrum of organizational theories to understand, explain, and predict the occurrence, causes, and consequences of positivity.” For instance, POS research focuses on how positive elements of the organizational environment can cultivate human virtue, build resilience, and foster positive emotions and engagement (Cameron et al., 2003). Most researchers recognize the need to integrate these two perspectives by investigating the relative contributions and dynamic interaction between positive individual traits and factors in the work environment (Bakker & Schaufeli, 2008; Hackman, 2009; Luthans & Avolio, 2009).

Along with this shift in emphasis towards positive individual and organizational phenomena has come mounting empirical evidence that people who experience a preponderance of positive emotions tend to acquire more favourable life outcomes, such as mental and physical health (Koivumaa-Honkanen et al., 2004; Pressman & Cohen, 2005); income (Diener & Biswas-Diener, 2003); longevity (Danner, Snowdon, & Friesen, 2001); and job performance (Lyubomirsky et al., 2005, p. 803). Contrary to the common belief that positive work and life outcomes lead to subjective well-being, Lyubomirsky and colleagues (2005) presented compelling cross-sectional, longitudinal, and experimental evidence for an inverse causal direction, where PA engenders success in life and work. This pervasive influence of positive emotions has been explained in terms of theory and research linking PA to heightened optimism (Seligman, 2002); elevated self-efficacy (Baron, 1990; Forgas, Bower, & Moylan, 1990); and enhanced resilience (Sutcliffe & Vogus, 2003).

Substantial evidence from the field of social cognition further indicates that most people, regardless of culture or nationality, maintain an irrationally positive outlook on life (Harris & Hahn, 2011; Hoch, 1984; Taylor & Brown, 1988, 1994; Weinstein, 1980; Weinstein & Klein, 1996). For instance, people expect to live longer and be healthier and happier than their peers, and underestimate their chances of getting divorced, having a heart attack, developing cancer, or becoming depressed. They also tend to overestimate their prospects of success on the job market and their satisfaction with their first job. More recent research by neuroscientists suggests that this bias towards optimism ("the belief that the future will be much better than the past or present") has a neurological basis and may be crucial to our existence (Phelps & Sharot, 2008; Sharot, 2011; Sharot, Riccardi, Raio, & Phelps, 2007). As Sharot (2011) notes,

> "Without optimism, our ancestors might never have ventured from their tribes and we might all be cave dwellers, still huddled together dreaming of light and heat…To make progress, we need to perceive alternative realities — better ones — and we need to believe that we can achieve them." (p. 42)

Collectively, these findings suggest that both NA and PA, far from mere methodological artefacts to be statistically controlled, may have a much more important role to play in the organizational sciences. Instead, both dispositions could function as causal "lenses" that colour our perceptions, affective reactions, and behavioural responses to the working world. Drawing confident causal conclusions on the relative impact of PA and NA on work attitudes however, will require more sophisticated longitudinal research designs grounded in strong theoretical models (Spector, Zapf et al., 2000). Additionally, there is a need for more research investigating the dispositional aspects of other work attitudes beyond job satisfaction (Bowling et al., 2006; Cropanzano et al., 1993). One construct that has recently attracted considerable interest from academics and the popular press is job insecurity — "a concern about the future existence of one's job or features associated with the job" (Lim, 1997; p. 252).

Job Insecurity and the Changing Nature of Work

Renewed interest in affect since the 1990s has taken place against a backdrop of dramatic and persistent changes to working life (Gowing, Kraft, & Quick, 1998; Sparks, Faragher, & Cooper, 2001). A turbulent economy combined with rapid technological advancement, tougher competitive standards, and labour market deregulation have forced organizations to adapt by making their operations more effective with fewer resources (Cascio, 1998, 2002). In attempts to cut operating expenses and boost profits, organizations worldwide have engaged in widespread downsizing and various forms of restructuring, such as mergers and acquisitions; privatization; and the increased use of subcontracted staff (Datta, Guthrie, Basuil, & Pandey, 2010).

Downsizing, or "the planned elimination of positions or jobs" (Kets de Vries & Balazs, 1997), has become an increasingly common strategy since the 1980s. Although downsizing began as a survival tactic used by companies in decline, an increasing number of profitable organizations now use widespread lay-offs as a preferred business strategy (Cascio & Young, 2003). As this thesis was being written, job cuts reached crisis proportions as the global market struggled to recover from what economists have called the worst economic decline since the Great Depression. Since the recession began in December 2007, a staggering 5.7 million Americans had lost their jobs by April, 2009 (United States Department of Labor, 2009). Similar findings have been reported in Asia, Europe, Canada, and Australia, where widespread layoffs resulted in elevated unemployment rates (Datta et al., 2010). The International Labour Organization (ILO) predicted as many as 51 million jobs worldwide would be lost in 2009, pushing the world's unemployment rate to 7.1% (ILO, 2009). In light of these figures, the director of the ILO declared, "We are now facing a global jobs crisis … we can expect that for many of those who manage to keep a job, earnings and other conditions of employment will deteriorate" (ILO, 2009, p. 7).

Beyond layoffs, another common adaptive strategy is the adoption of flexible employment contracts to meet new labour demands (Brewster, Mayne, & Tregaskis, 1997; Burke & Nelson, 1998; Dale & Bamford, 1998; OECD, 1999, 2002; Wooden, 1999). Since the 1990s, a distinctive shift has occurred away from full-time and ongoing employment towards an increased use of workers on part-time, contingent, or temporary employment arrangements (Appelbaum, 1992; Barling & Gallagher, 1996; Belous, 1989; Dale & Bamford, 1998; Kalleberg, Reskin, & Hudson, 2000; OECD, 2002; Purcell & Purcell, 1999). This pattern represents what many refer to as a fundamental restructuring of the employment relationship between workers and employers (Cappelli, 1999; Parks, Kidder, & Gallagher, 1998; Rousseau & Schalk, 2000). These authors argue that the state of the labour market has resulted in a shift from a "relational contract" based on a long-term mutual commitment to the relationship (e.g., hard work and loyalty in return for job security), to a "transactional relationship" based on a very short- term exchange of benefits and services (e.g., pay for attendance). Consequently, the promise of lifelong career has become a vestige of the past for most of the modern workforce.

Collectively, these changes to the work environment have dramatically altered traditional views on the stability of employment and resulted in what researchers have described as chronic and pervasive feelings of job insecurity on a global scale (Jacobson, 1991a; Probst, 2008; Sparks et al., 2001). Indeed, as disturbing as the job loss statistics are, it is safe to assume that a far greater number of employees live in fear of losing their job. This insecurity has been shown to extend beyond the job itself to the loss of valued features of the job, which are increasingly under threat during periods of restructuring (Hellgren et al., 1999). Surviving employees typically face dramatic increases in workload, a loss of personal control, role ambiguity, less support from supervisors and co-workers, and diminished resources (Amabile & Conti, 1999; Gowing et al., 1998; Shaw, Fields, Thacker, & Fisher, 1993). Thus, even in a restructuring environment that does not involve layoffs, employees may experience insecurity over whether these unfavourable changes to their jobs will continue or worsen over time.

Survey findings from 21 OECD member countries (OECD, 1997, 1999) indicate that perceptions of job insecurity rose steadily in the 1980s and 90s. More recently, annual job satisfaction surveys conducted between 2008 and 2010 by the Society for Human Resource Management (SHRM) — a human resource management association representing 140 countries — reported job security as the top employee concern and the most important aspect of job satisfaction (regardless of industry, staff size, tenure, age, and gender) above compensation, benefits, workplace safety, relationship with one's supervisor, the work itself, and senior management/employee communication (SHRM, 2008, 2009, 2010).

Toward a Causal Model of Job Insecurity and Job Satisfaction

It is not surprising that job insecurity has rapidly become "one of the most important stressors in contemporary working life" (DeCuyper, Bernard-Oettel, Berntson, DeWitte, & Alcaro, 2008; p. 493). Supporting this contention is meta-analytic research indicating consistent negative associations between job insecurity and job satisfaction (ρ = -.41), general mental health (ρ = -.24), and physical health (ρ = -.16) (Sverke, Hellgren, & Näswall, 2002). Longitudinal studies further report the enduring effects of job insecurity on mental strain and job satisfaction over time (Dekker & Schaufeli, 1995; Heaney, Israel, & House, 1994; Hellgren & Sverke, 2003; Iverson & Sabroe, 1988; Noer, 1993; Roskies et al., 1993).

Several studies suggest that job insecurity can be as distressing, if not more distressing, than unemployment itself (Dekker & Schaufeli, 1995; Kasl, 1982; Latack & Dozier, 1986). It is the prolonged uncertainty and lack of personal control over future changes to the organization that make job insecurity a particularly distressing phenomenon. A number of studies have linked downsizing and restructuring to heightened job insecurity (Brockner, Grover, Reed, & Dewitt, 1992). However, it is unclear whether this association reflects a problem of downsizing/restructuring per se or of the types of changes that were implemented (Datta et al., 2010). Further research is needed to identify intervening situational factors — such as deployment or changes to the job — that may also drive perceptions of job insecurity, and to examine how these perceptions develop over time (Kets de Vries & Balazs, 1997; Paulsen et al., 2005).

Beyond the human costs of job insecurity, organizations may also pay a high price in terms employee attitudes and behaviours. Sverke and colleagues (2002) found negative associations between job insecurity and several employee attitudes, such as organizational commitment ($\rho = -.36$); trust ($\rho = -.50$); job involvement ($\rho = -.37$); and intentions to quit ($\rho = .28$). Other studies have reported significant positive correlations with actual turnover (Arnold & Feldman, 1982; Blau, 1994, 2007). Job insecurity has also been linked directly to lower self-reported job performance ($\rho = -.21$; Sverke et al., 2002) and higher levels of workplace injuries and accidents (Probst, 2004; Probst & Brubaker, 2001). Thus, from both an occupational health and managerial perspective, it becomes imperative to understand and find ways of reducing the impact of job insecurity on both individuals and organizations.

Despite the breadth of research linking job insecurity to a myriad of individual and organizational variables, few attempts have been made to advance beyond correlational data to an examination of causal processes (Hellgren & Sverke, 2003). This is especially apparent with respect to job satisfaction, where a general reliance on cross-sectional research designs has prevented researchers from establishing the strength and direction of causal relations with job insecurity and hampered theoretical advancement. Consequently, a question raised by Hartley and colleagues (1991) almost two decades ago remains unresolved — “Does job insecurity cause lower job satisfaction; or do employees with lower job satisfaction experience more job insecurity?” (p. 201)

Consistent with theories of occupational stress (e.g., Lazarus & Folkman, 1989), the predominant view amongst scholars is that job insecurity will result in diminished job satisfaction and not vice versa (e.g., De Witte, 2006; Greenhalgh & Rosenblatt, 1984; Sverke et al., 2002). However, it may be that job satisfaction provides a protective buffer against job insecurity such that workers predisposed to experience higher levels of job satisfaction also perceive their jobs as more secure, even in the face of downsizing. Empirical evidence supporting the pervasive influence of positive emotions, a bias towards optimism, and a dispositional basis for job satisfaction would suggest that this may be the dominant causal direction.

Alternative causal models are also theoretically plausible when the separate dimensions of intrinsic and extrinsic job satisfaction are examined. For instance, a model of reverse causation may be causally predominant for extrinsic job satisfaction, where a person's satisfaction with extrinsic rewards such as salary and promotions would provide a protective buffer against the onset of job insecurity. Alternatively, the dominant relationship for intrinsic job satisfaction (e.g., autonomy, job variety) may be one of reciprocal causation, where, for instance, job insecurity at Time 1 would cause a reduction in intrinsic job satisfaction at Time 2, which would in turn cause greater job insecurity at Time 3. Only by testing these competing causal relationships longitudinally is it possible to obtain more accurate and parsimonious causal models with stronger explanatory power.

How Important Are PA and NA?

Given that job insecurity and job satisfaction are both attitudes with an affective component, a considerable portion of these constructs may be rooted in PA and NA. In this thesis, I propose, as others have (e.g., Burke et al., 1993; Munz et al., 1996), that PA and NA independently influence work conditions and psychological states, with PA more strongly associated with positive organizational variables and NA with negative stressors and strains. Thus, a true account of the causal relationship between job insecurity and job satisfaction would need to identify their level of overlap with NA and PA, respectively.

Although numerous studies have investigated the impact of job insecurity on job satisfaction, the role of dispositions remains under-researched (Näswall et al., 2005). This is surprising given that the subjective experience of job insecurity depends on the individual's evaluation of their environment as threatening (Lazarus & Folkman, 1984). As Roskies and colleagues (1993) note, "precisely when the threat is unclear, it is in the eye of the beholder, rather than a characteristic of the situation *per se*, that determine whether the circumstances are appraised as stressful or not" (p. 618). Personality dispositions are, therefore, likely to play a central role in shaping a person's vulnerability and resilience to job insecurity. To the extent that job insecurity and job satisfaction are influenced by dispositional affect, spurious associations would have been reported in previous research.

As stable dispositions thought to have a genetic component (Arvey et al., 1989) and a neurological basis (Davidson, 1998; Watson, Weise, Vaidya, & Tellegen, 1999; Whittle, Allen, Lubman, & Yucel, 2005), it is reasonable to expect PA and NA to function as exogenous constructs, with NA influencing job insecurity and PA affecting job satisfaction through direct and/or mediation paths. The direct effects of NA and PA may be explained in terms of perceptual, affective, and behavioural mechanisms (Moyle, 1995; Spector, Zapf et al., 2000). For instance, high PA employees with an optimistic and energetic disposition may perceive their work in a more favourable light, have a more positive emotional reaction to their job, and proactively craft their work to be more satisfying. Conversely, high NA employees may be more vulnerable to job insecurity through a tendency to perceive organizational change as a symbol of impending job loss, and have less favourable emotional reactions and behavioural responses to organizational restructuring. More complex mediation paths are also possible where, for instance, NA may influence job satisfaction indirectly through job insecurity or PA may influence job satisfaction, which, in turn, drives job insecurity.

Testing the direct and mediation effects of dispositional affect and establishing the temporal predominance of job insecurity and job satisfaction requires a three-wave longitudinal panel design using SEM (Ployhart & Vandenberg, 2010; Singer & Willet, 2003; Williams & Podsakoff, 1989). Such a design strengthens causal inferences by accounting for measurement error over time, testing competing causal relationships simultaneously, and controlling for the potential effects of NA and PA as primary sources of CMV. Of the few longitudinal studies examining the relationship between job insecurity and job satisfaction (Heaney et al., 1994; Hellgren et al., 1999; Nelson, Cooper, & Jackson, 1995; Probst, 2002), no study has met these criteria.

Research Objectives

The central purpose of this thesis is to develop and test a causal model describing the mechanisms through which PA and NA might influence the relationship between job insecurity and job satisfaction. The research will address two primary research questions:

- How important are PA and NA to the job insecurity-job satisfaction relationship?

- What is the strength and direction of causal relations between job insecurity and job satisfaction?

Prior to this investigation, it was necessary to establish robust measures of the constructs included in the structural model. This required addressing two unresolved issues related to the measurement of job insecurity and job satisfaction in a set of preliminary studies.

First, drawing causal inferences requires accurate measures of theoretical constructs, and research has yet to converge on a concise job insecurity measure with acceptable levels of validity and reliability. The majority of studies have instead relied on "global" or unidimensional measures with little if any evaluation of psychometric properties (Ashford, Lee, & Bobko, 1989; De Witte, 1999). Further complicating this measurement issue is a lack of clear and consistent definitions of the construct. While some researchers conceptualize job insecurity as a simple one-dimensional construct (van Vuuren & Klandermans, 1990), others support a more complex model in which job insecurity is viewed as a function of multiple factors, such as the loss of valued features of one's job and social cues in the work environment (Greenhalgh & Rosenblatt, 1984; Hartley & Klandermans, 1986; Lahey, 1984; O'Neill, 2005).

In their recent review of the job insecurity literature, van Wiek and Pienaar (2008) conclude that "more research, with extensive and new perceptions, needs to be done to possibly arrive at a final model, which will include a clear conceptualisation, definition, and measurement of job insecurity as an integrated industrial phenomenon" (p. 62). Toward this end, I have developed and validated a new job insecurity measure representing the core dimensions identified by workers facing an objective threat of job loss and grounded in a comprehensive review of pre-existing measurement models. A series of robust statistical procedures were conducted, including exploratory and confirmatory factor analysis with tests of measurement invariance across samples. This new measure will add rigour to the present study and future job insecurity research, contributing to the development of cumulative knowledge. For practitioners, establishing a psychometrically robust and parsimonious job insecurity measure will enable organizations to accurately monitor job insecurity and assess its impact on individual health and organizational performance.

The second issue concerns the conceptualization and measurement of job satisfaction. The separate dimensions of intrinsic and extrinsic job satisfaction have not been clearly delineated in theoretical models of job insecurity and subjective well-being (Greenhalgh & Rosenblatt, 1984; Hellgren et al., 1999; Sverke et al., 2002). Researchers have tended to rely on global or composite measures of overall job satisfaction, which mask important predictive relationships between the correlated but distinct dimensions of intrinsic and extrinsic job satisfaction. These distinctions are important since the psychological processes linking job insecurity to intrinsic and extrinsic job satisfaction may differ from those for overall job satisfaction.

Although several studies investigating the relationship between job insecurity and job satisfaction have measured separate dimensions or facets of job satisfaction, researchers rarely interpret their findings at this level of analysis (Buitendach & De Witte, 2005). To address this gap, I conducted a psychometric meta-analysis to examine the strength of the relationship between job insecurity and intrinsic and extrinsic job satisfaction relative to global and overall (composite) measures. This review will help to determine whether there is empirical justification for examining job satisfaction at the dimension-specific rather than the global level of analysis. Additionally, the meta-analysis serves as a means of synthesizing and integrating empirical findings and laying the groundwork for more concise theoretical models.

Having determined the salient dimensions of job insecurity and job satisfaction, I will combine these constructs with PA and NA to form a measurement model to be tested for structural invariance and stability over time. I will then formulate theoretically grounded causal hypotheses based on the measurement model that emerges from this analysis and the meta-analytic findings. The causal hypotheses will be expressed in a structural model, which will then be tested across three waves of longitudinal panel data using SEM.

Research Contributions

The present research enhances the existing literature in several ways. First, whereas previous research has placed a disproportionate emphasis on NA as a nuisance variable and on its relationship with job satisfaction, this study simultaneously examines the relative importance of both NA and PA on the relationship between job insecurity and job satisfaction. This causal model is consistent with a growing recognition among POB scholars that simply focusing on positive aspects of work life is not enough; that "in order to make a substantive contribution to organizational science, POB will need to show the added value of the positive over the negative." (Bakker & Schaufeli, 2008, p. 149)

Second, most dispositional research has either relied on the temporal stability of job attitudes to infer dispositional effects (Staw & Ross, 1985); correlated job attitudes with specific personality dispositions (Connolly & Viswesvaran, 2000; Thoresen et al., 2003); or examined whether dispositions at one point in time influence subsequent job satisfaction at another point in time (Spector & O'Connell, 1994; Staw et al., 1986; Watson & Slack, 1993). By analyzing three waves of longitudinal panel data (n = 258) using SEM, this study is able to test more complex direct and mediation effects of NA and PA on job insecurity and job satisfaction.

Third, unlike previous cross-sectional studies examining the association between job insecurity and job satisfaction, the present multi-wave panel design provides a rigorous examination of alternative causal models of direct, reverse, and reciprocal causation (Frese, 1985; Pedhazur & Pedhazur-Schmelkin, 1991). This design further strengthens causal inferences by circumventing problems of CMV and accounting for two well-established third variables (NA and PA).

Finally, by collecting organizational survey data before, during and after a significant downsizing initiative, the study is able to examine the dynamic interaction between the separate dimensions of job insecurity and job satisfaction triggered by the process of downsizing. In this way, I address a well-documented shortcoming of cross-sectional designs — that they only provide a “snapshot” of variables at a particular point in time when the vast majority of theories in organizational psychology are explicitly or implicitly longitudinal in nature (Ployhart & Vandenberg, 2010).

From a practical perspective, mapping the longitudinal relationships between dispositional affect, job insecurity, and job satisfaction will assist organizations in identifying how dispositional and situational factors interact to influence a person’s vulnerability and resilience to job insecurity. This framework can be used to guide organizational development initiatives aimed at reducing job insecurity and enhancing job satisfaction. The model could also be used to evaluate the impact of organizational downsizing and restructuring with greater precision and tailor health promotion efforts to those employees who would benefit most. Understanding how job insecurity develops over time and implementing effective remedial programs is becoming more critical to organizations as they continue to pursue widespread restructuring intended to strengthen the organization over the long-term.

Beyond its substantive contributions, this thesis incorporates a rigorous series of statistical procedures aimed at overcoming common methodological barriers to progress in organizational psychology (Edwards, 2008). Specifically, the research i) uses SEM in order to account for measurement error; ii) incorporates control variables into theoretical models, "making explicit the presumed causal structure by which control variables relate to one another and to the substantive variables under study (Becker, 2005; Meehl, 1971)" (p. 482); and iii) employs at least three waves of longitudinal panel data to circumvent the effects of CMV and examine competing causal models in order to draw strong causal inferences. Similar procedures were recently recommended by one of the pioneers of organizational behaviour, Richard Hackman (2009), who called for a "tightening of standards by the gatekeepers of Positive Organizational Scholarship" (p. 314).

Overview of the Thesis

The thesis is divided into eight chapters. Chapter I explores the dimensionality and measurement of job insecurity drawing on theoretical and empirical research findings. The literature review traces the varied definitions and measures of the construct from an early emphasis on satisfaction with job security in a stable labour market to a focus on job insecurity as a prominent stressor in contemporary organizations. Competing perspectives on the dimensionality of the construct are reviewed and unresolved measurement issues are highlighted.

To address these issues, Chapter II presents the results of research aimed at developing a new job insecurity measurement model and testing the construct validity of the measure using exploratory and confirmatory factor analyses with tests of invariance across samples. In contrast to the conventional view of job insecurity as a global or unidimensional construct, the results support a four-dimensional measure capturing insecurity over *job loss*, *job changes*, *organizational survival*, and *marginalization*. Importantly, this measurement structure represents dimensions derived from workers facing an objective threat of job loss and is anchored in a strong theoretical foundation.

In Chapter III, I conduct a meta-analytic review of the job insecurity literature to clarify the strength of the relationship between job insecurity and intrinsic and extrinsic job satisfaction relative to overall job satisfaction (global and composite measures). Results of the meta-analysis provide the empirical basis from which structural hypotheses are developed in Chapter VI.

Chapter IV details the methodology for the longitudinal analyses reported in the thesis, including the procedure used to collect longitudinal data and the sample characteristics. Design and implementation issues are addressed including contextual information on the organization surveyed, instrumentation, and an overview of statistical techniques used to test the hypothesized causal model.

Chapter V tests the structure and stability of the four job insecurity dimensions and intrinsic and extrinsic job satisfaction with a multi-wave, multi-variable (MWMV) technique and structural equations modelling.

Chapter VI begins by making important conceptual and operational distinctions between job satisfaction and affective well-being and state versus trait affect. Theoretical hypotheses linking job insecurity to job satisfaction are then presented with reference to need fulfilment theories of motivation and Warr's (1987) vitamin model. The hypothesized influence of PA on job satisfaction and NA on job insecurity is discussed with reference to dispositional theories and research.

In Chapter VII, I examine the discriminant validity of the two dispositional, three job insecurity, and two job satisfaction constructs using confirmatory factor analysis (CFA). The hypothesized three-wave structural model is then tested by way of SEM.

Finally, Chapter VIII presents the distinct contributions made by this thesis to understanding the relationship between job insecurity and job satisfaction and the role of dispositional affect. Here, I summarize the main findings and limitations along with theoretical and practical implications, and suggest potential directions for future research.

CHAPTER I

THE MEANING AND MEASUREMENT OF JOB INSECURITY

> "It is a period of agony of varying strength. Rumours about possible decisions and actions are circulating. Reliable information is not available. You have to decide whether you should try to look for another job or not. Sometimes you have too little to do. You hover between hope and despair. The trade union tries to get as many as possible active in the struggle to save jobs and to make the unemployment problem a concern for the entire working group and not the individual person. For the individual this phase is characterised by the threat of impending unemployment."
>
> — Joelson & Wahlquist (1987, p. 179)

In this chapter, I explore the nature and measurement of job insecurity, drawing on theoretical and empirical research findings. The literature review traces the varied definitions and measures of the construct—from the early emphasis on satisfaction with job *security* in a relatively stable labour market to the current focus on job *insecurity* as a prominent stressor in organizations. Competing perspectives on the dimensionality of the construct are reviewed and unresolved measurement issues are highlighted. Based on theoretical and empirical developments in the literature, I propose a four-dimensional measurement model. The model extends the recent three-dimensional job insecurity measure (JIM) developed and validated by O'Neill (2005) by including a fourth factor that captures the perceived threat of losing valued job features. I describe each of the four job insecurity factors (employment uncertainty, job changes insecurity, managerial distance and growth climate) and link them with theoretical dimensions and pre-existing measures. This review provides the theoretical and empirical foundation from which I will develop and validate a new job insecurity measure in Chapter II.

Satisfaction with Job Security: The Early Years

Research interest in the meaning of job security can be traced back to the relatively stable economy of the1950s when the first attempt was made to determine what workers meant by the word "security." Thompson and Davis (1956) used essays written for the General Motors "My Job Contest," which asked employees to describe why they liked their job. Approximately one-fifth of the sampled essays used the term "security," and of these, job security was defined as an assurance of continued work and income. This assurance was derived from a feeling of confidence in the company's economic stability and the employees' own ability to meet future demands.

Following the release of the seminal Hawthorne studies and the emergence of the human relations movement (Roethlisberger & Dickson, 1946), the concept of job security began to emerge as a key component of various motivational theories (Herzberg, Mausner, & Snyderman, 1959; Maslow, 1954; Super, 1957). Super (1957) described job security as "one of the dominant needs and one of the principal reasons for working" (p. 13). In his widely adopted hierarchy of needs theory, Maslow (1954) viewed security as a type of "safety need" along with stability, freedom from fear, and need for structure and order. In his words, "we can perceive the expressions of safety needs … in such phenomena as … the common preference for a job with tenure and protection" (p. 87). According to Maslow, fundamental needs such as job security are grouped according to a hierarchy of prepotency. That is, some needs are assumed to be more important (potent) than others and must be satisfied before other needs can serve as motivators. This means that if one's security needs are no longer met, then they become prepotent over the need for love, belongingness, self-esteem, and self-actualization. Research by McGregor

(1960) later confirmed the importance of job security as a component of an employee's need for safety.

In Herzberg's (1959) two-factor theory, job security was incorporated into a slightly different framework for need fulfilment. Herzberg defined job security as "those features of the job situation which lead to assurance for continued employment, either within the same company or within the same type of work or profession" (Herzberg et al., 1959, p. 41). Unlike Maslow, who viewed job security as a motivator, Herzberg categorized the construct as an extrinsic "hygiene" factor along with such job characteristics as salary and working conditions. This meant that job security, when absent, could lead to dissatisfaction but could not lead to either satisfaction or lasting motivation on the job. Herzberg's content analysis of interview data from a sample of 200 accountants and engineers suggested that job security was the most important hygiene factor (Herzberg et al., 1959).

Maslow and Herzberg's theories provided a useful framework for understanding job security in the context of need fulfilment and are still widely used by practitioners. They did not, however, offer a useful operationalization of the construct. A first step towards addressing this deficiency came in the 1960s and 70s with the development of standardized measures of job satisfaction. Job security appeared as a distinct facet of many job satisfaction and work climate instruments including three of the most well-established: the Survey of Working Conditions by the Institute for Social Research (Quinn et al., 1971); the Minnesota Job Satisfaction Questionnaire (MSQ; D. J. Weiss, Dawis, England, & Lofquist, 1967); and Hackman & Oldham's (1974) Job Diagnostic Survey (JDS).

For the next two decades, job security continued to receive only scant attention in the literature — as a component of job satisfaction and a subdomain of the occupational stress literature dealing with involuntary job loss and unemployment (Jacobson, 1991a). It took a dramatic shift in the labour market towards downsizing and restructuring before this tangential interest in job *security* evolved into more systematic research efforts aimed at understanding the role of job *insecurity* as a prolific work stressor. Despite numerous studies investigating the impact of job insecurity on a range of individual and organizational outcomes (Sverke et al., 2002), only recently has attention been given to understanding the meaning and measurement of the construct itself.

Defining Job Insecurity

To date, job insecurity has been conceptualized by scholars in many diverse and sometimes conflicting ways (Jacobson, 1991a). Some researchers have adopted a narrow definition of the construct, conceptualizing it simply as "an overall concern about the future existence of one's job" (Rosenblatt & Ruvio, 1996, p. 587); "concern about the future permanence of the job" (van Vuuren & Klandermans, 1990, p. 133); or "an employee's perception of a potential threat to continuity in his or her current job" (Heaney et al., 1994, p. 1431).

Others have advocated a more complex, multidimensional perspective (Ashford et al., 1989; Borg & Elizur, 1992; Greenhalgh & Rosenblatt, 1984; Hellgren et al., 1999; Kinnunen, Mauno, Nätti, & Happonen, 1999; Rosenblatt & Ruvio, 1996). Most multidimensional conceptualizations were influenced by the pioneering work of Greenhalgh and Rosenblatt (1984), who defined job insecurity as "a perceived powerlessness to maintain desired continuity in a threatened job situation" (p. 438). They argued that what the individual perceives as "potential loss of continuity in a job situation can span the range of permanent loss of the job itself to loss of some subjectively important features of the job" (Greenhalgh & Rosenblatt, 1984, p. 440). More recently, Ferrie, Shipley, Stansfeld, and Marmot (2002) echoed this perspective, stating that "it is now widely recognized that the definition of job insecurity as the threat of imminent jobs loss is too narrow in that it fails to include threat from deteriorating employment conditions and career opportunities" (p. 453).

In line with this multidimensional view and the corroborating findings presented in Chapter II, job insecurity is defined herein as "*a concern about the future existence of one's job or features associated with the job*" (Lim, 1997; p. 252). This definition goes beyond concern over job loss to encompass the loss of desirable job features such as salary, promotion opportunities, physical working conditions, and career opportunities (Borg & Elizur, 1992; Greenhalgh & Rosenblatt, 1984). Inherent in this definition is an important distinction on which most researchers have agreed (De Witte, 2005a; Jacobson, 1991b; Sverke & Hellgren, 2002; Sverke et al., 2002): Job insecurity is a subjective phenomenon distinct from objective indices of employment instability.

Distinguishing Job Insecurity and Employment Instability

In his seminal paper elucidating the job insecurity construct, Jacobson (1991b) notes, "the mere statement that widespread apprehension about jobs exists and may be growing is of little value unless we find ways to present it as a clear and distinct experience" (p. 23). Jacobson's conceptual framework highlights the need to distinguish between job *insecurity* as a subjective experience and objective indicators of employment *instability* such as employment turnover rates and contingent employment status. Such indicators are often used by economists and labour specialists as proxy measures of job insecurity under the assumption that a decrease in the length of time individuals spend with their employer implies a subsequent increase in perceived job insecurity (Auer & Cazes, 2000; Burgess & Rees, 1996; Green, Felstead, & Burchall, 2000; Gregg & Waldsworth, 1995; Robinson, 2000). Another common tendency is to equate levels of unemployment with job insecurity (Gallie, White, Cheng, & Tomlinson, 1998).

Researchers in the behavioural sciences have also described jobs as more or less insecure based on similar objective criteria. For instance, Pearce (1998) uses temporary employment status as “an independently determined probability that workers will have the same job in the foreseeable future” (p. 34). At the organizational level, objective job insecurity has been assessed by classifying or rating the organization as high or low risk of job insecurity based on contextual factors such as the degree of organizational change or restructuring (Büssing, 1999; Ferrie, Shipley, Marmot, Stansfeld, & Smith, 1998; Roskies et al., 1993).

Jacobson (1991a) describes job insecurity not in terms of employment instability, but as a distinct perceptual phenomenon representing a transformation of beliefs about what is happening in the organization and its environment. This view is aligned with Lazarus and Folkman’s (1984) transactional stress theory, which posits that both dispositional characteristics and environmental cues shape our cognitive and emotional reactions to potential threats. It therefore follows that perceptions of job insecurity may differ between individuals even if they are exposed to the same objective situation, and that individuals may differ in their reactions to perceptions of jobs at risk.

Supporting Lazarus and Folkman's theory are several studies indicating that individuals facing identical changes to their work environment (e.g., downsizing, mergers, and acquisitions) differ significantly in their perceptions of job insecurity (Davy, Kinicki, & Scheck, 1997; Fryer & McKenna, 1987; Mohr, 2000; van Vuuren, Klandermans, Jacobson, & Hartley, 1991a, 1991b). With respect to employment tenure, self-reported levels of job insecurity are only modestly correlated with intention to resign (Barling & Kelloway, 1996; Burke, 1998a, 1998b; Davy et al., 1997; Dekker & Schaufeli, 1995) and actual turnover rates (Arnold & Feldman, 1982; Blau, 1994, 2007) and have been found to vary significantly in circumstances where employees have life-time contracts protected by legislation (Alnajjar, 1996) and tenure systems (Matthews & Weaver, 1996). Thus, while perceptions of job insecurity are unlikely to be widespread in the absence of an objective threat, there is inherent value in measuring job insecurity as a distinct subjective phenomenon.

In the following sections, I will review and critique attempts to operationalize job insecurity as a psychological construct, making important conceptual and methodological distinctions between i) cognitive and affective job insecurity and ii) insecurity over job loss and job changes. Importantly, this review will cover the salient dimensions of job insecurity that have arisen from the perspectives of both researchers and workers facing an objective threat of job loss.

The Dimensionality of Job Insecurity

As stated above, job insecurity has been conceptualized as either a unidimensional or a multidimensional construct. These two competing views on the scope of job insecurity are further reflected in the varied attempts to measure the construct (Sverke et al., 2002). Measures composed of single or multiple items assessing the continuity of the job itself (e.g., likelihood/fear/probability of job loss) are deemed unidimensional or "global" measures. Conversely, measures that encompass uncertainty surrounding the present job and valued aspects of that job are labelled multidimensional. Although some measures treat job features and job loss separately, others treat them as part of the same job insecurity construct. A further distinction can be made between cognitive measures, which tap the probability or likelihood of job loss, and affective measures, which include negative emotional reactions to the threat of job loss such as fear and worry (Borg & Elizur, 1992). Table 1.1 presents the unidimensional and multidimensional job insecurity measures included in the review, distinguishing between multidimensional measures that were developed based on á priori theory and those developed from the perspective of insecure workers.

Table 1.1.

Examples of Unidimensional and Multidimensional Measures of Job Insecurity

Unidimensional Measures			
Source & Measure	Dimension	Items	Sample Item
Borg & Elizur (1992)	Overall job security	1	"My job is very secure here at xyz."
Caplan et al. (1975) Job Future Ambiguity (JFA)	Certainty of job and career security	4	"How certain are you about what your future career picture looks like?"
Johnson et al. (1989) Work Opinion Questionnaire (WOQ)	Fear of job loss	7	"The thought of getting fired really scares me."
Caverly (2007)	Worry over job loss	1	"I am not worried about job security."
Van Vuuren (1990)	Likelihood of job loss	4	"Do you expect to be in your current position five years from now?"
Arnold & Feldman (1982)	Likelihood of job loss	1	"How likely is it that you might be fired or laid off?"
Dewitte (1999)	Probability of job loss	1	"How large, in your opinion, is the probability that you will become unemployed in the near future?"
Hackman & Oldham (1980) Job Diagnostic Survey (JDS)	Satisfaction with job security	2	Level of satisfaction with…"how secure things look for me in the future in this organization."
Jacobson (1991)	Worry over job loss; likelihood of job loss and; satisfaction with job security	3	To what extent…"are you worried at the present time about your continued employment in your current job" ; "At the present time, does it seem likely that you will lose your job"; "Are you satisfied with the security provided in your present job."

Note. Adapted and updated from Sverke and Hellgren (2002). Items with an asterisk are reverse-scored.

Table 1.1 (Continued)

Theory-Based Multidimensional Measures			
Source & Measure	Dimension	Items	Sample Item
Ashford et al. (1989) Lee et al. (2008) Job Insecurity Scale (JIS)	a) Importance of job features - abridged - bare bones	17 9 5	"In your work life, how important is the freedom to schedule your own work to you personally?"
	b) Perceived threats to job features - abridged - bare bones	17 9 5	"Looking to the future, what is the probability that changes could occur–changes you don't want or might disagree with–that would negatively affect your freedom to schedule your own work?"
	c) Importance of total job - abridged - bare bones	10 8 6	"How important to you personally is the possibility that you may be laid off permanently?"
	d) Perceived threats to total job - abridged - bare bones	10 8 6	"Again, thinking about the future, how likely is it that you may be laid off permanently?"
	e) Powerlessness	3	"I have enough power in this organization to control events that might affect my job."
	Multiplicative scale		= [Σ(a x b) + Σ (c x d)] x e
Borg & Elizur (1992)	Cognitive job insecurity	6	*"In my opinion I will keep my job in the near future."
	Affective job insecurity	3	"The thought of losing my job troubles me."
Probst (2003) Job Security Index (JSI) Job Security Satisfaction (JSS)	Cognitive job security (JSI)	18	Descriptive phrases describing job security (e.g., "sure," "unpredictable," "up in the air," "uncertain").
	Affective job security (JSS)	20	Descriptive phrases describing satisfaction with job security (e.g., "makes me tense," "worrisome," "stressful").

Note. Adapted and updated from Sverke and Hellgren (2002). Items with an asterisk are reverse-scored.

Table 1.1 (Continued)

Source & Measure	Dimension	Items	Sample Item
	Theory-Based Multidimensional Measures		
Hellgren et al. (1999)	Quantitative job insecurity	3	"I am worried about having to leave my job before I would like to."
	Qualitative job insecurity	4	*"My future career opportunities in this organization are favourable."
Blau et al. (2003)	Job loss insecurity	7	"The future of my department is uncertain over the next year/three years."
	Human capital security	4	"I am worried about whether my skills will be of value next year."
	Work condition security	4	"I am worried that the decision-making freedom I have on my job will decrease over the next year."
Roskies & Louis-Guerin (1990)	Termination	1	Likelihood of experiencing termination in the next year or so.
	Retirement	1	Likelihood of experiencing forced early retirement in the same period.
	Demotion	1	Likelihood of experiencing demotion in the same period.
	Condition	1	Likelihood of experiencing forced deterioration of working conditions in the same period.
	Long-term	1	Inability to keep the present job, even should the respondent wish to, until normal retirement.
Bartrum (2006)			
Job Characteristics Scale	Supportive supervision	4	"The respect you have for your supervisor."
	Opportunity for skill use	4	"The opportunity you have to learn new skills for personal development."
	Opportunity for interpersonal contact	4	"Opportunity to meet new people."
	Physical safety	4	"The capacity to take time out when you are stressed."
	Personal control	4	"The capacity you have to choose which tasks you work on."
	Availability of money	4	"The money to live a comfortable lifestyle."
	Valued social position	4	"The status you have within your organization."
	Variety	4	"The variety you have in your job."
	Externally generated goals	4	"The level of expertise you are expected to have in your job."
	Environmental clarity	4	"Being clear about what you have to do."

Note. Adapted and updated from Sverke and Hellgren (2002). Items with an asterisk are reverse-scored.

Table 1.1 (Continued)

Worker-Based Multidimensional Measures			
Source & Measure	Dimension	Items	Sample item
Lahey (1985) Job Security Scale (JSS)	Job permanence	11	"I'm not really sure of how long my job will last."
	Company growth & stability	5	"Management is planning to expand this company."
	Company concern for the individual	14	"This company really makes you feel wanted."
	Job performance	8	"My work meets the company's standards."
	Individual commitment	6	"I regard my position as a career rather than a job."
O'Neill (2005) Job Insecurity Measure (JIM)	Employment uncertainty	4	*"I am uncertain about my future with this organization"; "When productivity in this organization is low, I still feel secure in my job."
	Growth climate	4	"This organization appears to have clear goals and a definite strategy for achieving them"; "Management appears to be preparing in advance and planning for the future."
	Managerial distance	3	*"I feel as though management is avoiding me"; "I feel as though my privileges in this organization are being maintained."

Note. Adapted and updated from Sverke and Hellgren (2002). Items with an asterisk are reverse-scored

Unidimensional Job Insecurity Measures

In the pursuit of more substantive research questions, many studies in the job insecurity literature have attempted to measure the construct through single-item global measures, most of which capture the likelihood or probability of job loss (Borg, Kristensen, & Burr, 2000; De Jonge, Bosma, Peter, & Siegrist, 2000; De Witte, 1999; Heaney et al., 1994; Hui & Lee, 2000; Kinnunen & Nätti, 1994; Lord & Hartley, 1998). Examples include measures developed by Decker and Schaufeli (1995) ("Do you expect to be in your current position five years from now?") and Mohr (2000) ("How do you assess the probability of losing your job in the near future?"). With at least two observable variables necessary to define a latent construct (Bentler & Chou, 1987), the reliability of these single-item global measures is dubious due to measurement error.

Wanous, Reichers, and Hudy (1997) have advocated the use of single-item measures in some research situations, demonstrating that the minimum reliability for a one-item measure of global satisfaction in their meta-analysis was estimated between 〈 = .45 and 〈 = .69 depending on the assumptions made. However, these minimum reliabilities are unacceptable if one adopts the recommended minimum reliability level of.70 (Nunnally, 1978).

As a more reliable alternative to single-item measures, some researchers have employed unidimensional scales with multiple items tapping perceived uncertainty or emotions such as fear or anxiety over future job loss. For instance, Johnson et al.'s (1984) seven-item subscale of the Work Opinion Questionnaire asks respondents to rate on a five-point scale items such as "The thought of getting fired really scares me." One of the most frequently used unidimensional instruments is the four-item Job Future Ambiguity scale developed by Caplan, Cobb, French, Van Harrison, and Pinneau (1975), which measures the amount of certainty a person has about future job and career security (e.g., “How certain are you about what your future career picture looks like” and “whether your job skills will be of use and value five years from now?”).

Previous studies incorporating unidimensional measures have been criticized for failing to display the psychometric properties of their scales or to describe in sufficient detail the statistical procedures applied (Ashford et al., 1989). These psychometric deficiencies are compounded by variability in the item content in terms of both the target of insecurity (e.g., one’s job, career, responsibilities) and varying emphasis on cognitive perceptions or affective reactions to job insecurity. This practice of merging purportedly distinct constructs at the measurement level prevents researchers from uncovering important differences between the constructs and theoretically meaningful relationships with outcomes.

Multidimensional Job Insecurity Measures

Cognitive vs. affective job insecurity. Recent research has argued for a two-dimensional job insecurity measurement structure consisting of cognitive and affective factors that are purported to be related but distinct constructs (Huang, Lee, Ashford, & Ren, 2009; Ito & Brotheridge, 2007; Konig & Staufenbiel, 2006; Reisel & Banai, 2002b). Unlike cognitive measures — which capture emotionally neutral perceptions of job insecurity, such as the probability of losing one’s job or particular job features (e.g., Caplan et al., 1975) — affective measures assess negative emotional reactions to perceived job insecurity, such as fear or anxiety over job loss.

The proposed distinction between cognitive and affective dimensions is consistent with Weiss and Cropanzano's (1996) affective events theory, which distinguishes between behaviours that are driven by the affective reactions of the employee and those that are driven by employee judgments. The theory posits that both affective reactions and cognitive judgments need to be analysed in order to accurately predict employee behaviour. Similarly, Lazarus and Folkman's transactional theory of stress and coping (1984) proposes that the cognitive appraisal of a threat precedes an individual's independent emotional reaction to that threat. Supporting these theories is a considerable body of evidence demonstrating that emotions arise out of cognitive appraisals (Frijda, 1988; Morrison & Robinson, 1997; Oatley, 1992; Ortony, Clore, & Collins, 1988; Schwarz & Clore, 1983).

Although few researchers would disagree that job insecurity includes both cognitive and affective components, Huang and colleagues (2009) note a lack of consistency in the measurement of the two dimensions. Some researchers have combined cognitive and affective scales into a composite job insecurity index (Reisel & Banai, 2002b), while others have treated the two dimensions as related but distinct (Konig & Staufenbiel, 2006). These mixed interpretations of cognitive and affective job insecurity have likely contributed to the varying strength and direction of associations reported with attitudinal outcomes (Ito & Brotheridge, 2007; Konig & Staufenbiel, 2006).

In an attempt to clarify the cognitive and affective dimensions of job insecurity, Probst (2003) developed the Job Security Index (JSI) and the Job Security Satisfaction (JSS) scale. The JSI assesses "an individual's cognitive appraisal of the future of his or her job with respect to the perceived level of stability and continuance of that job" (p.

452), while the JSS measures satisfaction with job security, which Probst equated to affective job insecurity. Respondents are asked to rate a series of adjectives or short phrases — such as "questionable," and "discouraging" for the JSI; and "nerve wracking," and "looks optimistic" for the JSS — on a three-point scale, indicating the extent to which they describe the future of their job and their job security. Although Probst's study is one of few to apply confirmatory factor analysis (CFA), the author notes that "the resulting fit indices are nonetheless lower than would be desired according to conventional standards" (p. 459). Moreover, separate factors emerged for the negatively and positively worded items of the JSS, leading the author to recommend that "future research apply confirmatory factor analyses … to confirm its factor structure."

Bartrum (2007) identifies three features of the JSI and JSS that are likely to have contributed to these suboptimal results. The first is the three-point rating scale, which reduces the variability of responses by limiting the response options of participants. Second, the measure asks respondents to focus on the future of their job as opposed to their current job security. Finally, the instrument does not assess insecurity due to job changes — despite research indicating that this may be a salient dimension of job insecurity (Hellgren et al., 1999). Another important issue not raised by Bartrum is that because these three-point rating scales are categorical, they cannot be evaluated using the recommended maximum likelihood method in CFA: they can only be assessed using distribution-free methods.

Perhaps the most serious consequence of measuring affective job insecurity as a separate construct is the issue of common method variance (CMV). As discussed in the introduction, NA and PA have been identified as two primary sources of CMV. Since self-report measures of affective job insecurity and well-being outcomes (e.g., job satisfaction and affective well-being) both have an affective component, NA and PA may account for systematic variance in the relationships obtained between these variables that differ from the actual ("true") score variance. By providing an alternative explanation for the observed relationship between the predictor (affective job insecurity) and the criterion (subjective well-being), this systematic error variance "can have a serious confounding influence on empirical results, yielding potentially misleading conclusions" (Podsakoff et al., 2003, p. 879).

One of the most common methodological strategies for minimizing CMV is to directly measure NA and PA and statistically control for (or partial out) their effects on the predictor and criterion (Brief et al., 1988; Burke et al., 1993; Chen & Spector, 1991). However, another more preventative approach would be to construct scale items that are more resistant to CMV (Podsakoff et al., 2003). In this case, rather than directly measuring affective states, scale items can be developed so that the emotional experience of job insecurity is implicit. The advantage of this approach is that CMV can be reduced while still capturing the affective element of job insecurity.

Job loss vs. job changes insecurity. Several researchers have argued for an expanded conceptualization of job insecurity to encompass insecurity over losing valued features of one's job. As Mauno, Leskinen, and Kinnunen (2001) state, "it has to be realized that defining job insecurity solely as the threat of job loss (i.e., unidimensionally) is an oversimplification and therefore multidimensional approaches, which also contain the threats of losing other important job features, are also required" (p. 921). From this perspective, job insecurity could exist in a restructuring environment that does not include layoffs but may involve unfavourable changes to job characteristics.

Greenhalgh and Rosenblatt (1984) were the first researchers to argue in favour of a multidimensional operationalization of job insecurity. Following their contention that "loss of valued job features is an important but often overlooked aspect of job insecurity" (p. 441), researchers have attempted to operationalize insecurity due to job changes as distinct from insecurity due to job loss (Ashford et al., 1989; Bartrum, 2006; Blau, Tatum, McCoy, Dobria, & Ward-Cook, 2004; Greenhalgh & Sutton, 1991; Hellgren et al., 1999)

Ashford et al.'s (1989) 51-item job insecurity scale (JIS) mirrors Greenhalgh and Rosenblatt's theoretical model and consists of five subscales designed to measure seven job features (e.g., opportunities for promotion, freedom to schedule own work) and ten changes to the job as a whole (e.g., demotion, permanent job loss) in terms of their importance, the likelihood they would be lost, and their perceived powerlessness to resist the threat. The multiplicative combination of these components forms a composite measure of overall job insecurity as follows:

> [Σ (importance of job feature X likelihood of losing job feature) + Σ (importance of possible negative change to total job X likelihood of change)] X [perceived powerlessness to resist threat]

While acknowledging the important contribution of Greenhalgh and Rosenblatt's theoretical framework, researchers have questioned the validity and reliability of the probability scale based on evidence of longitudinal instability (Mauno et al., 2001), while others claim that the importance (Kinnunen, Mauno, Nätti, & Happonen, 2000) and powerlessness (Jacobson, 1991a; Johnson, Bobko, & Hartenian, 1992; Kinnunen et al., 2000; Rosenblatt & Ruvio, 1996) subscales are not necessary components of job insecurity. Indeed, the evidence of construct validity presented by Ashford et al. (1989) is tenuous given their reliance on a convergent validation procedure followed by a multivariate test of "predictive validity" on attitudinal outcomes.

Another limitation of the JIS is its impractical length and the unclear rationale behind its multiplicative scoring procedure (Bartrum, 2006; Jacobson, 1991a; McCarthy, 1993). In their recent meta-analysis, Cheng and Chan (2007) excluded studies using the JIS, citing research by Evans (1991) that indicates the relationship between such measures and criterion variables is subject to a "scaling effect" that may give rise to spurious results in bivariate correlational analysis. In light of these limitations, researchers have tended to select subscales from the original JIS and apply an additive rather than a multiplicative scoring method (Ameen, Jackson, Pasewark, & Strawser, 1995; Mauno & Kinnunen, 2002; Rosenblatt & Ruvio, 1996; Sverke, Gallagher, & Hellgren, 2000; Sverke & Hellgren, 2001; Westman, Etzion, & Danon, 2001).

Lee and colleagues (2007) responded to these criticisms by creating an abridged (37 items) and "bare bones" (25-items) version of the JIS and examining the construct validity of the measures on US and Chinese samples using CFA. Unfortunately, the authors did not establish the *relativ*e fit of their proposed five-dimensional model by comparing it with at least a "non-trivial" one-factor model (Byrne, 2006; Sobel & Bohrnstedt, 1985). Nonetheless, the fit statistics were described as "marginally acceptable" for the US sample (χ^2 142 = 254.36; CFI = .92; IFI = .92) and "acceptable" for the Chinese sample [χ^2 142 = 220.20; CFI = .89; IFI = .90]. Thus, although the abridged JIS represents an improvement on the original scale in terms of length, the two most contentious issues hampering the model's widespread use (multiplicative relationship between scales and the factor structure) have yet to be resolved empirically.

Blau and colleagues (2003) claimed that the six specific job features identified by Greenhalgh and Rosenblatt (1989) could be further partitioned into the dimensions of *human capital insecurity* ("a perceived personal threat that affects an individual's monetary income and/or psychic income") and *work conditions insecurity* ("a perceived threat to non-personal, job-specific situational characteristics"). They developed items for these two dimensions and a third subscale measuring job loss insecurity (e.g., "I am worried about my overall job security") specifically for the health care industry, based on Ashford et al.'s (1989) JIS and Caplan et al.'s (1975) job future ambiguity scale.

With the human capital and work condition scales each including only two substantive items expressed in terms of a one-year and three-year time frame (four items in total), these scales do not meet the required three items necessary to define a latent construct (Bentler & Chou, 1987; Cook, Hepworth, Wall, & Warr, 1981; Kline, 1998). Blau et al.'s rationale for delineating items into one-year and three-year time frames was based on "the current dynamic nature of the health care industry." No theoretical justification is provided for choosing only two job features each for the work condition and human capital subscales. All items were rated on a four-point scale from "strongly agree" to "strongly disagree."

Exploratory and confirmatory factor analyses on a heterogeneous sample of 447 working adults indicated that the three-factor structure was an acceptable fit to the data and supported the discriminant validity of the three subscales. Although Blau and colleagues noted that the fit statistics for one and two-factor models were "not as supportive," they did not report the relevant statistics. The strength of correlations between the job insecurity subscales indicated that they are related but distinct (*r* range = .49 to .71), while different patterns of associations were shown for the separate subscales in relation to interactional justice, withdrawal cognitions, and turnover intentions.

Perhaps the most robust, theoretically derived measure of job changes insecurity was developed recently by Bartrum (2006) as part of her doctoral dissertation. Bartrum's Job Characteristics Measure is based on Warr's (1987; 1999) well-established "vitamin model" of job related affective well-being. In essence, Warr's model identifies ten principal features of the work environment that influence mental health (e.g., opportunity for control, variety, environmental clarity, availability of money). Exploratory and confirmatory factor analyses supported a 10-dimensional, 40-item measurement model assessing the appraisal of the potential loss of Warr's 10 job features. Each of the instrument's 10 subscales (four items each) was significantly associated with measures of psychological distress, life satisfaction, and global job insecurity in the expected direction. Eight of the ten job features were significantly associated with global job insecurity, ranging from -.15 to -.29. While Bartrum's (2006) measure has a strong theoretical base and acceptable psychometric properties, its 40-item length is likely to prevent widespread use: for instance, as part of an organization's broader employee opinion survey.

As a more parsimonious alternative to the JIS and Bartrum's Job Characteristics Measure, Hellgren, Sverke and Isaksson (1999) developed a job insecurity measure with subscales measuring job insecurity that is *quantitative* (perceived threats to the continuity of the job itself) and *qualitative* (perceived threat to valued qualities of the employment relationship). The independence of the two scales was examined using Principal Components Analysis (PCA) on the survey responses of a large Swedish retail chain undergoing restructuring ($N = 375$). The analyses supported a two-factor solution consisting of four qualitative items (e.g., "My future career opportunities in [the organization] are favourable"; "I feel that [the organization] can provide me with stimulating job content in the near future") and three quantitative items (e.g., "I am worried about having to leave my job before I would like to"; "There is a risk that I will have to leave my present job in the year to come"). These two factors were only moderately correlated ($r = .28$) and demonstrated adequate internal consistency reliability for both quantitative ($\alpha = .79$) and qualitative scales ($\alpha = .75$). Quantitative and qualitative job insecurity also predicted subsequent mental and physical health, while qualitative job insecurity was the sole predictor of job satisfaction and turnover intention.

Although Hellgren et al.'s (1999) study provides preliminary evidence of a two-dimensional job insecurity measurement structure, the results are limited by the authors' reliance on PCA as a validation procedure. The limitations of PCA in validation research are now well documented by statisticians (Ford, MacCallum, & Tait, 1986; Snook & Gorsuch, 1989; Widaman, 1993). Most importantly, PCA does not identify latent structures but is instead designed to yield composites of the observed variables that represent a mixture of common and unique (error) effects. A more rigorous, theory-driven test of factorial validity is a two-stage procedure beginning with exploratory factor analysis (EFA) followed by confirmatory factor analysis (CFA), ideally testing for invariance across groups (Byrne, 1994b) and over time (Alanen, Leskinen, & Kuusinen, 1998). Job insecurity has only recently been examined using CFA (Bartrum, 2006; Lee et al., 2007; Probst, 2003) and tested for invariance over time (Mauno, Leskinen, & Kinnunen, 2003).

In summary, preliminary attempts to develop a measure of job changes insecurity suggests that the construct is correlated but distinguishable from job loss insecurity and should be measured accordingly. A considerable challenge, however, is developing a measure that is both psychometrically sound and short enough to be used in an applied setting. What is required is an instrument that captures the most salient job changes underlying employee insecurity with a core set of items written at an appropriate level of specificity. From a practical perspective, such a measure would help to ensure that job insecurity is addressed in organizational restructuring initiatives that do not include layoffs but may dramatically alter job requirements. Organizations can then take steps to either protect those job features for which employees are most concerned or explain the benefits or necessity of the changes to employees.

Job Insecurity from the Worker's Perspective

A common characteristic of the preceding job insecurity measures is a general reliance on deductive procedures in scale development. Specifically, items were developed from the researcher's perspective and designed to "fit" an á priori theoretical framework. Implicit in this approach is the assumption that the researcher's interpretation of the nature of the construct and its dimensionality is a reasonable approximation of that of the worker's. However, researchers themselves have yet to agree on a common definition and measure of job insecurity, creating inconsistency and confusion on both fronts. Moreover, as Bolman and Deal (1997) have observed, researchers approach the study of organizations from a unique "frame" or perspective, which in turn shapes their interpretation of the way individuals, groups, and organizations function. This distinction seems especially applicable to the psychological experience of job insecurity, where the perspective of researchers may be far removed from that of employees in a downsizing or restructuring environment.

This discrepancy between the researcher's and worker's interpretation of job insecurity was identified by Bartnek and Seo (2002, p. 239) as "an important threat to the content validity of the construct" in that "it might miss important dimensions or include trivial dimensions in the setting studied." In order to overcome these deficiencies, the authors highlight the advantages of qualitative or inductive research methods to i) gain a richer understanding of job insecurity from the worker's perspective; ii) confirm or disconfirm academic definitions of the construct in a local context; and iii) uncover new dimensions that have not been included in previously developed scales.

By generating items directly from insecure workers, the inductive approach to scale development has the capacity to identify the various environmental cues and social dynamics that employees draw from to make sense of threatening environments, which may not be intuitively apparent to researchers. Once uncovered, these dimensions can then be interpreted in light of prevailing theoretical models or serve to enrich and expand such models (Klandermans & van Vuuren, 1999).

To my knowledge, Lahey's Job Security Scale (JSS) is the first measure to be developed based on this qualitative approach. In her doctoral dissertation, Lahey (1984) conducted semistructured interviews with 22 employees from five organizations representing public and private industry. She then developed and administered a pilot questionnaire to 487 employees representing three organizations (service, manufacturing and civil-service). She used PCA to produce a 44-item measure consisting of five different dimensions including: *company concern for the individual* (employee's attitudes regarding management and company policy), *job performance* (workers' perceptions of their work quality); *company growth and stability* (the organization's financial history and future); *job permanence* (beliefs about the continuity of employee's jobs); and *individual commitment* (individuals' long-term orientation toward their jobs).

Unfortunately, at the time of Lahey's study the use of CFA techniques—which would have enabled her to extend her findings beyond a preliminary exploration of the instrument's components—was less widespread. This methodological limitation has given rise to a common criticism that the JSS suffers from a lack of parsimony (Hartley, Jacobson, Klandermans, & van Vuuren, 1991; Jacobson, 1991b) and offers "relatively little phenomenological contribution to the concept of job insecurity since some dimensions could pass for correlates of job insecurity (e.g., work performance)" (Rosenblatt & Ruvio, 1996, p. 588). A more rigorous test of the instrument's factorial validity and generalizability beyond the study sample would have required CFA with tests of invariance across groups (Byrne, 2006).

Toward a New Measure of Job Insecurity

Recognizing the psychometric and practical limitations of multidimensional job insecurity measures, several commentators have recommended a more rigorous program of research aimed at assessing and refining job insecurity scales with the aid of CFA (Sverke et al., 2002; van Wiek & Pienaar, 2008). To this end, O'Neill (2005) developed and validated a new job insecurity measure (JIM) on a sample of 544 respondents derived from a large private sector organization in Western Australia that was undergoing major restructuring at the time of data collection.

This study was the first since Lahey (1985) to develop a multidimensional job insecurity measure from the perspective of employees facing an objective threat of job loss. Following the qualitative approach used by Lahey (1984), items for the JIM were generated by a series of semistructured interviews with a random sample of 59 employees. Participants were asked to complete the phrases, “I feel insecure in my job when …” and “I feel secure in my job when … .” These interviews generated over 300 statements relating to job insecurity and job security, from which five consistent themes emerged across occupational categories. Three of these themes overlapped with Lahey’s dimensions (employment uncertainty, company concern for the individual, and job performance), and two new dimensions were uncovered (growth climate and managerial distance).

EFA and CFA on a five-factor, 20-item pilot measure supported a three-factor, 11-item measurement model consisting of *employment uncertainty* (the degree of uncertainty about job continuity within the organization); *growth climate* (the extent to which management is perceived to be planning and investing in the future growth of the company), and *managerial distance* (the perception of being excluded and treated differently than other staff by management). Subsequent tests of invariance across loadings and factor co-variances confirmed that the model could be generalized across a split sample. Each dimension was found to have acceptable reliability (internal consistency), and moderate correlations between the three job insecurity dimensions ($r < .60$) indicated that these factors are correlated but distinct constructs. Finally, significant associations with intrinsic job satisfaction, organizational commitment, intention to resign, and negative job carry-over further substantiated the instrument's criterion-related validity (See Appendix A for the JIM items and validation statistics).

These results provide robust empirical evidence for the measurement of job insecurity through the three correlated but distinct dimensions of employment uncertainty, growth climate, and managerial distance. Since these scales were developed inductively, the next important step in construct validation is to establish a clear link between these dimensions and their theoretical domain (Hinkin, 1998). This process may suggest room for expanding and refining the measurement model with a view to maximizing its explanatory power. A detailed inspection of the JIM reveals important conceptual distinctions amongst the subscales, as well as strong theoretical underpinnings spanning the disciplines of industrial-organizational psychology, sociology, and organizational behaviour. Each job insecurity dimension will, therefore, be discussed in greater detail below.

Employment Uncertainty

The employment uncertainty dimension represents the essence of most unidimensional definitions of job insecurity—an employee's uncertainty about the future existence of his or her job (De Witte, 1999). Uncertainty has been identified as one of the most common psychological states arising from organizational change (Terry & Jimmieson, 1999) and a central aspect of job insecurity (Ashford, 1988; Büssing, 1999; Callan, 1993; Jick, 1985; Olsen & Tetrick, 1988). Item content for the employment uncertainty scale reflects cognitive perceptions of uncertainty rather than affective reactions to these perceptions, and is consistent with measures of the probability and likelihood of job loss (Mohr, 2000; van Vuuren & Klandermans, 1990), job future ambiguity (Caplan et al., 1975), cognitive job insecurity (Borg & Elizur, 1992), quantitative job insecurity (Hellgren et al., 1999), and job loss insecurity (Blau et al., 2004). Sample items include “I’m not sure how long my job will last,” “The probability of being laid-off is high,” and “I am uncertain about my future with this organization.”

Employee perceptions of employment uncertainty have appeared in two of the most influential models in the occupational stress literature. The ambiguity associated with a person’s career future first appeared in the occupational stress literature by way of the classic research conducted by Kahn, Wolfe, Quinn, Snoek and Rosenthal (1964) and others (Caplan et al., 1975) who incorporated “job future ambiguity” into their influential Michigan organizational stress model. Defined and measured simply as uncertainty about one’s career future (Caplan et al. 1975), job future ambiguity is depicted in the their model as one of several “role stressors” present in the psychological environment, which are said to be causally related to physiological, behavioural, and affective stress responses. The notion of job future ambiguity later appeared as an environmental determinant of well-being within Warr’s (1987) vitamin model, under the “environmental clarity” group of features. Within this domain, Warr posits that a central source of work-related well-being is “the degree to which it is possible to forecast what is likely to happen, irrespective of one’s behaviour.” Empirical support for both models is now well established and continues to grow.

Inextricably linked to the perception of uncertainty is the feeling of being unable to control contingencies that may adversely affect employment status. This feeling of powerlessness is reflected in items such as “Working hard does not guarantee that I am going to keep my job" and "When productivity is low, I still feel secure in this company" (reverse-scored). The experience of powerlessness is central to the theoretical framework developed by Greenhalgh and Rosenblatt (1984) and is considered by some theorists to be the core of the phenomenon of job insecurity (Dekker & Schaufeli, 1995; Greenhalgh & Rosenblatt, 1984; Jacobson, 1991a). This aspect is also a central component of Warr's environmental clarity feature, with an important impact on psychological well-being. "Powerlessness to control events" was also included as an integral component in the conceptual framework for the People's Security Surveys (PSS) published by the International Labor Organization (Anker, 2002, p. 313). While some researchers have questioned whether the powerlessness subscale of Ashford et al.'s (1989) JIS is a dimension of job insecurity (Kinnunen et al., 2000; Rosenblatt & Ruvio, 1996), O'Neill's (2005) findings support the argument that powerlessness is embedded in the experience of employment uncertainty (Jacobson, 1991a).

Growth Climate

In contrast to the employment uncertainty scale's focus on the continuity of the job itself, items corresponding to growth climate and managerial distance reflect situational factors in the immediate work environment and could be perceived as salient cues or precursors of impending job loss. Anchored to the growth climate scale are items signalling organizational performance and growth. For example, reference is made to explicit signs of corporate "productivity," "planning for the future," "trying to build this company," and "investing in new equipment and materials."

As mentioned at the beginning of this chapter, one of the earliest investigations into job security by Thompson and Davis (1956) found that security of employment was primarily derived from employees' confidence in the company's economic stability and their own ability to meet future demands. Similar items reappeared in the Company Growth and Stability scale of Lahey's (1984) JSS. In the context of environmental uncertainty, Jacobson (1991) and others (Hartley et al., 1991; Klanderman & van Vuuren, 1999) have discussed the importance of such contextual factors in enhancing or reducing the perceived probability and/or severity of job loss. In addition, external economic forces such as global competition, economic decline, and weaker labour markets have all been found to influence perceptions of job insecurity (Burchell, 1999).

During periods of organizational change and uncertainty, employees are inclined to seek ways of reducing their uncertainty by gaining information on the economic viability of the organization (Casey, Miller, & Johnson, 1997). Research into organizational change suggests that even when top managers know what changes will occur, they are often unable or unwilling to report information on the company's status or discuss changes with employees (Mirvis & Marks, 1986; Schweiger & DeNisi, 1991). This response is consistent with the threat-rigidity thesis (Staw, Sandelands, & Dutton, 1981), which posits that when faced with threatening situations, individuals, groups, and organizations will respond with greater rigidity by restricting information and constricting control such that power and influence can become more concentrated or placed in higher levels of the organizational hierarchy. As a consequence of this failure to communicate, employees are often left uncertain about their futures and are forced to rely on unintended clues and rumours (Napier, Simmons, & Stratton, 1989), which are typically an ineffective way of reducing anxiety (Rosnow, 1988). Thus, it is not surprising that the perceived financial viability of an organization has surfaced as an integral component of job insecurity.

Empirical evidence supporting the relationship between job insecurity and growth climate can be found in a rigorous study by Schneider, Hayes, Smith, and Salvaggio (2003) analyzing the causal impact of satisfaction with job security and six other facets (empowerment, job fulfilment, pay, work group, work facilitation, and overall job satisfaction) on organizational performance. Data collected from 35 companies over eight years was analysed at the organizational level, enabling a robust test of direct and reciprocal causation. Satisfaction with job security emerged as one of only three facets (including pay and overall job satisfaction) demonstrating statistically significant and stable relationships with financial and market performance across various time lags. Contrary to the conventional hypothesis that the causal direction flows from work attitudes to organizational performance (Argyris, 1957; Likert, 1961; McGregor, 1960), results from this study showed the strongest evidence for reverse causation: where both return on assets and earnings per share predicted satisfaction with job security. The strength of the correlation is particularly impressive given the difficulty in finding correlates of any objective organizational performance measure due to the many possible sources of an organization's financial performance (March & Sutton, 1997; Siehl & Martin, 1990).

As noted by Schneider et al. (2003), their findings are consistent with the theories of Porter and Lawler (1968) and Locke and Latham (1990), who argue that organizational performance is likely to precede job satisfaction (including job security satisfaction) because the rewards that come from performance at an individual and organizational level give employees the most satisfaction. It is therefore reasonable from both a theoretical and empirical perspective to expect that employees would come to view their jobs as more or less secure based on indicators of organizational performance captured in the growth climate scale.

Managerial Distance

The three-item managerial distance subscale captures dysfunctional interpersonal behaviours related to social exclusion on the part of management (e.g., "I feel as though management is avoiding me"; "Management at this company seem to be spending sufficient time interacting with staff"; reverse-scored) and the denial of expected privileges (e.g., "I feel as though my privileges in this organization are being maintained"; reverse-scored). In the qualitative interviews conducted by O'Neill (2005), these and other similar items were consistently raised by workers as indicators that their jobs were insecure.

Although such behaviours have yet to be examined in the published literature as elements of job insecurity, items related to social exclusion such as the "silent treatment" have appeared in the literature on "workplace deviant behaviour" as indicators of broader constructs such as interpersonal deviance (Bennett & Robinson, 2000), workplace bullying (Fox & Stallworth, 2005), workplace incivility (Blau & Andersson, 2005), and abusive supervision (Tepper, 2000; Zellars, Tepper, & Duffy, 2002). Robinson & Bennett (1995, p. 556) define workplace deviant behaviour as "voluntary behaviour that violates significant organizational norms, and in doing so threatens the well-being of the organization or its members or both."

Andersson and Pearson (1999) define workplace incivility as a unique form of "low-intensity deviant behaviour with ambiguous intent to harm the target, in violation of workplace norms for mutual respect" (p. 457). Such behaviours are particularly powerful since a manager may couch them as inadvertent, thus attempting to conceal their true nature (Neuman & Baron, 1997). It would appear that both aspects of managerial distance (social exclusion and denial of privileges) fall under this type of deviant behaviour.

Research in the realm of organizational justice has also highlighted the relationship between managers and employees as especially influential during periods of organizational change and restructuring. Organizational justice refers to employee perceptions of fairness in the workplace (Greenberg, 1990) and can be viewed in terms of three dimensions: distributive justice (Adams, 1965; Homans, 1961), procedural justice (Leventhal, 1980; Thibaut & Walker, 1975), and interactional justice (Bies & Moag, 1986). There is now a considerable body of research indicating a negative association between perceived organizational justice and job insecurity (Chovwen & Ivensor, 2009; Francis & Barling, 2005; Kausto, Elo, Lipponen, & Elovainio, 2005; Probst, 1999; Salter, 1999).

Interactional justice comprises two components: interpersonal and informational justice (Bies & Moag, 1986). Most relevant to managerial distance is interpersonal justice, that is, "the degree to which people are treated with politeness, dignity, and respect by authorities or third parties involved in executing or determining outcomes" (Colquit, Conlon, Wesson, Porter, & Ng, 2001, p. 427). Recent findings from cross-sectional studies (e.g., Elovainio, Kivimäki, & Vahtera, 2002; Fox, Spector, & Miles, 2001; Schmitt & Dörfel, 1999) and longitudinal analyses (Kivimäki, Vahtera, Elovainio, Pentti, & Virtanen, 2003; Tepper, 2001) suggest that interactional justice is a major source of psychosocial stress at work, amounting to a health risk. Moreover, the effects of unfair treatment as a source of stress have been attributed to social exclusion (Lind & Tylor, 1988; Tylor & Lind, 1992) on the part of the target.

Outside of the work setting, a wide range of theoretical and empirical research has been conducted on the construct of social ostracism (Sommer, Williams, Ciarocco, & Baumeister, 2001; Williams, Shore, & Grahe, 1998). Williams (2001) defined ostracism as the extent to which an individual is ignored or excluded by others. Approximately 70% of Americans claim to have used the silent treatment on their romantic partners (Faulkner, Williams, Sherman, & Williams, 1997), and other studies have demonstrated its prevalence among school age children (Asher & Coie, 1990; Asher & Parker, 1989) and co-workers (Miceli & Near, 1992). Despite the paucity of research in the organizational domain, survey research over a five-year period by Fox and Stallworth (2005; cited in Ferris, Brown, Berry, & Lian, 2008) indicates the prevalence of various forms of ostracism at work, with 66% of employees claiming they had been given the silent treatment, 29% reporting others had left the room when they entered, and 18% reporting being moved to an isolated location.

Given the prevalence of various forms of social exclusion in the workplace, it is plausible that incumbents form an association between managerial distance and job loss based on either their own experience of exclusion by management, or witnessing the exclusion of others, prior to being made redundant. Through this experience, managerial distance would come to be viewed by the employee as a precursor to job loss.

But what would compel a manager to exclude an employee who has been declared redundant? One possibility is that once employees have been designated redundant or are recognized as poor performers, their social identity is tainted—causing them to be excluded from the normal social activities of the work group. This theory is rooted in the phenomenon of *social stigma* proposed by sociologists (Durkheim, 1895; Falk, 2001; Goffman, 1970). According to Goffman (1970), a stigma occurs when the actual social identity of individuals (the attributes they can be proved to possess) does not meet society's normative expectations of the attributes the individuals should possess (their virtual identity). In this way, an individual's social identity is tainted or spoiled, and they are assumed to be incapable of fulfilling the role requirements of social interaction. Stigmatized individuals often describe being ostracized, devalued, rejected, scorned, and shunned (Heatherton, Kleck, Hebl, & Hull, 2000).

Goffman (1970) describes stigmas as occurring in three basic forms: *physical deformity* (e.g., obesity, leprosy), *tribal out group status* (imagined or real traits of ethnic groups, nationalities, or religions deemed to constitute a deviation from what is deemed to be the prevailing norm), and *deviant personal traits* (e.g., mental illness, criminal backgrounds). Stigmas attached to the unemployed fall under the category of deviant personal traits and have been well-documented by sociologists (Heatherton et al., 2000). These three forms of stigma are cross-culturally ubiquitous and have a long history; some researchers hypothesize that the tendency to stigmatize may have evolutionary roots (Kurzban & Leary, 2001).

Given that stigma are highly dependent on social, economic, and political power (Haslam, Jetton, Postmes, & Haslam, 2009), it makes sense that the most powerful members of organizations—managers—would emerge as the primary source of social exclusion, the "stigmatizer," in the managerial distance construct. This view is supported by leader member exchange theory, which asserts that leaders with limited time and resources will develop stronger relationships—in terms of reciprocal trust and support, frequency of communication, personal favours, and rewards—with employees who are "in-group" than with "out-group" members (Graen & Cashman, 1975; Wayne & Green, 1993; Wayne, Shore, & Liden, 1997). The in-group members are typically high performing employees who would be less vulnerable to job loss.

While classical views of stigma have framed the processes and consequences of stigma in dispositional terms, contemporary social psychologists now view stigma as largely a social construction. For instance, Crocker, Major, & Steele (1998) define stigma as "some attribute, or characteristic, that conveys a social identity that is devalued in some particular social context" (p. 505). Accordingly, social identity theory postulates that in many social contexts people define their sense of self in terms of group membership or social identity (Tajfel & Turner, 1979, 1986). Thus, because this is a broader social phenomenon, it is reasonable to expect that stigmatizing behaviour underpinning the managerial distance construct would extend beyond the manager to other members of the work group.

Like employment uncertainty, the perception that one is being socially excluded from the broader work group may stem, in part, from the social dynamics of organizational restructuring and downsizing. This proposition can be explained in terms of sociologist George Homan's (1950) theory of Human Groups. Based on sociological and anthropological field studies of groups within and outside of organizations, Homans developed a conceptual scheme consisting of three classes of variables – interaction, sentiments and activities- that were posited to be mutually related in the behaviour of group members (the internal system) but also in the relationship of the group to its physical and social environment (the external system).

Interaction is defined as "an event in which an action of one man was the stimulus for an action of another" (Homans, 1962, p. 37) including the duration and frequency of a person's speech in conversation; how often and how soon that person initiated conversation or other action and; and the number of individuals a person interacted with in a given place or time (Homans, 1983, p. 14). *Sentiment* refers to behaviour expressing a person's attitudes toward other persons and includes the "liking and disliking for individuals, approval or disapproval of the things they do" (Homans, 1947, p. 14). Finally, *activity* connotes any action that people perform that may not require interactions with others or express personal sentiments.

One of the central propositions of the theory is that "the more frequently persons interact with one another, when no one of them originates interaction with much greater frequency than the others, the greater is their liking for one another and their feel of ease in one another's presence" (Homans, 1950; p. 243). Conversely, less interaction among group members is purported to result in more negative sentiments. Homans hypothesized that the relationship between interaction and sentiment is mutually dependent stating "It is not just that favourable sentiments increase as interaction increases, but that these sentiments then boost interaction still further…through processes like these a social system builds up or elaborates itself" (p. 112).

Arising from the mutual dependence of interaction and sentiment, Homans (1950; p. 113) observed the formation of ‘in-groups’ and ‘out-groups’ noting “the greater the inward solidarity, the greater the outward hostility”. Specifically, the theory holds that “a decrease in the frequency of interaction between the members of a group and outsiders, accompanied by an increase in the strength of their negative sentiments toward outsiders, will increase the frequency of interaction and strength of positive sentiments among the members of the group, and vice versa.” (p. 113)

Perhaps the most obvious consequence of downsizing and restructuring is the disbanding of work groups and the formation of new groups. This process has been shown to trigger a change, and potentially a loss, of social identity leading to job dissatisfaction, lower perceived work group performance, and diminished identification with the work team and the organization as a whole (Jetton, O'Brien, & Trindall, 2002). In this context, formal and informal group interactions are likely to be less frequent and possibly more restricted to surviving members of the former ‘in-group’ who can be trusted and relied upon. As a consequence, Homan’s theory would predict more negative sentiments toward out-group members and greater in-group solidarity. Moreover, based on the mutual dependence of interaction and sentiment theorized by Homans, the social gap between in-groups and out-groups is expected to strengthen over time. Through this social disruption of a work group, restructuring and downsizing would lead to perceptions of social exclusion among out-group members.

Collectively, theory and research that treat managerial distance as a component of job insecurity indicate that the possibility that management would socially exclude employees based on the stigma of being declared redundant, particularly in a stressful restructuring environment, is very real and warrants further research. Specifically, we need to determine whether the managerial distance construct will generalize to other organizational settings; and whether perceptions of social exclusion extend beyond the behaviour of management to the broader activities of the work group.

In summary, the findings from O'Neill's (2005) study provide compelling evidence for a three-dimensional job insecurity measurement model consisting of employment uncertainty, managerial distance and growth climate. Given that these three subscales were derived from a private sector sample where concerns over job loss are likely to have been a dominant concern, it is not surprising that job changes insecurity did not emerge as a salient dimension from qualitative interviews with employees. This construct has, however, surfaced in the theoretical and empirical literature as a potential fourth dimension of job insecurity.

Summary and Conclusions

This chapter has provided a review and critique of theoretical perspectives and measures of job insecurity, tracing the historical roots of the construct from an early focus on job security as a potential motivator and an integral facet of job satisfaction to a contemporary emphasis on job insecurity fuelled by global downsizing and restructuring. Despite the well-documented effects of job insecurity on individual and organizational outcomes, surprisingly few investigations have attempted to systematically examine the dimensionality of the construct itself using sophisticated statistical procedures.

As far back as the 1980s, researchers have lamented the lack of a theoretically based and psychometrically sound measure of job insecurity (Greenhalgh & Rosenblatt, 1984) and called for the development of a valid and reliable instrument (Ashford et al., 1989; Jacobson, 1987). However, almost three decades later there remains a lack of agreement on how to conceptualize and measure the construct (Mauno & Kinnunen, 2002). Not surprisingly, the literature is replete with job insecurity measures running the gamut from single item global measures to 57-item multidimensional instruments, often with little if any evaluation of psychometric properties. Creating further confusion is the common practice of combining conceptually distinct items—such as satisfaction with job security, fear of job loss, importance of job security, and probability of job loss—into a single job insecurity measure. This inconsistency of measurement led Sverke and Hellgren (2002) in their review of the literature to conclude that "our understanding of job insecurity and its consequences is confined and hampered by conceptual and as well as empirical ambiguities" (p. 24).

Theoretical perspectives informing the study of job insecurity highlight the importance of seeing this construct as a complex multidimensional one, distinct from objective indicators of employment stability. Because job insecurity is a subjective phenomenon, both dispositional and situational factors are important determinants of the construct. As a multidimensional construct, job insecurity is broad enough to encompass threats of imminent job loss as well as valued aspects of that job. Further distinctions have been made between cognitive job insecurity (which captures the perceived probability of job loss) and affective reactions to these perceptions (e.g., fear and worry over potential job loss).

Despite the intuitive appeal of a multidimensional job insecurity structure, previous research has yet to converge on a concise measurement model. This lack of consensus may be largely attributed to i) a paucity of rigorous validation research using contemporary CFA techniques, ii) the proliferation of job insecurity scales derived from different theoretical orientations and perspectives, and iii) a growing preference for more parsimonious measures.

While most researchers would agree that job insecurity includes both affective and cognitive elements, there is little consensus on whether these elements should be measured as a unidimensional or two-dimensional construct. A serious concern in measuring affective and cognitive job insecurity separately is the problem of CMV, where items measuring affective reactions to job insecurity contribute systematic error variance attributed to dispositional affect. Beyond statistically controlling for NA and PA, CMV can be minimized by incorporating indirect measures of affective job insecurity into a unidimensional scale, which also includes cognitive items tapping the probability or likelihood of job loss.

Also evident from this review is the dearth of job insecurity measures developed from the unique psychological experience of the insecure worker—rather, most "fit" the worker's perspective into a pre-existing theoretical framework. By using an inductive approach to generate measurement items, researchers are able to "attend in depth to local actors understandings of job security" (Bartnek & Seo, 2002, p. 238).

O'Neill (2005) recently developed and validated the parsimonious three-dimensional JIM using EFA and CFA. Results indicated that the two dimensions of growth climate and managerial distance were related, but were distinct from the third dimension of employment uncertainty. Importantly, the JIM is one of only two job insecurity measures developed from the perspective of workers facing an objective threat of job loss using qualitative methods of scale development and validated quantitatively

(Lahey, 1984; O'Neill, 2005). The measure is also designed to minimize CMV by embedding the experience of powerlessness in the employment uncertainty scale rather than measuring this element separately.

While growth climate and managerial distance have only recently been examined as dimensions of job insecurity, their role in shaping perceptions of job insecurity is supported by well-established theories drawn from the disciplines of organizational psychology, sociology, and organizational behaviour. Of particular relevance to growth climate are the threat-rigidity thesis of organizational change (Staw et al., 1981), theories of work motivation (Herzberg, 1959; Maslow, 1954; 1970), and empirical evidence supporting the relationship between satisfaction with job insecurity and organizational performance (Schneider et al., 2003). Integral to the construct of managerial distance is the notion of social exclusion or the silent treatment, which has appeared in various measures under the rubric of workplace deviance (Robinson & Bennett, 1995), interpersonal justice (Colquitt et al., 2001), and workplace ostracism (Ferris, Brown, Berry, & Lian, 2008). The theoretical underpinnings linking managerial distance to job insecurity can be found in the literature on social stigma advanced by sociologists (Heatherton et al., 2000), stress-coping theory (Folkman & Lazarus, 1980; 1985), and leader-member exchange theory (Sparrowe & Liden, 1997). Social identity theory and Homan's (1950) theory of human groups further highlight the need to examine whether the source of social exclusion extends beyond the manager to other members of the work group.

Job changes insecurity, a potential fourth dimension of job insecurity, is unlikely to have surfaced in O'Neill's (2005) inductive study, given the study was based on a private sector sample in the midst of downsizing where job loss was a dominant concern. Preliminary examinations of the construct validity of job changes insecurity suggest that the construct is correlated but distinct from job loss insecurity and is significantly associated with mental and physical health outcomes and job satisfaction. However, researchers have yet to develop a measure that is both psychometrically sound and short enough to be used in an applied setting. From a practical perspective, such a measure would help to ensure that job insecurity is addressed in organizational restructuring initiatives that do not include layoffs but may trigger insecurity by dramatically altering job requirements.

In conclusion, the theoretical and empirical developments discussed in this review support the need for a job insecurity measure that i) captures both the cognitive and affective experience of job loss insecurity while minimizing CMV; ii) is short enough to be used in an applied setting; and iii) includes the two dimensions of growth climate and managerial distance identified by insecure workers as well as the fourth dimension of job changes insecurity. Clearly establishing the factorial structure and psychometric properties of such a measure will require robust CFA techniques. This is the purpose of the next chapter, in which I describe the development and psychometric evaluation of a new job insecurity measure based on two independent Canadian samples in the media industry.

CHAPTER II

THE DEVELOPMENT AND VALIDATION OF A NEW JOB INSECURITY MEASURE

> "The legitimacy of organizational research as a scientific endeavour is dependent upon the psychometric properties of the measuring instruments"
>
> — Schoenfeldt (1984; p. 78)

In this chapter, I present the results of a study aimed at establishing the construct validity and dimensionality of job insecurity. Developing a job insecurity measurement model with adequate psychometric properties is a necessary first step prior to examining the structural linkages between job insecurity and job satisfaction (Anderson & Gerbing, 1988; Jöreskog & Sörbom, 1993). As discussed in the previous chapter, researchers have measured job insecurity as either a unidimensional or multidimensional construct with instruments ranging from a single item to 52 items. Many of these measures have been developed with little or no evaluation of psychometric properties or exploratory factor-analytic methods. Only recently have researchers begun to examine job insecurity through the more rigorous theory-driven technique of confirmatory factor analysis (Bartrum, 2006; Lee et al., 2007; Probst, 2003). Thus, consensus has yet to be reached on a psychometrically robust and parsimonious measure of the construct.

Surprisingly, only two job insecurity measures have been developed from the perspective of insecure workers using qualitative methods to generate scale items (Lahey, 1984; O'Neill, 2005). O'Neill (2005) recently developed a multidimensional job insecurity measure (JIM) based on interviews with Australian workers facing an objective threat of job loss. This study was the first since Lahey's (1985) to generate scale items using an inductive process of qualitative interviews with workers facing an objective threat of job loss. Exploratory and confirmatory factor analysis (EFA and CFA) on an

Australian sample supported a measurement model consisting of three correlated but distinct subscales: employment uncertainty, growth climate, and managerial distance. Employment uncertainty taps uncertainty regarding the continuity of one's job and is the subscale most commonly associated with job insecurity. Managerial distance captures the perception of being excluded by one's manager and receiving differential treatment relative to other staff. Growth climate taps the perceived growth and financial viability of the employee's organization. O'Neill's study found these factors to have acceptable levels of internal consistency, and to be generalizable (i.e., invariant) across independent employee samples. This empirical support for the three-factor measurement model called into question unidimensional measures of the job insecurity construct, establishing the need to explore employment conditions beyond the threat of imminent job loss.

The purpose of this study is to refine and expand the three-dimensional JIM based on theoretical and empirical developments discussed in Chapter I. Recent research by Hellgren et al. (1999) and others (Bartrum, 2006; Blau et al., 2004) suggests a fourth dimension may be added to the model, capturing the anticipated loss of valued job features as opposed to the job as a whole. To test this hypothesis, I developed and tested a *job changes insecurity* scale as part of a new four-dimensional measurement model.

Consistent with the view that developing a psychometric instrument is a process of continuous refinement, this study also revises O'Neill's (2005) original three job insecurity scales to enhance their explanatory power and incorporate theoretical advancements as well as pre-existing scales. This step is particularly important for the dimensions of growth climate and managerial distance, which were derived from qualitative interviews with insecure workers and are only now being examined in a broader theoretical context. Also, by validating the new four-dimensional structure on two Canadian organizations from different industries, I was able to test the possibility that the three original JIM dimensions are sample or industry-specific. In order to capture revisions made to the employment uncertainty, managerial distance, and growth climate scales and to avoid any confusion with pre-existing measures, I renamed these scales *job loss insecurity*, *marginalization insecurity*, and *organizational survival insecurity*, respectively.

Research Aims and Hypotheses

The present study is divided into three parts. Part one describes the process used to develop the four job insecurity scales on a Canadian sample, including the initial generation and peer review of items followed by an EFA to reduce an initial pool of 41-items to a 22-item pilot scale. Part two presents the results of EFA and CFA on a distinct sample to establish the dimensionality and construct validity of the final 18-item JIM. This includes tests of convergent and discriminant validity and an analysis of invariance to determine the equivalence of the measurement model across different samples. In line with the multidimensional view of job insecurity discussed in Chapter I, I hypothesized that a four-dimensional structure would prove to be a more appropriate model for employee's perceptions of job insecurity than a unidimensional model, and that the four-dimensional structure would generalize across different employee samples. The two testable hypotheses therefore are:

$H_{2.1}$. A four-dimensional measurement model of job insecurity (job loss, job changes, marginalization, and organizational survival) will demonstrate a fit to the data that is superior to a unidimensional model.

$H_{2.2}$. The four-dimensional job insecurity measurement model derived from the validation sample will generalize (i.e., be invariant) to data drawn from a cross-validation sample.

Part 1: Developing the Pilot Job Insecurity Measure (JIM)

Item Generation

While the original JIM was developed from the perspective of employees facing an objective threat of job loss, items for the pilot JIM were generated using a deductive approach based on the four-dimensions capturing insecurity over job loss, job changes, marginalization, and organizational survival. I reviewed the literature and existing measures relevant to each of the four proposed job insecurity dimensions and developed items to be succinct and easily comprehensible. The items also needed to i) be consistent with the definition for each subscale, ii) be behavioural in nature, and iii) not confound with affective outcomes or other attitudinal variables (Hinkin, 1998).

A primary criticism of existing multidimensional job insecurity scales is a lack of parsimony, which can create problems with respondent fatigue or response biases (Anastasi, 1976). Foreskin and Sörbom (1993) have further noted that it is difficult to attain model fit when the analysis includes many indicators sourced from different domains. With this in mind, the preliminary JIM was developed with the overarching goal of balancing domain sampling with scale parsimony (Cronbach & Meehl, 1955). Research opinions differ on the exact number of items required to form a reliable scale. When developing multidimensional measurement models, Bollen (1989) claims that two items are sufficient to define a construct, while others recommend using at least three items per scale (Bentler & Chou, 1987; Cook et al., 1981; Kline, 1998). In order to ensure that a minimum of three items would be retained following exploratory and confirmatory factor analyses, I developed a sufficient number of preliminary items for the job loss (eight items), organizational survival (six items), marginalization (14 items) and job changes (13 items) scales. All of the manifest variables (i.e., indicators) were rated on a seven-point Likert scale with options ranging from 1 ("Very accurate"), 2 ("Mostly inaccurate"), 3 ("Slightly inaccurate"), 4 ("Uncertain"), 5 ("Slightly accurate"), 6 ("Mostly accurate"), to 7 ("Very accurate").

Job loss insecurity was defined as the perceived uncertainty about the continuance of one's job and the likelihood of job loss. Consistent with this definition, I developed four items designed to capture cognitive perceptions of job insecurity after reviewing pre-existing measures related to employment uncertainty (O'Neill, 2005), job permanence (Lahey, 1984), the probability and likelihood of job loss (Mohr, 2000; van Vuuren & Klandermans, 1990), job future ambiguity (Caplan et al., 1975), cognitive job insecurity (Borg & Elizur, 1992), and quantitative job insecurity (Hellgren et al., 1999). Two of the original items from O'Neill's employment uncertainty scale were retained. Sample items include "I'm not sure of how long my job will last," "the probability of being laid-off is high," and "I am uncertain about my future with this organization."

Closely tied to the perception of uncertainty over job loss are employees' feelings of being unable to control contingencies that may adversely affect their employment status. Importantly, this sense of a lack of control or powerlessness constitutes the affective aspect of uncertainty without referring to specific affective states such as fear or worry. By not directly measuring affective reactions to perceived job insecurity, I was able to avoid confounding the measure with affective outcomes (Podsakoff et al., 2003). Items capturing the experience of powerlessness include the following: "No matter how hard I work, there is no guarantee that I am going to keep my job"; and "When productivity in this organization is low, I still feel secure in my job" (reverse scored). The experience of powerlessness is central to the theoretical framework developed by Greenhalgh and Rosenblatt (1984) and operationalized in Ashford et al.'s (1989) JIS. More recently, Warr's (1999) vitamin model theorized powerlessness to be an integral component of the environmental clarity group of features. While there is some debate over whether powerlessness as measured by Ashford et al. (1989) is a facet of job insecurity (Kinnunen et al., 2000; Rosenblatt & Ruvio, 1996), O'Neill (2005) found that powerlessness items loaded onto a single employment uncertainty dimension, supporting Jacobson's (1991a) view that powerlessness is embedded in the experience of employment uncertainty.

The importance of job loss to the individual has been identified as an integral element of job insecurity (Ashford et al., 1989) and is tapped by two items: one that reflects a preoccupation with job loss ("The possibility of losing my job occupies my thoughts constantly.") and the other that taps employability ("If I were to lose my job, it would be very difficult to secure a job equal to or better than my current position."). These items also imply that the prospect of job loss would elicit negative emotions for the individual without directly specifying affective states.

Marginalization insecurity reflects the perception of being ignored by management and excluded from the broader social activities of the organization. While the managerial distance scale focused on management as the source of social exclusion, research on social stigma (Goffman, 1970) and ostracism (Ferris, Brown, Berry, & Lian, 2008) suggests that employee perceptions of marginalization may extend to the broader social context, which in this case would include co-workers. To test this proposition, I expanded the content domain of O'Neill's (2005) managerial distance scale to include items that fall under the broader definition of marginalization from measures of social ostracism (Sommer et al., 2001; Williams et al., 1998), supervisory undermining (Duffy, Ganster, & Pagon, 2002), interpersonal deviance (Bennett & Robinson, 2000), workplace bullying (Fox & Stallworth, 2005), and abusive supervision (Tepper, 2000; Zellars et al., 2002).

While these scales contain a wide variety of deviant behaviours from the perspective of either the perpetrator (e.g., interpersonal deviance) or the target (e.g., supervisory undermining, workplace bullying), each includes at least one indicator of social exclusion or ostracism. The supervisory undermining scale by Duffy et al. (2002), for example, contains the item "Others gave you the 'silent treatment' at work," while the workplace incivility scale (Blau & Andersson, 2005) asks respondents to rate how often someone at work has "ignored or excluded you from professional camaraderie (e.g., social conversation)." I added 11 items to the original three-item managerial distance scale, with some items reflecting forms of marginalization on the part of the manager ("Management appears uncomfortable interacting with me," "Management at this company notices me" (reverse scored)) and others indicating social exclusion from activities of the organization as a whole ("I feel like I am being given the 'silent treatment' in this organization"; "I feel included in the activities of the organization" (reverse scored)). Assuming the results of the present study support expanding the source of exclusion beyond the employees' manager, the revisions were expected to enhance the explanatory power of O'Neill's (2005) managerial distance scale.

Organizational survival insecurity was defined as the degree to which the organization is perceived to be economically viable and investing in future growth. In generating items for this scale, Lahey's (1984) "company growth and stability" scale and O'Neill's "growth climate" scale were especially influential. I retained three items from the growth climate scale, while adding another three items to enhance the reliability and explanatory power of the instrument by tapping other environmental indicators of corporate growth—such as "This organization is investing in new equipment and materials" and "Productivity appears to be slowing in this company." With the exception of the latter item, which was negatively worded, the remaining positively worded items were reverse-scored to reflect insecurity.

Finally, I adapted items developed for the *job changes insecurity* scale from Lee et al.'s (1989) abridged job features security measure; Hellgren et al.'s (1999) qualitative job insecurity scale; Blau et al.'s (2004) "work condition job feature insecurity" scale; and Bartrum's (2006) Job Characteristics Scale. Items refer to the anticipated loss of valued job features in *general*, such as "unfavourable changes to my job," "many features of my job that I value the most," and "the rewards of my job," as well as *specific* facets of the job such as "opportunities for promotion and advancement," "physical working conditions," "my relationship with fellow workers," and "opportunities to use important skills." Given the myriad of job characteristics that could be a source of concern for employees, a reasonable number of salient job features were chosen for the pilot measure based on facets of intrinsic and extrinsic job satisfaction captured in Warr, Cook, & Wall's (1979) well-researched scales.

Peer Review

I generated an original set of 46 items for the preliminary JIM. A peer review of the measure was then conducted by four university professors from psychology and business administration departments with experience consulting in organizations and developing psychometric instruments. This was followed by an independent review by six members of the survey committee for the sample organization. Upon completing the instrument, each participant was provided with definitions of the four constructs and asked to review the instrument in terms of clarity, wording, face validity, content validity, and ease of usage. Given the sensitive nature of some items, this feedback from the review panel helped to ensure that the items were not perceived as overly invasive or contentious while still representing the construct definitions. As a result of this review, I eliminated five items and reworded others, creating the 41-item pilot JIM displayed in Table 2.1. Also included in the table are the pre-existing measures used to inform the content of each subscale.

Table 2.1

Dimensions and Items of the Preliminary Job Insecurity Measure

Job Insecurity Dimension & Items	Measurement Sources
Job Loss Insecurity	
1. The possibility of losing my job occupies my thoughts constantly.	O'Neill (2005) Employment Uncertainty Caplan et al. (1975) Job Future Ambiguity
2. *No matter how hard I work, there is no guarantee that I am going to keep my job.	Ashford et al. (1989) Perceived threats to total job van Vuuren (1990) Likelihood of job loss Mohr (2000) Probability of Job loss
3. I am certain of losing my job.	Probst (2003) Job Security Index (JSI)
4. I'm not sure of how long my job will last.	Lahey (1984) Job Permanence
5. *I am uncertain about my future with this organization.	Borg & Elizur (1992) Cognitive Job insecurity
6. The probability of being laid off is high.	
7. *When productivity in this organization is low I still feel secure in my job.	
8. If I were to lose my job, it would be very difficult to secure a job equal to or better than my current position.	
Organizational Survival Insecurity	
9. This organization is maintaining and investing in new equipment and materials.	Lahey (1984) Company Growth & Stability O'Neill (2005) Growth Climate
10. *Senior management is really trying to build this organization and make it successful.	
11. *Management appears to be preparing in advance and planning for the future.	
12. Productivity appears to be slowing in this company.	
13. *This organization seems to have clear goals and a definite strategy for achieving them.	
14. There will always be a job for me in this organization.	
Job Changes Insecurity	
15. I expect more restrictions will be placed on how I do my job.	Hellgren et al. (1999) Qualitative JI Ashford et al. (1989) Job Features Security
16. I believe there will be fewer opportunities to use important skills that I possess.	Blau et al. (2004) Work Condition Job Feature Insecurity
17. Opportunities for pay increases are promising.	Blau et al. (2004) Human Capital Job Feature Insecurity
18. I believe I will have to give up my role in this organization before I am ready.	Bartrum (2006) Job Characteristics
19. There will be less opportunities for promotion and advancement in the future.	
20. Overall, my physical working conditions are likely to deteriorate.	
21. I am expecting unfavourable changes to my job.	
22. I expect to have fewer resources to meet the performance requirements on my job.	

Table 2.1 (Continued)

Job Changes Insecurity	
23. All in all, I believe the quality of my relationship with fellow workers will change for the worse.	
24. The rewards of my job are likely to diminish.	
25. I will probably lose many features of my job that I value the most.	
26. I wish my job could go back to the way it used to be.	
27. In the future, I will receive less recognition for good work.	
Marginalization Insecurity	
28. *I feel as though management is avoiding me.	O'Neill (2005) Managerial Distance Duffy et al. (2002) Supervisor Undermining Bennett & Robinson (2000) Interpersonal Deviance Fox & Stallworth (2005) Workplace Bullying Ferris et al., (2008) Workplace Ostracism Williams (2001) Social Ostracism Tepper (2000) Abusive Supervision Blau & Andersson (2005) Workplace Incivility
29. *Management at this company seem to be spending a sufficient amount of time interacting with staff.	
30. *I feel as though my privileges in this organization are being maintained.	
31. Management at this company give considered responses to my questions.	
32. Management appear uncomfortable interacting with me.	
33. I feel as though I have fallen out of favour in this organization.	
34. I feel included in the activities of the organization.	
35. Management at this company pays attention to me when I am speaking.	
36. Management at this company notices me.	
37. I doubt others would notice if I missed a day of work.	
38. Management often shows signs that I am important to this organization.	
39. I feel like I am being given the 'silent treatment' in the organization.	
40. When presented with the opportunity, management will interact with me.	
41. I am often excluded from discussions or meetings that affect me.	

Note. Items based on the original Job Insecurity Measure (JIM) developed by O'Neill (2005) are marked with an asterisk.

Item Reduction

Sample. I collected data from a Canadian private sector organization *(N* = 682) specializing in the production, distribution, sales, and advertising of a provincial newspaper. The data set represents 12 main operating units, including advertising and sales, newsroom/editorial, pre-pressroom, pressroom and mailroom, reader sales and service, human resources, financial services/in-plant printing, clerical/administrative support, library research services, technical services, marketing, and building maintenance. With a broad range of occupational classifications encompassing a mix of blue and white-collar employees, the data set contained a high degree of occupational heterogeneity.

Data collection. A paper-and-pencil employee opinion survey was administered to groups of 10 to 30 employees. The group administration sessions were conducted by members of the human resources department during normal working hours over a period of 10 days in September 2004. In return for their voluntary participation, respondents were offered a free lunch. To ensure a standardized survey administration, the organization prepared a video of the researcher providing administration instructions and background information on the survey, which placed particular emphasis on the steps taken to ensure the confidentiality of survey responses. The survey took approximately 40 minutes to complete and participants were instructed to place their completed questionnaires in locked ballot boxes to be emptied by the researcher. In this way, only the researcher had access to the completed information.

Although the economic climate at the time of data collection was relatively stable, perceptions of job insecurity are likely to have been influenced by a history of layoffs.

Approximately one year prior to data collection, the organization was acquired by a larger global communications firm, resulting in the most intensive wave of downsizing and restructuring in its history. During this period, an estimated 400 staff were made redundant with an additional 120 placed on temporary contracts. Although the bulk of the layoffs were reported by corporate headquarters to have subsided at the time of data collection, small-scale layoffs were still being implemented in some departments and, in most cases, workers who had voluntarily left were not being replaced.

Statistical analysis. The employee opinion survey yielded a 56% response rate (n = 384). After listwise deletion of missing data, the final sample was 362. Exploratory factor analysis reduced the 41-item pilot JIM to a reasonable number of items and provided a preliminary indication of its factorial structure. The population estimates for the factor loadings were calculated using the maximum likelihood estimation procedure, which aims to maximize the probability of sampling the observed correlation matrix from a population (Tabachnick & Fidell, 1989). Promax (oblique) rotation was used to interpret the solution since they provide “a more accurate and realistic representation of how constructs are likely to be related to one another” than varimax (orthogonal) rotation, which assumes independence among the constructs (Fabrigar, Wegener, MacCallum, & Strahan, 1999, p. 282).

Results. The EFA yielded an eight-factor solution with eigenvalues greater than one, collectively accounting for 62.6% of the variance. However, only five factors were considered reliable after rotation. Each of the remaining three factors (i.e., seven to nine) had less than three items with factor loadings greater than .30, most of which had cross-loadings. Since at least three items with loadings above .30 are considered adequate to define a latent construct, the seven items associated with these three factors (7, 14, 16, 27, 32, 33, 38) were eliminated. Further examination of the pattern matrix revealed two items (17, 18) not loading onto their target factors and with relatively low within-factor loadings. These items were deleted along with eight additional items (8, 12, 29, 30, 31, 34, 37, 40) with factor loadings below the conventional cut-off level of 0.40 (Hinkin, 1998).

I then conducted a second EFA (N = 339) on the reduced 24-item measure, identifying five factors with eigenvalues greater than one. Since the fifth factor contained only two items (35, 36), these were deleted producing the 22-item pilot JIM. As indicated in Table 2.2, this four-factor solution accounted for 58.16% of the variance.

Table 2.2.

Exploratory Factor Analysis of the Preliminary Job Insecurity Measure

Items	Factor 1 (OSI)	Factor 2 (JLI)	Factor 1 (JCI)	Factor 4 (MI)
10	.971			
11	.922			
13	.757			
9	.605			
4		.787		
6		.686		
2		.679		
3		.662		
1		.622		
5		.591		
22			.778	
24			.712	
21			.700	
25			.682	
20			.633	
19			.520	
23			.447	
26			.419	
15			.377	
39				.556
28				.453
41				.385
Eigenvalues	6.716	3.089	1.745	1.245
% Variance	30.529	14.042	7.930	5.660
Total Variance				58.161

Note: N = 339; OSI = Organizational survival insecurity; JLI = Job loss insecurity; JCI = Job changes insecurity; MI = Marginalization insecurity.

Part 2: Validity and Reliability of the Job Insecurity Measure (JIM)

Sample and Data Collection

I collected data from a large North American media company (*N* = 2,900) that provides radio and television services. A total of 1,185 surveys were completed, representing 47% of the employees who received the invitation e-mail. This data set contained four central divisions (television, radio, corporate, content), consisting of 21 departments and several geographically dispersed locations. A more detailed description of the sample characteristics and data collection procedure is provided in the methodology chapter (Chapter V).

From the main data set, 110 of the cases with missing information or univariate outliers were eliminated, resulting in 1,004 cases available for subsequent analyses. Using a listwise selection procedure, this main sample was randomly split into two equal samples of *n* = 502 each. Anderson and Gerbing (1988) recommend the random assignment of two subsamples, where one sample is used to develop the measurement model and the other to validate the solution obtained. In line with this recommendation, one of these samples (*n* = 502) was used in its entirety to perform the EFA. Subsample 2 was then randomly split into two equal subsamples of *n* = 251 each, and utilized for CFA. One of these two samples was designated the calibration sample and the other the cross-validation sample.

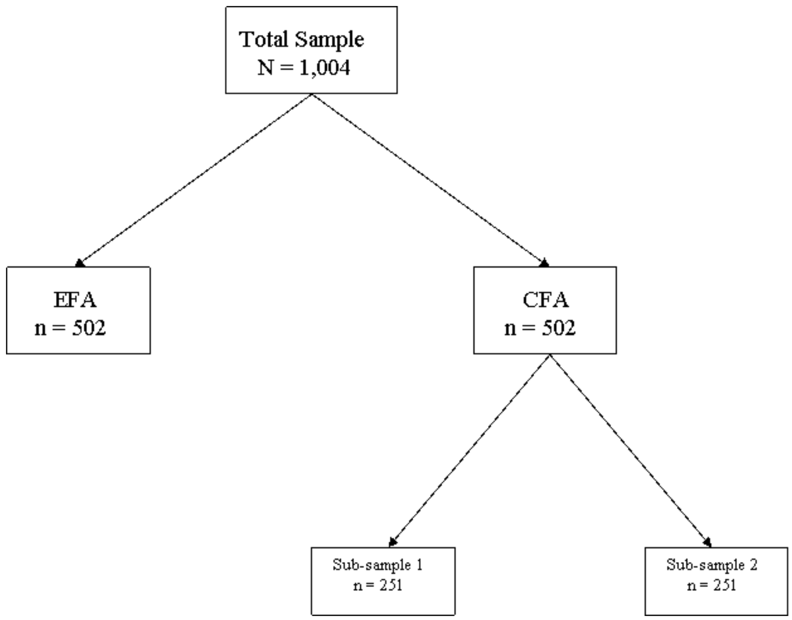


Figure 2.1. Random allocation of samples for exploratory and confirmatory factor analyses.

The Pilot Job Insecurity Measure

The 22-item pilot measure developed in Phase 1 was used to tap employees' perceptions of job insecurity. This measure comprised four correlated but distinct subscales tapping insecurity that arises over *job loss* (e.g., "The possibility of losing my job occupies my thoughts constantly"), *job changes* (e.g., "I will probably lose many features of my job that I value the most"), *marginalization* (e.g., "I feel as though management is avoiding me"), and *organizational survival* (e.g., "Senior management is really trying to build this company and make it successful"). Respondents were asked to indicate their level of agreement with statements on a seven-point scale ranging from 1 ("Very inaccurate") to 7 ("Very accurate"). All items were positively worded with the exception of the organizational survival scale, which was reverse-scored.

Statistical Analyses

EFA was first performed on Sample 1 ($n = 502$) to obtain a factor solution suitable for CFA. I used the maximum likelihood oblique estimation procedure for the EFA and chose the direct oblimin method of rotation, since it generated the most easily interpretable and psychologically meaningful solution.

Sample 2 was then utilized for conducting CFA to test the extent to which the factorial structure derived from EFA fitted the data. The EQS version 6.1 structural equations modelling (SEM) program (Bentler, 2005) was used to conduct the CFA. Analyses of model fit involved testing a sequence of three measurement models of increasing complexity. The first model, which was used as a baseline, was a null model, which argues for complete independence (zero covariance) between items (Bentler & Bonett, 1980). Model 2 was a unidimensional solution with all of the items loading onto a single factor. Model 3 consisted of the hypothesized four-dimensional structure of job insecurity. The maximum likelihood method of estimation was used to estimate all models, and the input for all analyses was the covariance matrix. To test these models, only random error was taken into consideration.

Assessment of model fit. The appropriateness of each of the three competing models (null, single factor, and four factor structures) was examined using several indices of fit (see Chapter IV for a more detailed description). Global assessments of fit were based on the Satorra-Bentler scaled statistic (S-Bχ^2) and the difference in chi-square and degrees of freedom. Given the known dependency of the chi-square statistic on sample size (Bentler & Bonett, 1980), several additional fit indices were calculated, including the robust comparative fit index (RCFI) and the standardized root mean square residual

(SRMR). The RCFI ranges from zero to 1.00 with a value ≥ 0.95 indicating an acceptable fit (Hu & Bentler, 1999). Values below .08 for the SRMR are deemed acceptable (Hu & Bentler, 1999), while those above this cut-off value would indicate a misspecification of the model. A supplementary third index was used, the root mean square of approximation (RMSEA), because this index—unlike the CFI and the SRMR, which rely on point estimates—has known distributional properties and provides information on the degree of imprecision in the point estimates. The RMSEA is relatively independent of sample size, and models may be tested on the basis of confidence intervals (CI). Point estimates of .05 or less indicate a good fit, while a value approaching .08 would represent reasonable errors of approximation (Steiger, 1989), although Hu and Bentler (1999) more recently have recommended a cut-off value of .06 for this index as an indication of a reasonable fit. RMSEA values above .10 indicate poor fit.

Since point estimates fail to capture the degree of imprecision in estimating this fit, MacCallum, Browne, and Sugawara (1996) have presented a framework for evaluating model fit based on confidence intervals. According to this framework, a decision is made to reject the hypothesis of "not-close fit" but not of "close fit" when the entire CI of the RMSEA is below 0.05. Conversely, when the entire CI is above 0.05, the hypothesis of "close fit" is rejected but not that of the "not-close fit." Finally, when the CI "straddles" 0.05, both hypotheses of "close fit" and "not-close fit" cannot be rejected, as they are both plausible.

In order to draw strong conclusions about model fit, adequate statistical power needs to be demonstrated. Power is the "probability that the results of a significance test will lead to rejection of the null hypothesis when there is a true effect in the population"

(Kline, 1998, p. 308). Power analysis for tests of model fit requires the specification of null and alternative hypotheses, which translate into an effect size (i.e., the extent to which the null hypothesis is incorrect). MacCallum and colleagues (1996) provided formulæ for calculating power and requisite sample size when the null hypothesis is less than or equal to .05 and the alternative hypothesis is equal to .08, using an alpha level of .05 and a power of .80. I will base all model fit evaluations for the present study, therefore, on MacCallum et al.'s (1996) framework, after demonstrating adequate power and sample size requirements.

Convergent and discriminant validity. Convergent validity was assessed by examining the *t*-ratios for the factor loadings of the job insecurity items on their specified dimensions. Statistically significant *t*-ratios indicate that the items in the model are significantly related to their target constructs. The discriminant validity for each pair of latent constructs was assessed by setting estimated covariance parameters free and then performing a separate analysis where the relationship between them was constrained to 1.00 (Anderson & Gerbing, 1988). Because these two difference models are nested, a chi-square difference test (with one degree of freedom) on the values obtained for the constrained and unconstrained models is appropriate (Jöreskog, 1971). A significant difference in chi-square suggests non-equivalence and indicates that the constructs are distinguishable (Bagozzi & Phillips, 1982). Anderson and Gerbing (1988) argue that the chi-square difference test must be performed separately for each pair of constructs (rather than a simultaneous test of all constructs), because a non-significant value for one pair of factors can be obscured by other pairs that have significant differences in chi-square. Further evidence of convergent and discriminant validity is provided in Appendix B where I examine correlations between the four job insecurity dimensions and similar and dissimilar constructs.

Testing for invariance. Having identified the measurement model that most adequately described the data, I then "cross-validated" this best-fitting model against subsample 2. Byrne (2006) and others (Cole & Maxwell, 1985) have argued that the evidence of construct validity in one sample does not guarantee construct validity across groups. Thus, the cross-validation procedure in EQS was used to establish the statistical equalities between the two sets of data, or the "generalizability" of the measurement model. Evidence of equivalence on tests for invariance of parameters across the two subsamples; that is, the estimation of parameters in the validation sample was constrained to be equal to the values of the unconstrained calibration sample. A series of "chi-square difference tests" (Bollen, 1989, p. 292) was then performed between the two nested models.

After establishing the best baseline model for each group separately, tests of invariance between two or more samples proceed in a hierarchical fashion (Byrne, Shavelson, & Muthen, 1989). Invariance is first sought by comparing the baseline model with a model that constrains item-factor loadings in the replication sample. If the results of the comparison are not statistically significant (i.e., constrained parameters are equal across groups), a further comparison of this model and one with additional constraints on factor covariances is performed (Bentler, 1995). A statistically non-significant result between the two nested models may be taken as evidence that the model is invariant across samples.

An even more restrictive test is to constrain, in addition to the loadings and covariances among factors, the error variances of the observed variables. If the results of the comparison between the two nested models (i.e., between the constrained covariance model and the constrained error variance model) are statistically non-significant, then we may conclude that the three-factor measurement model is invariant across samples. That is, results may be taken to indicate that the constructs are generalizable to other samples. Although the Jöreskog (1979) tradition of invariance testing holds that the equality of error parameters should be tested, others have argued that to do so represents an excessively stringent test of the data (Bentler, 1992; Byrne, 1994a). I took a conservative stance in the present analysis by constraining all three sets of parameters in testing for invariance.

Results

Exploratory factor analysis. Table 2.3 displays the results of the EFA on Sample 1 (n = 502) with the 22-item covariance matrix used as the input for the analysis. This analysis identified four job insecurity factors with an eigenvalue greater than one, comprising 18 items and accounting for 58.02% of the variance. Out of the 22 pilot items, four of these had loadings below the conventional cut-off of .40 (Hinkin, 1998) and were therefore eliminated. The first factor, *job changes*, contained six items accounting for 39.98% of the variance. The content of this scale dealt with undesirable changes to the job in general (e.g., “Many features of my job that I value the most”; “Unfavourable changes to my job”) that would apply across organizations and jobs. Importantly, these items captured changes that would threaten an employee’s ability to perform on the job (e.g., “I expect to have fewer resources to meet the performance requirements of my job"). By contrast, the five eliminated items dealt with changes to specific job characteristics that may not generalize across organizations ("Promotion and advancement"). These items also tend to resemble what Jahoda (1982) refers to as "latent functions" of employment (e.g., "relationships with fellow co-workers"), which would make a job less intrinsically rewarding but would not jeopardize a person's ability to earn a living (the "manifest function" of employment).

All six of the pilot items for the second factor, *job loss*, were retained, accounting for 6.48% of the variance. The third factor, consisting of three items and accounting for 6.85% of the variance, assessed insecurity over *marginalization*. This measure expands the content domain of O'Neill's (2005) managerial distance scale to capture the perception of being excluded by management ("I feel as though management is avoiding me") as well as the broader social activities of the organization ("I'm often excluded from discussions or meetings that affect me"; "I feel like I am being given the 'silent treatment' in this organization"). Finally, all three of O'Neill's (2005) growth climate items were retained in the *organizational survival* scale, representing 4.70% of the variance.

Table 2.3.

Exploratory Factor Analysis of the Pilot Job Insecurity Measure

Items	Factor 1 (JCI)	Factor 2 (JLI)	Factor 3 (MI)	Factor 4 (OSI)
1. I will probably lose many features of my job that I value the most.	.848			
2. The rewards of my job are likely to diminish.	.818			
3. I expect to have fewer resources to meet the performance requirements of my job.	.811			
4. I am expecting unfavourable changes to my job.	.768			
5. Overall, my physical working conditions are likely to deteriorate.	.711			
6. I wish my job could go back to the way it used to be.	.699			
7. I'm not sure of how long my job will last.		.891		
8. The probability of being laid-off is high.		.803		
9. The possibility of losing my job occupies my thoughts constantly.		.786		
10. No matter how hard I work there is no guarantee that I am going to keep my job.		.774		
11. I am certain of losing my job.		.742		
12. I am uncertain about my future with this organization.		.562		
13. I feel as though management is avoiding me.			.995	
14. I feel like I am being given the "silent treatment" in this organization.			.907	
15. I am often excluded from discussions or meetings that affect me.			.737	
16. Management appears to be preparing in advance and planning for the future.				.938
17. Senior management is really trying to build this organization and make it successful.				.852
18. This organization seems to have clear goals and a definite strategy for achieving them.				.736
Eigenvalues	10.497	2.342	1.629	1.370
% Variance	39.983	6.484	6.854	4.701
Total Variance				58.023

Note: Analysis based on Sample 1 data, $n = 502$. JCI = Job changes insecurity; JLI = Job loss insecurity; MI = Marginalization insecurity; OSI = Organizational survival insecurity.

Confirmatory factor analysis. The job insecurity measurement model identified through the EFA was the input for CFA. This 18-item model illustrated in Figure 2.2 was tested using Sample 2. Table 2.4 displays fit indices for this model (RCFI= .973; RMSEA= .048; CI= .040 - .056; SRMR= .041) in comparison to a null model.

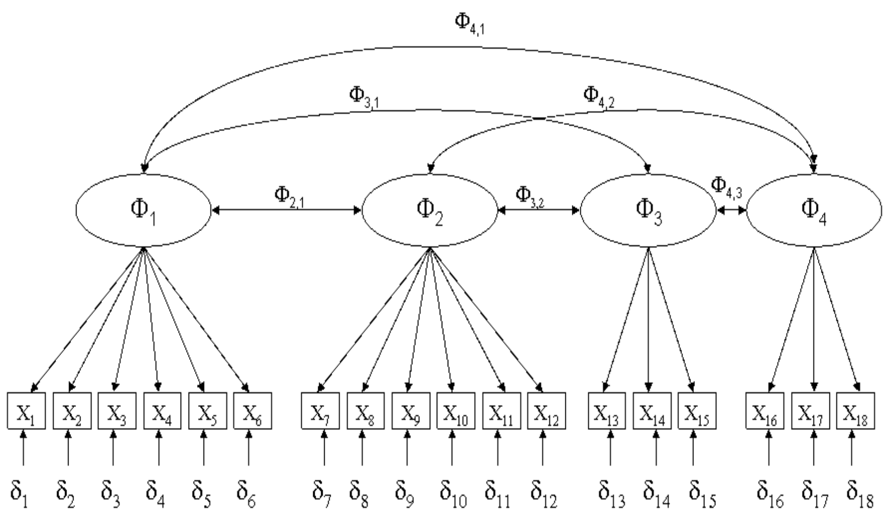


Figure 2.2. The job insecurity measurement model.

Tables 2.4 and 2.5 show the relevant fit indices for the null, single and four-factor models across the calibration and cross-validation samples. Results for the calibration sample reveal that the four-factor model provided the best fit of the data. The single-factor solution, when compared to the four-factor model, generated lower scores on the robust CFI (.637) as well as the point estimate of .159 for the RMSEA, with an unacceptable 90% confidence interval that ranges from .149 to .168, and a SRMR of .122. This result indicates that the single factor model does not fit the data well. By contrast, the point estimates on the robust CFI (.954), and the RMSEA (.058) with a 90% confidence interval of .046 to .069, indicate that the four-factor model provides a very good fit to the data (MacCallum et al., 1996). Similar results are reported for the cross-validation sample, as can be seen in Table 2.6. Hypothesis 2.2 is therefore supported.

Table 2.4.

Confirmatory Factor Analysis of Sample 1 Data

Model	χ^2	S-Bχ^2	df	RCFI	RMSEA (CI)	SRMR
Null Model	5551.426	--	153	--	--	--
4 Factor	362.267	276.987	129	.973	.048 (.040,.056)	.041

Note: n = 502. S-B χ^2 = Satorra-Bentler Scaled Statistic; CFI = Comparative Fit Index; RCFI = Robust Comparative Fit Index; SRMR = Standardized Root Mean Square Residual; RMSEA = Robust Root Mean Error of Approximation; Power = 1.00 for RMSEA.

Table 2.5.

Confirmatory Factor Analysis of Calibration Sample

Model	χ^2	S-Bχ^2	df	RCFI	RMSEA (CI)	SRMR
Null Model	3019.718	2495.107	153	--	--	--
1 Factor	1223.560	984.723	135	.637	.159 (.149,.168)	.122
4 Factor	279.926	236.191	129	.954	.058 (.046,.069)	.058

Note. S-B χ^2 = Satorra-Bentler Scaled Statistic; CFI = Comparative Fit Index; RCFI = Robust Comparative Fit Index; SRMR = Standardized Root Mean Square Residual; RMSEA = Robust Root Mean Error of Approximation; Power = 1.00 for RMSEA.

Table 2.6.

Confirmatory Factor Analysis of Cross-Validation Sample

Model	χ^2	S-Bχ^2	df	CFI	RCFI	RMSEA (CI)	SRMR
Null Model	3154.242	2354.741	153	--	--	--	--
1 Factor	1322.152	1020.154	135		.598	.162 (.152,.171)	.126
4 Factor	252.877	218.060	129		.960	.053 (.040,.064)	.046

Note. S-B χ^2 = Satorra-Bentler Scaled Statistic; CFI = Comparative Fit Index; RCFI = Robust Comparative Fit Index; SRMR = Standardized Root Mean Square Residual; RMSEA = Robust Root Mean Error of Approximation; Power = .997 for RMSEA.

Inter-correlations and reliability statistics. Displayed in Table 2.7 are the summary statistics for Subsample 1, including means, standard deviations, reliability estimates, and inter-correlations for the four job insecurity dimensions. Alpha reliabilities for each job insecurity dimension far exceed the minimum requirement of .70 (Nunnally, 1978), confirming the reliability of the instrument. As indicated in the tables, the means for each of the factors are lower than the midpoint (measurement ranged from 1 to 7), which suggests that, overall, employees in both samples felt slightly insecure in their positions. The size of the standard deviations, particularly for job loss insecurity (1.799), indicates considerable variability in responses, which may reflect the different levels of restructuring and downsizing occurring across divisions and locations of the sample organization.

Inter-correlations among the four job insecurity factors are not excessively high, suggesting that the subscales are related but independent. In line with previous research (Hellgren et al., 1999; Blau et al., 2004), job changes showed a strong correlation with job loss, which is to be expected in a restructuring environment where layoffs are often accompanied by changes to work roles and responsibilities. Of the two new job insecurity subscales, marginalization showed the strongest associations with job changes and job loss, with coefficients of $r = .576$ and $r = .448$, respectively. While insecurity over organizational survival showed moderate correlations with job loss ($r = -.268$) and marginalization ($r = -.335$), stronger associations were reported for job changes ($r = -.476$).

Table 2.7.

Factor Correlation Matrix for Subsample 1 (n =251)

	Mean (SD)	Alpha	Factor 1 (JCI)	Factor 2 (JLI)	Factor 3 (OSI)	Factor 4 (MI)
Factor 1 (JCI)	2.947 (1.714)	.905	*1.00*	--	--	--
Factor 2 (JLI)	3.149 (1.799)	.896	.659	*1.00*	--	--
Factor 3 (OSI)	5.306 (1.453)	.861	-.476	-.268	*1.00*	--
Factor 4 (MI)	2.398 (1.649)	.879	.576	.448	-.335	*1.00*

Note. JCI = Job changes insecurity; JLI= Job loss insecurity; MI= Marginalization insecurity; OSI= Organizational survival insecurity.

Construct reliability. Further evidence of reliability was provided by the construct reliability coefficients of the four subscales for the calibration sample as presented in Table 2.8. As can be seen, the construct reliability coefficients for all four job insecurity constructs far exceeded the recommendation of Hair et al. (1995) who suggest that "the indicator reliabilities should exceed .50, which roughly corresponds to a standardized loading of .70" (p. 642). In addition, variance extracted was also calculated for each subscale by taking into account the amount of variance due to measurement error. For this statistic, Hair and colleagues (1995) suggest that "the variance extracted value should exceed .50 for a construct" (p. 642). From the table, it can be seen that for all four constructs the variance extracted exceed the recommended guidelines. The Hair et al. (1995) formulæ used to calculate the CR and VE are presented below:

$$VE = \frac{\Sigma std.loadings^2}{\Sigma std.loadings^2 + \Sigma\varepsilon_j} \quad CR = \frac{(\Sigma std.loadings)^2}{(\Sigma std.loadings)^2 + \Sigma\varepsilon_J}$$

Table 2.8.

Construct Reliability and Variance Extracted Coefficients

Job Insecurity Dimension	Construct Reliability Coefficients	Variance Extracted Coefficients
Job Loss Insecurity	.896	.591
Marginalization Insecurity	.881	.715
Organizational Survival Insecurity	.907	.620
Job Changes Insecurity	.870	.694

Convergent and discriminant validity. Displayed in Table 2.9 are the convergent validities for both samples of the 18 items across the four factors for both subsamples. All of the *t*-ratios for the loadings in both subsamples were statistically significant ($p < .001$), indicating that each item in the model was significantly related to its intended construct.

Discriminant validities of the four job insecurity constructs for Subsample 1 are shown in Table 2.10. In every case, the difference in χ^2 between the baseline model with the covariance parameters set free and the model where the same parameters were fixed at 1 was statistically significant. That is, all of the chi-squares for the unconstrained model were substantially lower, indicating discriminability among the four subscales.

Table 2.9.

Standardized Coefficients and T-Ratios for Subsamples 1 & 2

Job Insecurity Items	Factor	Subsample 1 Standardized Coefficient	Subsample 1 *z*	Subsample 2 Standardized Coefficient	Subsample 2 *z*
1. The possibility of losing my job occupies my thoughts constantly.	F2 (JLI)	.695	14.441	.774	15.372
2. No matter how hard I work there is no guarantee that I am going to keep my job.	--	.719	15.931	.725	16.717
3. I am certain of losing my job.	--	.778	15.688	.779	12.779
4. I'm not sure of how long my job will last.	--	.804	18.850	.849	22.905
5. I am uncertain about my future with this organization.	--	.765	16.394	.750	15.343
6. The probability of being laid-off is high.	--	.842	17.199	.824	15.620
7. Senior management is really trying to build this organization and make it successful.	F3 (OSI)	.785	17.417	.841	18.417
8. Management appears to be preparing in advance and planning for the future.	--	.850	17.475	.795	14.312
9. This organization seems to have clear goals and a definite strategy for achieving them.	--	.676	12.916	.723	12.134
10. Overall, my physical working conditions are likely to deteriorate.	F1 (JCI)	.850	12.710	.820	10.761
11. I am expecting unfavourable changes to my job.	--	.934	14.823	.911	15.289
12. I expect to have fewer resources to meet the performance requirements of my job.	--	.698	10.494	.772	12.119
13. The rewards of my job are likely to diminish.	--	.771	13.582	.724	12.151
14. I will probably lose many features of my job that I value the most.	--	.855	17.287	.879	18.890
15. I wish my job could go back to the way it used to be.	--	.772	16.765	.785	15.916
16. I feel like I am being given the “silent treatment” in this organization.	F4 (MI)	.888	13.873	.878	12.854
17. I am often excluded from discussions or meetings that affect me.	--	.707	12.514	.810	15.983
18. I feel as though management is avoiding me.	--	.925	14.931	.925	13.350

Note: z = The z-score or T-Ratio (unstandardized coefficients/standard error). The critical values for two tailed tests are z = 1.96, $p = .05$; $z = 2.58$, $p = .01$, $z = 3.29$, $p = .001$.

Table 2.10.

Discriminant Validity Analysis for Subsample 1 (n =251)

Models	χ^2	*df*	$\Delta\chi^2$	Δ *df*
Freely Correlated - Baseline	279.926	129	--	--
Perfectly Correlated – Factor 1 & Factor 2	621.119	130	341.194	1
Perfectly Correlated – Factor 1 & Factor 3	573.511	130	293.585	1
Perfectly Correlated – Factor 1 & Factor 4	567.349	130	287.423	1
Perfectly Correlated – Factor 2 & Factor 3	634.876	130	354.950	1
Perfectly Correlated – Factor 2 & Factor 4	630.732	130	350.806	1
Perfectly Correlated – Factor 3 & Factor 4	779.411	130	499.485	1

Note: The critical value for the chi-square difference test is $\chi^2(1) > 10.83$, p = .001.

Invariance of the Measurement Model

Table 2.11 shows the chi-square difference tests with the associated degrees of freedom for nested models based on the multi-sample analysis. After imposing all constraints for the invariance of loadings across groups, the χ^2 increment from the baseline was not statistically significant ($\Delta\chi^2 = 15.807$, 18 df, $p > .05$). Holding the factor covariances across groups invariant after constraining the factor loadings to be equal across groups did not result in a statistically significant difference between nested models ($\Delta\chi^2 = 8.187$, 6 df, $p > .05$). When the most restrictive model was tested, which included invariant error variances in addition to loadings and covariances, the results were not statistically significant ($\Delta\chi^2 = 4.816$, 18 df, $p > .05$). For this final model, the point estimates for the RMSEA (.035; CI = .029, .040), CFI (.961) and SRMR (.060) all indicate that this model fits the data well.

Table 2.11.

Invariance Analysis of the Four Factor Job Insecurity Measurement Model

Models	MFF χ^2	df	S-B χ^2	$\Delta\chi^2$	Δ df	S-B $\Delta\chi^2$	CFI	SRMR	RMSEA (CI)
Null	6173.961	306	4842.732	--	--	--	--	--	--
Baseline (Same form and pattern)	532.803	258	454.449	--	--	--	.957	.053	.039 (.033, .045)
Loadings Invariant	548.610	276	469.836	15.807 n.s.	18	15.387 n.s.	.957	.057	.037 (.032, .043)
Loadings + Factor Covariances Invariant	556.797	282	474.670	8.187 n.s.	6	4.834 n.s.	.958	.060	.037 (.031. .043)
Loadings + Covariances + Error Variances Invariant	580.616	300	479.486	4.816 n.s.	18	13.201 n.s.	.961	.060	.035 (.029, .040)

Note: MFF χ^2 = minimum fit function chi-square; S-B χ^2 = Satorra-Bentler Scaled chi-square; CFI = Comparative Fit Index; SRMR = Standardized root mean square residual; RMSEA = Root Mean Square Error of Approximation; CI = confidence intervals. Nested model chi-square differences are not statistically significant (n.s.). Power = 1.00 for RMSEA.

Criterion-related validity and empirical tests. Included in Appendix B are more extensive analyses exploring the relationship between the four dimensions of job insecurity with a variety of outcomes related to psychological well-being (job-related affective well-being, intrinsic and extrinsic job satisfaction) and organizational attitudes (organizational commitment, trust in management, and intention to resign). This is followed by a series of empirical tests to examine whether variations in the four JIM scales are likely to result from group differences in division, job category, age, gender, and tenure.

Broadly stated, the results of these analyses indicate that the four job insecurity scales demonstrate criterion-related validity in relation to the attitudinal and affective outcomes examined. Further evidence of discriminant validity was found for organizational survival and marginalization insecurity, which were strongly associated with but separate from the similar variables. These variables were supervisory support and interpersonal justice for marginalization insecurity, and communication climate and trust in management for organizational survival insecurity. All four job insecurity scales were able to discriminate across different employee groups on the basis of demographic variables. Systematic differences in the expected direction were found across employee groups on the basis of division, job category, age, gender, and tenure. Where applicable, these differences were generally consistent with empirical research.

Summary and Conclusions

Despite the many theoretical advances that have been made since systematic research into job insecurity began in the 1980s, researchers have been unable to reach a consensus on how to conceptualize and measure the construct (Ashford et al., 1987;

Mauno & Kinnunen, 2002; Klandermans & van Vuuren, 1999; van Wiek & Pienaar, 2008). The main purpose of this study was to develop and validate a new job insecurity measure that represents, in a parsimonious way, the salient dimensions of job insecurity from the perspective of the insecure worker. Scale items were generated from a comprehensive review of pre-existing measures and theoretical frameworks with particular emphasis on measures developed from qualitative interviews with workers facing an objective threat of job loss (Lahey, 1984; O'Neill, 2005).

In contrast to previous unidimensional conceptualizations of the construct, the present results support the measurement of job insecurity through the four correlated but distinct subscales of job loss, job changes, marginalization and organizational survival insecurity. Tests of invariance across loadings, factor covariances, and error covariances held across two samples, thus confirming the statistical equivalence of the four-factor structure between the two sets of data. In addition to its strong construct validity, the results indicate high internal consistency and construct reliability for the measure. The fact that the revised versions of the three job insecurity scales validated by O'Neill (2005) on an Australian sample were replicated in two distinct Canadian samples further corroborates the generalizability of the instrument. A promising avenue for future research is to cross-validate the measure across cultures.

These findings, along with the demonstrated criterion-related validity of the four subscales across a range of important individual and organizational outcomes (see Appendix B), support the use of the instrument in academic and applied settings. Indeed, consistent use of the instrument will enhance the rigour of future research and contribute to the development of richer theoretical frameworks to advance our understanding of the causes and consequences of job insecurity. Common usage of the measure would also allow meaningful comparisons to be made across studies and contribute to a normative database from which organizations can benchmark the results of their employee opinion surveys.

The strong fit of the four-dimensional measurement model to the data strengthens the contention of Mauno and colleagues (2001) that “defining job insecurity solely as the threat of job loss (i.e., unidimensionally) is an oversimplification and therefore multidimensional approaches, which also contain the threats of losing other important job features, are also required.” (p. 921) Specifically, the results indicate that job insecurity is a complex phenomenon shaped by employee perceptions of: the probability of job loss (job loss insecurity); social dynamics within the work group (marginalization insecurity); unfavourable changes to one’s job (job changes insecurity); and the organization’s performance and capacity for future growth (organizational survival insecurity). This multidimensional model will pave the way for more complex and informative theoretical models drawing from the disciplines of organizational psychology, sociology, and organizational behaviour.

The present study has made a number of important contributions to our understanding of the meaning and measurement of job insecurity. A key feature of the job loss insecurity scale is its assessment of cognitive items tapping the probability of job loss (e.g., “The probability of being laid off is high”) as well as content that implies negative emotions with respect to future job loss without directly measuring affective states (e.g., “The possibility of losing my job occupies my thoughts constantly”; “No matter how hard I work there is no guarantee that I am going to keep my job”). This format has the advantage of incorporating the affective experience of job insecurity while minimizing common method variance (CMV) associated with affective well-being scales. Also captured in the scale are facets of powerlessness and importance of job loss, which are featured as key components of job insecurity in the seminal theoretical framework of Greenhalgh and Rosenblatt (1984). While Ashford et al. (1989) and others (Lee et al., 2007) have developed lengthy scales to measure these dimensions separately, the present study has incorporated them into a six-item unifactorial scale.

The job changes insecurity scale also represents a more parsimonious alternative to existing scales such as Bartrum's (2006) 41-item Job Characteristics Scale, the original 51-item Job Insecurity Scale (JIS) by Ashford et al. (1989) or Lee et al.'s (2007) abridged (37 items) and bare-bones (25 items) versions of the JIS. This in itself should increase the response rate of the questionnaire and promote the widespread use of the instrument. Additionally, the measure has psychometric advantages over previous scales that were developed based on a less robust methodology (Blau et al., 2004; Hellgren et al., 1999). From an expanded set of 13 items covering changes to intrinsic and extrinsic facets of a job, EFA and CFA in this study identified six salient changes to the job. These items also have high external validity in that they represent some of the most well documented changes stemming from corporate restructuring and downsizing (Cascio, 2002; Mishra, Spreitzer, & Mishra, 1998) such as salary freezes ("the rewards of my job are likely to deteriorate"), cut-backs in plant and equipment technology ("overall, my physical working conditions are likely to deteriorate"), and a decreased investment in training ("I expect to have fewer resources to meet the performance requirements of my job").

The lack of definitive evidence regarding the measurement properties of job changes insecurity has perpetuated an ongoing debate over whether the construct is empirically distinct from job loss insecurity and whether its impact on employee attitudes is comparable (Hellgren et al., 1999; Klandermans & van Vuuren, 1999; Reisel & Banai, 2002a). By establishing that job changes insecurity is a related but distinct dimension of job insecurity with strong construct validity, a case is made for researchers to measure both job changes and job loss insecurity and advance beyond this debate by investigating "when one is more likely to occur than the other, and under what circumstances the one is more threatening than the other" (Klandermans & van Vuuren, 1999, p. 147).

While O'Neill (2005) restricted his managerial distance scale to social exclusion on the part of one's manager, the results of this study support an expanded three-item marginalization insecurity scale capturing perceived exclusion from the broader activities of the organization. This revision is reflected in the items, "I feel like I'm being given the silent treatment in this organization" and "I am excluded from discussions or meetings that affect me." It should be noted, however, that the "marker" item with the highest standardized coefficient identifies management as the source of marginalization ("I feel as though management is avoiding me"). Taken together, these results indicate that although this form of insecurity may be largely driven by the behaviour of management, it can spread to other members of the organization.

Moderate inter-correlations between the four dimensions of job insecurity indicate that these are correlated but distinguishable constructs. I therefore conducted a post-hoc analysis to determine the extent to which these dimensions are in fact tapping the construct of job insecurity. Correlational analyses of the four job insecurity factors with an unambiguous global measure of "satisfaction with job insecurity" revealed moderate to strong correlations for all four dimensions. As would be expected, job loss insecurity showed the strongest association with a global job security (r = -.770) followed by job changes (r = -.503), marginalization (r = -.423), and organizational survival (r = -.367) insecurity. While the strong relationship between job loss insecurity and global job security indicates that these measures are tapping the same contract space, the moderate strength of the associations for the remaining scales suggests that these dimensions are related to job security but clearly distinguishable.

Support for this four-dimensional JIM may raise the question of whether scores should be aggregated across subscales to produce an overall job insecurity index. This practice has been advocated by Ashford et al. (1989) and others (Lee et al., 2007) for the independent factors of the JIS. However, a strong rationale for combining the subscales would need to come from CFA evidence indicating that the constructs are being driven by a second-order job insecurity factor. Such a measurement model has not been supported either for this measure or the JIS. Therefore, researchers are well-advised to measure each of the four job insecurity dimensions but not to combine these into a composite score.

Another practical advantage of measuring the job insecurity subscales separately is that these scores provide more diagnostic information than the total score. As others have argued (Jacobson, 1991a; Lahey, 1984), valuable information on the salient components of job insecurity is lost when these scales are combined. Moreover, collecting information on these separate dimensions of job insecurity would enable organizations to adopt a broader range of evidence-based strategies to reduce job insecurity. Thus, for both methodological and practical reasons, individual subscales appear to be the most appropriate level of analysis.

While this study has employed robust statistical procedures to ensure that only valid and reliable results are reported, two limitations are noteworthy.

First, like most behavioural science research, the study has relied on self-report measures. As discussed in the previous chapter, the collection of self-report data may result in an inflation of effect size due to CMV (Podsakoff et al., 2003). Although the results of the CFA using Harmon's single factor test suggests that CMV is not a likely source of bias in the data, some researchers have argued that a reliance on the emergence of a single factor as evidence of CMV is an insensitive test (Podsakoff et al., 2003). These authors argue that since multiple factors are more likely to result from factor analysis, a single factor test is unlikely to provide evidence that a measure is free from CMV. If this were the case, they argue, then CMV would have to completely account for the covariances among items for it to be detected as a problem. They assert that this assumption is unwarranted, and despite this procedure being widely used, they do not believe it is sufficient for dealing with CMV. In order to provide a more definitive test of whether the actual (true) score variance in job insecurity scales is affected by CMV, the longitudinal model of job insecurity and job satisfaction examined in Chapter VII will control for NA and PA as two of the most well-documented sources of CMV.

Second, while this study employed a robust test of measurement invariance across two independent samples, the longitudinal invariance of the measure is unclear. That is, it is unclear whether the same job insecurity dimensions and latent variables are driving participant's responses over time. Since measurement instability would compromise the ability to interpret longitudinal analyses, researchers recommend a test of longitudinal invariance prior to testing structural relationships over time (Meredith, 1993; Schaubroeck & Green, 1989; Schmitt, 1982; Vandenberg & Lance, 2000; Vandenberg & Self, 1993). To address this issue, I employ multi-wave, multi-variable modelling in Chapter V to examine the stability of the job insecurity dimensions as well as the structure of the measurement scales and the reliability of scale items over time.

In conclusion, a theoretically sound and empirically robust measure was developed capturing the experience of job insecurity from the perspective of the insecure worker. Given the prevalence and potentially debilitating consequences of job insecurity documented in the literature, it is important to operationalize the construct in valid and reliable ways. By drawing from well-established theory and employing a rigorous analytical procedure, the four job insecurity scales can be generally applied, pending a final test of longitudinal invariance. In the next chapter, I conduct a meta-analytic review to determine the strength of the association between job insecurity and job satisfaction before testing the stability and structural relations between these constructs longitudinally.

CHAPTER III

THE RELATIONSHIP BETWEEN JOB INSECURITY AND JOB SATISFACTION: A META-ANALYTIC REVIEW

> "Scientists have known for centuries that a single study will not resolve a major issue. Indeed, a small sample study will not even resolve a minor issue. Thus, the foundation of science is the cumulation of knowledge from the results of many studies."
>
> — Hunter & Schmidt (2004, p. xxvii)

Having established the dimensionality of job insecurity, this chapter presents the results of a meta-analytic review of over three decades of empirical research investigating the relationship between job insecurity and job satisfaction. While earlier meta-analyses have established a moderate association between job insecurity and overall job satisfaction (Cheng & Chan, 2007; Sverke et al., 2002), little is known about the relationship between job insecurity and intrinsic and extrinsic job satisfaction (Buitendach & De Witte, 2005). Most studies either have employed global measures of the construct or have not interpreted their results at the dimension-specific level.

By identifying the "true" correlations between job insecurity and the separate dimensions of job satisfaction, the meta-analysis provides an empirical basis to inform the structural hypotheses developed in Chapter VI and tested in Chapter VII. As recommended by Byrne (1994b), the hypothesized relations within a structural model ought to be grounded in theory and empirical research. Beyond the addition of published and unpublished research studies not included in previous meta-analyses, the present study provides the first meta-analytic test of the relationship between job insecurity and intrinsic and extrinsic job satisfaction. I begin the chapter by introducing theories and perspectives on the nature and measurement of job satisfaction with distinctions made between job satisfaction at different levels of specificity.

Defining and Measuring Job Satisfaction

Since the Hawthorne studies of the 1930s, job satisfaction has been one of the most widely studied topics in organizational psychology (Judge, Parker, Colbert, Heller, & Ilies, 2001; Spector, 1997). Several decades of research have established the construct as a significant contributor to individual health and organizational performance. Based on a meta-analysis of 500 studies with a combined sample of N= 267, 995, Faragher, Cass, and Cooper's (2005) report corrected correlations between job satisfaction and several mental health outcomes, indicating that employees experiencing low levels of job satisfaction are more likely to experience burnout (ρ = .478), diminished self-esteem (ρ = .429), and greater anxiety (ρ = .420) and depression (ρ = .428). The extent to which individuals are satisfied with their jobs has also been shown by meta-analytic results to correlate with employee turnover (ρ = -.22; Griffeth, Hom, & Gaertner, 2000), job performance (ρ = .30; Judge, Thoresen, Bono, & Patton, 2001), and organizational citizenship behaviour (ρ = .30; LePine, Erez, & Johnson, 2002). Other studies have linked job satisfaction to organizational performance in financial terms (Harter, Schmidt, & Hayes, 2002; Koys, 2001; Patterson, Warr, & West, 2004).

Perhaps the most influential definition of job satisfaction is that of Locke (1976), who defined the construct as "… a pleasurable or positive emotional state resulting from the appraisal of one's job or job experience" (p. 1304). This definition has both cognitive ("an appraisal of one's job") and affective ("emotional state") elements. Locke assumed that job satisfaction resulted from the interaction of cognition and affect in that individuals have thoughts about their jobs and feelings about those thoughts. For Locke, job satisfaction is an emotional reaction that "results from the perception that one's job fulfils or allows the fulfilment of one's important job values, providing and to the degree that those values are congruent with one's needs" (p. 1307).

Others have placed less emphasis on a person's emotional reaction to the job and conceptualized job satisfaction simply as a cognitive appraisal of the work environment (Organ & Near, 1985). However, this position is uncommon since, as an attitude, job satisfaction would need to consist of both cognitions and affect. Motowidlo, Packard, and Manning (1986; p. 176) take a more balanced approach, defining job satisfaction as "judgements about the favourability of the work environment."

A common thread linking most definitions of job satisfaction is the cognitive evaluation of a job based on a person's unique needs, values, and expectations. That is, an employee is said to experience job satisfaction to the extent that they feel their capabilities, experience, and values can be utilized in the work environment and that the work environment offers them opportunities and rewards (Dawis, 1992; Roberts & Roseanne, 1998). Because of the importance of individual needs in the evaluation of a job, job satisfaction has been conceived as an interaction of dispositional and situational influences (Hoppock, 1935).

At its most general level, job satisfaction has been operationalized in terms of overall job satisfaction or the extent to which a person is satisfied with his or her job as a whole (Judge, Boudreau, & Bretz, 1994). Researchers typically use scales comprised of one or more global items (e.g., "All things considered, how satisfied are you with your job?") or composite measures summing intrinsic and extrinsic facets into an index of overall job satisfaction (e.g., Minnesota Satisfaction Questionnaire).

Job satisfaction has also been defined and measured in terms of *intrinsic* and *extrinsic* dimensions (Warr et al., 1979). Intrinsic job satisfaction refers to the internal state associated with characteristics inherent in a job, such as opportunities for control and the utilization of skills (Clark, Oswald, & Warr, 1996). Extrinsic job satisfaction denotes an external state contingent upon aspects of a job, such as pay and promotions (Hirschfeld, 2000; Spector, 1997; Warr et al., 1979; Weiss et al., 1967). Although intrinsic and extrinsic job satisfaction have been found to be positively intercorrelated (r = .72; Warr et al., 1979), research supports some degree of discriminant validity with intrinsic job satisfaction tending to show stronger associations with job characteristics (Brown, 1996; Wong, Hui, & Law, 1998) and dispositional affect (Judge & Locke, 1993; Necowitz & Roznowski, 1994; Schaubroeck et al., 1996; Watson & Slack, 1993).

The third and most narrow level of scope is *facet-specific* job satisfaction, targeted at one particular aspect of work such as level of pay, working conditions, promotional opportunities, and the type of work. These different facets tend to be measured in terms of intrinsic and extrinsic forms of job satisfaction and are inter-correlated (Warr et al., 1979). In addition to providing more precise theoretical models, "facet satisfaction is often of more practical interest than is global job satisfaction, especially when organizations seek information to guide improvements of specific aspects of the workplace" (Spector, 1997, p. 116).

The Need for a Dimension-Specific Meta-Analysis

Previous meta-analyses (Cheng & Chan, 2007; Sverke et al., 2002) and theoretical frameworks (e.g., Greenhalgh & Rosenblatt, 1984; Hellgren et al., 1999) have tended to conceptualize job satisfaction as a global construct. Cheng and Chan (2007), for example, found a mean corrected correlation of -.43 for overall job satisfaction (*N* = 76260; *K* = 94). Similar results were reported in an earlier meta-analysis by Sverke and colleagues (2002), who found a mean corrected correlation of -.41 for job satisfaction (*N* = 28,885; *K* = 50). In both meta-analyses, studies measuring the separate dimensions of intrinsic and extrinsic job satisfaction were combined with studies using composite and global measures.

The tendency to combine facets of intrinsic and extrinsic job satisfaction into global and composite measures continues despite research consistently demonstrating that intrinsic and extrinsic job satisfaction are conceptually and empirically distinct from global job satisfaction (Bowling, Hendricks, & Wagner, 2008; Highhouse & Becker, 1993; Scarpello & Campbell, 1983) and demonstrate a distinct pattern of correlations with particular job characteristics (Warr, 2007; Wong et al., 1998). As a result, it is unclear whether the magnitude of the correlations reported for job insecurity and overall job satisfaction will generalize to intrinsic and extrinsic dimensions. These findings underscore the need to build more concise theoretical models examining the job insecurity-job satisfaction relationship at the dimension-specific level. De Witte (2005b) recently commented on the need for stronger theoretical frameworks to inform the relationship between job insecurity and psychological well-being, stating:

> The relative lack of theory in job insecurity research could be problematic in the long run. After some years, most associations will have been explored. As a consequence, scientific knowledge will not increase anymore, and the topic could disappear from the research agenda, despite its relevance for society. (p. 42)

Beyond the limitations placed on theory development, the practice of combining conceptually and empirically distinct outcomes may be problematic from a methodological perspective. As Hunter and Schmidt (2004) have stated:

> Measures of different dependent variable constructs should ordinarily not be combined in the same meta-analysis, but if they are, separate meta-analyses should also be reported for each conceptually different dependent variable … In general, meta-analyses that do not mix different independent variables are also more likely to be informative." (p. 469-470)

While Glass (1977; 1981) has argued that broad, mixed meta-analyses of "apples and oranges" may be justified and useful for broad summaries of a research literature, Hunter and Schmidt (2004) argue that "at least initially, meta-analyses … should probably be narrow and focused enough to correspond to the major constructs recognized by researchers in that area. Then, as understanding develops, later meta-analyses may become broader in scope if that is shown to be theoretically appropriate" (p. 470).

In the present meta-analysis, I examine studies measuring overall job satisfaction as either a global or composite construct separately from the distinct dimensions of intrinsic and extrinsic job satisfaction. Since previous research has primarily focused on job loss and job changes insecurity with studies often mixing items from the two dimensions, the definition of job insecurity for this thesis ("concern over the loss of one's job or features of that job") is appropriate for the meta-analysis. A narrative literature review was also conducted to account for longitudinal research and the limited number of studies investigating the independent effects of job changes insecurity.

Meta-Analysis

The statistical technique of meta-analysis was developed as a powerful means of aggregating empirical results across studies and improving the quality and accuracy of conclusions drawn from such studies (Glass, 1976; Hunter & Schmidt, 2004). Meta-analysis yields an estimate of the "true" relationship amongst psychological constructs by statistically correcting for sampling and measurement error as well as other artefacts. As Hunter and Schmidt (2004) have stated, "the data come to us encrypted, and to understand their meaning we must first break the code" (p. xxxi). By quantitatively comparing findings across diverse studies, meta-analysis reveals a definitive pattern of relationships that underlie the research literatures. In this way, the results serve as an empirical building block for theory development and an invaluable precursor to causal model testing by providing a strong empirical basis to substantiate the hypothesized linkages between causal variables.

I will begin the meta-analysis by discussing the methods used to search and gather studies, extract and code relevant information, and the procedure used to meta-analyze the information extracted.

Selection of Studies

Using the keywords "job security" and "job insecurity," I conducted computerized searches for published studies from 1980, when systematic research into job insecurity began (Sverke et al., 2002), to 2008 on the following databases: ABI Inform Global, ERIC, LIBRIS, Medline, Mental Health Abstracts, NIOSHTIC, Proquest, Psych INFO, Sociological Abstracts, Social Science Citation Index, and The Google™ Scholar search engine. I conducted a separate search for book chapters using the

WorldCat database before scanning the reference sections of previous literature reviews (e.g., De Witte, 2005a; Sverke & Hellgren, 2002) and meta-analyses (Cheng & Chan, 2007; Sverke et al., 2002) for relevant citations. Since the most recent meta-analysis by Cheng and Chan (2007) included an issue-by-issue manual search of 15 academic journals published prior to 2006, I manually searched the same journals from 2007 to 2008. These journals included *Academy of Management Journal, Anxiety, Stress and Coping: An International Journal, Applied Psychology: An International Review, European Journal of Work and Organizational Psychology, Human Relations, Journal of Applied Psychology, Journal of Managerial Psychology, Journal of Occupational and Organizational Psychology, Journal of Occupational Health Psychology, Journal of Organizational Behavior, Journal of Vocational Behavior, Psychological Bulletin, Social Science and Medicine, Stress Medicine (Stress and Health), and Work & Stress.*

In addition to published articles, I conducted a separate search for unpublished, peer-reviewed studies including conference papers and dissertations using the following databases: Proquest Dissertation Abstracts International, Australasian Digital Theses Program, OAIster theses repository, and the Theses Canada Portal of Library and Archives Canada. I also sent an e-mail request for relevant unpublished studies to scholars who had been active contributors to the job insecurity literature. Several scholars generously responded to this request often mailing paper copies of studies and providing essential statistics that were absent from the published report.[1] Finally, conference

[1] I wish to thank the following scholars for responding to the request for papers: Dada Adebayo, Marjorie Armstrong-Stassen, Susan Ashford, Neal Ashkanasy, Julian Barling, Terry Beehr, Gary Blau, Alan Carruth, Grand Cheng, Antonio Chirumbolo, Hee Kyoung Chun, Els Clays, Sidney Dekker, Margaret Denton, Rennie D'Souza, Dov Elizur, Jane Ferrie, Michael Frese, Francis Green, Jean Hartley, Johnny Hellgren, Randy Hodson, Cynthia Lee, Saija Mauno, Gisela Mohr, Tuija Muhonen, Michael O'Driscoll, Tahira Probst, William Reisel, Cynthia Rocha, Arie Shirom, Joel Shapiro, Pekka Virtanen, Johannes Siegrist, Katharina Näswall, Diane Vinokur, Pat Voydanoff, Andrea Werner-Leonard, Mina Westman, and Tony Winefield.

programs from 1996-2008 were reviewed for the Academy of Management and the Society for Industrial and Organizational Psychology.

Inclusion and Exclusion Criteria

I included studies in the meta-analysis if they satisfied three criteria. First, the study had to include a measure of subjective job insecurity or job security and at least one measure of job satisfaction (global, composite, intrinsic, or extrinsic job satisfaction) at the individual level of analysis. Second, the sample had to be derived from an English-speaking, working population. Finally, the data had to include either a zero-order correlation coefficient or information that could be converted to an *r* effect size, such as *t*-tests, *F*-tests, and chi-squares.

For those papers providing data from the same or overlapping samples, preference was given to those including more criterion variables, followed by those involving a larger sample, and finally those most recently published. As in Cheng & Chan's (2007) meta-analysis, I excluded articles that used Ashford et al.'s multiplicative JIS. These authors based their decision on research by Evans (1991), who argued that the relationship between such measures and criterion variables is subject to a "scaling effect" that may give rise to spurious results in bivariate correlational analysis. For longitudinal studies, only the first wave of data was considered since too few studies were available to examine differences between time lagged and cross-sectional correlations.

In contrast to the previous meta-analysis by Cheng and Chen (2007), this analysis excluded a total of 15 studies using single-item measures of global job satisfaction based on their questionable psychometric properties relative to multi-item scales (Gorsuch, 1997; Nunnally, 1978; Spector, 1992). In terms of reliability, a recent meta-analysis by

Cheng and Chen (2007) reported a mean reliability of .77 for multi-item job insecurity scales and .46 for single-item measures. A reliability coefficient of .46 is well below the recommended minimum reliability level of .70 (Nunnally, 1978). Moreover, a previous meta-analysis by Sverke et al. (2002) indicated that the negative effect of job insecurity on job satisfaction was stronger when job insecurity was captured by multiple-item than by single-item measures.

The final body of literature consisted of 78 independent studies (9 unpublished dissertations and 69 published studies) representing 101 independent samples and 70,957 employees. The number of independent samples was slightly more than Cheng and Chen's meta-analysis (2007; K = 94) of single-item studies, and included 68 more samples than the meta-analysis by Sverke and colleagues (2002) for multi-item job insecurity scales.

Coding of Studies

All sample characteristics (including correlation coefficients and reliabilities) were initially coded by myself. In order to assess the reliability of this coding, 35 studies were selected at random and coded by a postgraduate student who was briefed on the coding scheme. Overall, the raters reported a high level of agreement across the range of coding criteria (.94 - .99). Inconsistencies that were not due to errors were resolved by discussion.

Each of the independent samples was coded in terms of the following descriptive criteria: year of publication; source of the study (published article or book, unpublished conference paper or dissertation); country in which the study was conducted; sample size; gender (percentage of male and female), mean age, and tenure; the type of population sampled (private sector, public sector, convenience sample, working university students, academic staff, health care workers); type of jobs in the sample (supervisory, non-supervisory, combined); and type of research design (cross-sectional or longitudinal). I also collected information on the type of instruments used to measure job insecurity and job satisfaction as well as the number of items.

Studies measuring job satisfaction were coded as global, composite, intrinsic, or extrinsic job satisfaction. For the minority of studies reporting job dissatisfaction, the direction of the correlation was reversed. The most frequently used measures of job satisfaction were found to be the Minnesota Satisfaction Questionnaire (MSQ; Weiss et al., 1967), Warr, Cook and Wall's (1979) intrinsic and extrinsic job satisfaction scales, the Job Diagnostic Survey (JDS; Hackman & Oldham, 1975, 1980), and the Job Descriptive Index (JDI; Smith, Kendall, & Hulin, 1969). Each of these instruments has demonstrated construct validity (Price, 1997).

Measures coded as global job satisfaction included only facet-free items assessing overall satisfaction with one's job (e.g., "All things considered, how satisfied are you with your job?"). Composite measures were coded as those using a combination of intrinsic and extrinsic items. For those studies that presented specific facets or dimensions, composite correlations were computed by averaging the coefficients across the relevant scales.

While there is considerable overlap in the item content across job satisfaction measures, there is some variability in the allocation of items for intrinsic and extrinsic dimensions. Studies reporting correlation and reliability coefficients for individual facets were coded as either intrinsic or extrinsic dimensions of job satisfaction using Warr, Cook, and Wall's (1979) well-validated measurement model with some minor revisions to establish consistency across the three most popular scales such as the MSQ and JDI. For intrinsic job satisfaction, these facets included "The freedom to choose your own method of working," "Your opportunity to use your abilities," "The recognition you get for good work," "The amount of responsibility you are given," and "The amount of variety in your job." Items coded as extrinsic job satisfaction included satisfaction with the following: pay, chances for promotion, career advancement, supervisor, company policies and practices, and physical working conditions. In order to avoid artificially inflating correlations between job insecurity and extrinsic job satisfaction, I excluded extrinsic job satisfaction measures such as the MSQ that included one or more satisfaction with job security items in computing the average of the separate extrinsic facets.

Meta-Analytic Procedure

I implemented the meta-analysis method developed by Hunter and Schmidt (1990) using a software program freely available to researchers (Schwarzer, 1989). The analyses proceeded in four main steps.

First, the population effect size (or weighted mean r) was calculated using the Hunter and Schmidt (1990) formula, which adjusts each coefficient separately for sample size.

Second, the "true" population effect size (ρ) was calculated using a correction for sampling error and measurement error based on the reliabilities of the predictor and criterion (Hunter & Schmidt, 1990, p. 176). For the few samples where reliability coefficients were not reported, the missing values were coded zero, as required by the

Schwarzer program. The program contains a specific missing value treatment based on the artefact distributions described by Hunter, Schmidt, and Jackson (1982) and allows the necessary corrections in case of incomplete reliability information. The variance in the true population correlations (corrected standard deviation) was then calculated using the Hunter and Schmidt (1990, p. 150) estimate of the difference between the variance of the corrected correlation coefficients and their average squared standard error.

The third step was to describe the variability in the correlations by computing the 80% *credibility* intervals and the 90% *confidence* intervals. Confidence intervals are an estimate of the variability in the mean correlation across studies. A 90% confidence interval indicates 95% confidence that the mean correlation is significantly different from zero (Hunter & Schmidt, 2004). I used the appropriate formula provided by Whitener (1992) to calculate the confidence intervals based on whether the studies in the meta-analysis come from one population (i.e., they are homogenous) (p. 316) or several subpopulations (i.e., they are heterogeneous) (p. 317).

Non-overlapping confidence intervals were used to determine whether mean corrected correlations were significantly different from one another (Cumming & Finch, 2005; Hulsheger, Anderson, & Salgado, 2009). Non-overlapping confidence intervals are a sufficient but not a necessary condition for establishing statistical significance. Thus, even if confidence intervals overlap, values can still be significantly different from one another.

Credibility intervals estimate the variability of the individual correlations across studies as a means of detecting whether moderators are influencing the results of the meta-analysis (Whitener, 1992). That is, the mean corrected effect size reflects the influence of several subpopulations rather than one. The upper and lower limits of the credibility interval are calculated by adding and subtracting the residual standard deviation from the "true" population effect size. The presence of moderators can be inferred if the credibility interval that is obtained straddles zero (Whitener, 1992).

Two other statistical tests recommended by Sagie & Koslowsky (1993) were used to determine whether moderators were present: the Schmidt and Hunter 75% rule (SH-75%) and the Q-statistic. According to the SH-75% rule, if the residual variance is greater than 25% it may indicate that moderators are present and that the studies collected for the meta-analysis come from different sub-populations. The Q-statistic, designed to statistically examine variation across studies, is a chi-squared test with degrees of freedom *K*-1 (where *K* is the number of studies in the meta-analysis). I used the formula provided by Hunter and Schmidt (1990, p. 112) to calculate the Q-statistic. A statistically significant Q-statistic indicates that the samples are heterongeneous (i.e., come from one population).

The "File Drawer Problem"

It has been argued that both narrative and meta-analytic literature reviews are influenced by a publication bias that is expected to result from what has been termed the "file drawer problem" (Rosenthal, 1984). That is, the majority of studies accepted for publication report results that are statistically significant, leaving a presumably large number of relevant studies in the file drawers of researchers. As such, the results of published studies may not be representative of the studies conducted. One statistical procedure to address this problem is the fail-safe N formula developed by Rosenthal (1979) and later refined by Orwin (1983). This technique enables the researcher to calculate the number of missing studies showing zero effect size that would have to exist in order to bring the combined ρ value down to .05, .10, or any other level.

Hunter and Schmidt (2004, p. 448) have called into question the usefulness of Rosenthal's file drawer analysis based on three main problems associated with the technique. First, the authors note that the fail-safe N "typically turns out to be very large, for example, 65,000 (Rosenthal & Rubin, 1978) [and] it is highly unlikely that there are 65,000 'lost' studies on any topic." Second, the technique "is a fixed effect model and therefore yields accurate results only if the underlying correlation (or *d* value) is identical in all studies." Finally, since the ρ value that is initially computed for a set of studies also depends on the fixed effects assumption, this value is often inaccurate. Given these problems and others identified by Begg (1994, p. 406; cited in Hunter & Schmidt, 2004), the fail-safe N procedure was not applied in the present study.

Results

The results of the four meta-analyses are discussed in three main sections: a description of the study, measurement characteristics, and an examination of the main effects of job insecurity on the job satisfaction outcomes. Summary descriptions of studies included in the meta-analyses are provided in Tables 3.1 (global job satisfaction), 3.2 (composite job satisfaction), 3.3 (intrinsic job satisfaction), and 3.4 (extrinsic job satisfaction).

Characteristics of the Studies

Descriptive statistics for the samples indicate that the bulk of empirical research into job insecurity and job satisfaction has been conducted over the past decade. Of the 101 independent samples analyzed, 57% were reported from 2001 to 2008 with another

30% between 1991 and 2000, and only 6% from 1980 to 1990. Six additional samples were derived from a normative study by Weiss and colleagues conducted in 1967. Most of the studies were conducted in the US (50%) and Europe (22%), followed by Canada (15%), Australia (8%), and China (5%). Hong-Kong and Africa each had a single study. The average sample consisted of slightly more women (56%) than men (45%). The mean age and tenure across these samples was 39 and 10 years, respectively. Sample sizes were generally very large, with 23% of the studies reporting samples exceeding 600 participants, 23% reporting samples of 300 to 600, 35% of 151 to 300 participants, 16% of 50 to 150, and only five studies reporting samples of less than 50.

Characteristics of the Measures

The average reliability for job insecurity measures was .78. The majority of samples tended to use study-specific job insecurity measures (*k* = 23) followed by Caplan et al.'s (1975) job future ambiguity scale (JFA) (*k* = 14), the satisfaction with job security subscale of the JDS (*k* = 12), Probst's (2003) Job Security Index (JSI) (*k* = 9), and the MSQ (*k* = 6). A total of 43 independent samples used cognitive job insecurity measures, while 32 samples used measures with at least one affective item.

Global job satisfaction was most frequently assessed by the general job satisfaction subscale of the JDS (Hackman & Oldham, 1974, *k* = 22) and the quality of employment survey (Quinn & Shepard, 1974, *k* = 8). For composite job satisfaction, 15 studies used the MSQ, 10 used the JDI, and five used the JDS. A similar distribution of measures was found for intrinsic job satisfaction with most studies using the MSQ (*k* = 10) followed by the JDI (*k* = 7) and the JDS (*k* = 5). Studies measuring extrinsic job satisfaction also tended to use the MSQ (*k* = 10), the JDI (*k* = 9), and the JDS (*k* = 4).

Table 3.1.

Meta-Analytic Studies on the Relationship between Job Insecurity and Global Job Satisfaction

Study	Source	Country	N	R-rate	% male	% female	Mean age	Mean tenure	JI scale	α	JI items	Satisfaction scale	α	*r*
Abramis (1994)	1	US	281	--	54%	46%	41	--	JFA	-.22	--	Other	.83	-.22
Ashford et al. (1989)	1	US	84	28%	60%	40%	38	9	JFA	-.32	4	JDS	.81	-.32
Axelrod & Gavin (1980; Sample 1)	1	US	37	--	--	--	37	5	JFA	-.66	4	Other	.61	-.66
Axelrod & Gavin (1980; Sample 2)	1	US	33	--	--	--	37	5	JFA	-.13	4	Other	.61	-.13
Burke (1991)	1	CAN	73	20%	86%	14%	--	--	Other	-.29	2	QES	.82	-.29
Burke, R. (1998a)	1	CAN	217	40%	58%	42%	--	--	Other	-.15	4	QES	.85	-.15
Burke & Greenglass (2001)	1	CAN	1351	35%	97%	3%	42	15	SS	-.22	4	QES	.82	-.22
Champoux (1992)	1	US	247	--	50%	50%	--	--	JDS	-.48	2	JDS	.67	-.48
Chirumbolo & Areni (2005)	1	ITY	425	--	51%	49%	37	11	SS	-.19	5	OVERLJS	.86	-.19
Chirumbolo & Hellgren (2003)	1	BEL	1120	37%	65%	35%	37	14	JIS/JISI	-.32	5	OVERLJS	.85	-.32
Chirumbolo & Hellgren (2003)	1	ITY	476	55%	68%	32%	39	13	JIS/JISI	-.25	5	OVERLJS	.87	-.25
Chirumbolo & Hellgren (2003)	1	NETH	799	50%	75%	25%	48	--	JIS/JISI	-.23	5	OVERLJS	.96	-.23
Chirumbolo & Hellgren (2003)	1	SWED	2564	37%	22%	78%	45	14	JIS/JISI	-.11	5	OVERLJS	.82	-.11
Clark (2005)	2	AUS	385	31%	13%	87%	38	5	SS	-.34	5	QES	.78	-.34
Cole (1988)	1	US	212	62%	62%	38%	--	--	JFA	-.25	4	QES	.82	-.25
Colarelli et al. (1987)	1	US	280	60%	61%	39%	23	--	JDS	-.29	2	JDS	.77	-.29
De Cuyper & De Witte (2005)	1	BEL	656	--	39%	61%	35	--	JISI	-.22	4	Price, 1997	.82	-.22
De Cuyper & De Witte (2006)	1	BEL	544	71%	40%	60%	34	--	JISI	-.14	4	Price, 1997	.84	-.14
De Cuyper & De Witte (2007)	1	BEL	447	54%	37%	63%	34	10	JISI	-.17	4	Price, 1997	.85	-.17
Donaldson (1996)	2	CAN	225	33%	18%	82%	42	12	Other	-.14	4	JDI	.91	-.14

Table 3.1 (continued)

Study	Source	Country	N	R-rate	% male	% female	Mean age	Mean tenure	JI scale	α	JI items	Satisfaction scale	α	*r*
Edwards & Rothbard (1999)	1	US	1644	30%	34%	66%	40	--	SS	-.27	4	JDS	.89	-.27
Feather & Rauter (2004)	1	AUS	154	42%	52%	48%	35	7	SS	-.17	3	JDS	.76	-.17
Fields et al. (2005)	1	US	1556	62%	50%	50%	--	9	SS	-.23	2	QES	.73	-.23
Goeddeke (2005)	1	US	498	26%	--	--	48	--	JSI	-.29	18	Other	.82	-.29
Heaney et al. (1994)	1	US	207	41%	92%	8%	41	--	SS	-.34	5	SS	.84	-.34
Hellgren & Sverke (2001)	1	SWED	207	58%	21%	79%	42	10	JIS	-.29	10	OVERLJS	.89	-.29
Hellgren, Sverke & Isaksson (1999)	1	SWED	375	71%	46%	54%	48	21	SS	-.52	4	OVERLJS	.88	-.52
Israel et al. (1989)	1	US	680	66%	90%	10%	43	10	SS	-.35	5	QES	.84	-.35
Ito & Brotheridge (2007; cognitive JI)	1	CAN	600	12%	50%	50%	43	--	SS	-.22	2	JDS	.82	-.22
Ito & Brotheridge (2007; affective JI)	1	CAN	600	12%	50%	50%	43	--	B & E	-.07	2	JDS	.82	-.07
Iverson (1996)	1	AUS	761	74%	26%	74%	34	6	JDS	-.20	3	B & R	.86	-.20
Iverson & Kuruvilla (1995)	1	US	838	57%	21%	79%	38	4	JDS	-.27	3	B & R	.77	-.27
Iverson & Maquire (2000)	1	AUS	286	73%	100%	0%	38	9	JDS	-.40	3	B & R	.85	-.40
Iverson & Roy (1994)	1	AUS	246	32%	100%	0%	34	10	SS	-.15	2	Other	.52	-.15
Jago & Deery (2004)	1	AUS	297	43%	44%	56%	--	--	SS	-.43	3	Other	--	-.43
Kramer et al. (2004)	1	US	140	72%	99%	1%	49	22	Other	-.28	2	JDS	.77	-.28
Landsbergis (1988)	1	US	239	37%	5%	95%	37	6	JCQ	-.22	3	JCQ	.93	-.22
Lee et al. (2006; USA)	1	US	115	--	42%	58%	36	6	JIS	-.28	17	JDS	.81	-.28
Lee et al. (2006; China)	1	CHN	168	63%	39%	61%	29	5	JIS	-.35	17	JDS	.77	-.35
Lee et al. (2007; US MBA)	1	US	73	--	42%	58%	36	6	JFA	-.38	4	JDS	.81	-.38
Lee et al. (2007; China MBA)	1	CHN	178	--	39%	61%	36	5	JFA	-.22	4	JDS	.77	-.22

Table 3.1 (continued)

Study	Source	Country	N	R-rate	% male	% female	Mean age	Mean tenure	JI scale	α	JI items	Satisfaction scale	α	*r*
Lee et al. (2007; China hospitals)	1	CHN	550	81%	--	--	29	6	JFA	.65	4	JDS	.63	-.15
Lee et al. (2007; China bank)	1	CHN	189	85%	--	--	31	10	JFA	.73	4	JDS	.81	-.28
Levanoni & Sales (1990)	1	CAN	191	--	--	--	27	5	JDS	.77	2	JDS	.93	-.44
Lim (1996)	1	US	306	50%	68%	32%	37	7	JFA	.85	4	JDS	.84	-.48
Mäkikangas & Kinnunen (2003; Men)	1	FIN	232	45%	100%	0%	--	--	JFA	.77	4	JDS	.85	-.24
Mäkikangas & Kinnunen (2003; Women)	1	FIN	225	45%	0%	100%	--	--	JFA	.76	4	JDS	.85	-.16
Mansour-Cole (1995)	2	US	315	48%	2%	98%	40	11	JFA/JIS	.82	7	QES	.88	-.44
Meglino et al. (1989)	1	US	171	--	45%	55%	43	15	JDS	.55	2	JDS	.67	-.41
Näswall et al. (2005)	1	SWED	400	71%	9%	91%	43	14	JIS	.82	9	OVERSAT	.87	-.18
Olson (1995)	2	CAN	93	47%	0%	100%	--	--	SS	--	3	SS	--	-.27
Olson & Tetrick (1988)	1	US	3246	--	--	--	--	--	SS	.76	2	SS	.76	-.31
Reisel et al. (2007)	1	US	320	100%	66%	34%	36	4	SS	.80	4	B & R	.92	-.24
Shore & Tetrick (1991)	1	US	330	43%	82%	18%	47	22	JDS	.56	2	QES	.82	-.39
Stepina & Perrewe (1991)	1	US	117	66%	72%	28%	36	3	JDS/MSQ	--	4	JDS	.60	-.45
Storms et al. (2001)	1	BEL	3638	69%	55%	45%	36	--	JS/JCQ	.68	3	JCQ	.77	-.44
Tiegs et al. (1992)	1	US	6405	--	--	--	--	--	JDS	.73	2	JDS	.78	-.48
Tytherleigh et al. (2005)	1	UK	3808	38%	41%	59%	--	--	ASSET	.84	4	ASSET	.74	-.25
Van Dijkhuizen (1980)	1	NETH	578	--	--	--	--	--	JFA	.75	4	Other	.65	-.26
Wilson et al. (2004)	1	US	1130	53%	--	--	--	--	JSS	.79	5	JDS	.81	-.43

Table 3.2.

Meta-Analytic Studies on the Relationship between Job Insecurity and Composite Job Satisfaction

Study	Source	Country	N	R-rate	% male	% female	Mean age	Mean tenure	JI scale	α	JI items	Satisfaction scale	α	*r*
Armstrong-Stassen (2001)	1	CAN	146	43%	3%	97%	44	16	Jick, 1979	.88	6	MSQ	.88	-.18
Armstrong-Stassen (2004)	1	CAN	179	43%	5%	95%	44	17	Jick, 1979	.83	3	MSQ	.90	-.28
Armstong-Stassen et al. (2004)	1	CAN	159	51%	31%	69%	42	15	Jick, 1979	.81	3	MSQ	.83	-.55
Blau (2007)	1	US	228	43%	18%	82%	33	10	Other	.90	7	JDS	.93	-.28
Buitendach & De Witte (2005)	1	--	169	--	95%	5%	36	--	JISI	.84	10	MSQ	.88	-.16
Davy et al. (1997; Study 1)	1	US	300	46%	68%	32%	42	9	JFA	.88	3	MSQ	.86	-.54
Davy et al. (1997; Study 2)	1	US	188	90%	78%	22%	43	13	JFA	.89	3	MSQ	.79	-.48
Davy et al. (1991)	1	US	88	40%	69%	31%	42	9	SS	--	5	MSQ	.87	-.40
Denton et al. (2002)	1	CAN	1311	--	6%	94%	45	6	SS	.86	10	SS	.69	-.37
Goulet & Singh (2002)	1	US	228	61%	38%	62%	38	17	SS	.71	2	JDS	.88	-.39
Hollenbeck & Williams (1986)	1	US	112	--	31%	69%	--	--	JDI	.78	5	JDI	.76	-.17
Keil et al. (2000; Study 1)	1	CAN	204	37%	100%	0%	38	6	Jick, 1979	.87	3	MSQ	.86	-.35
König & Staufenbiel (2006)	1	GRM	143	83%	71%	29%	40	12	B & E	.91	3	JDS	.92	-.24
MacNeil (1994)	2	US	1460	75%	76%	24%	45	20	JSS	.66	7	MSQ	.88	-.49
McFarlane Shore & Tetrick (1991)	1	US	330	43%	82%	18%	47	22	JDS	.56	2	JDS	.82	-.40
O'Neill (2005)	2	AUS	544	89%	83%	12%	41	13	EU/JIM	.82	5	C & W	.82	-.27
O'Neill (2008)	2	CAN	1004	47%	47%	53%	--	7	SS	.90	6	C & W	.83	-.46
Probst (2002)	1	US	283	63%	37%	63%	42	13	JSI	.97	18	JDI	.91	-.24
Probst (2005; steel manufacturing)	1	US	273	58%	71%	29%	32	8	JSI	.73	3	JDI	.85	-.32
Probst (2005; tire manufacturing)	1	US	63	39%	64%	36%	27	5	JSI	.73	3	JDI	.85	-.28

Table 3.2 (continued)

Study	Source	Country	N	R-rate	% male	% female	Mean age	Mean tenure	JI scale	α	JI items	Satisfaction scale	α	*r*
Probst (2005; pharmaceutical)	1	US	184	62%	21%	79%	22	1	JSI	.73	3	JDI	.85	-.10
Probst (2005; software manufacturer)	1	US	73	60%	30%	70%	22	3	JSI	.73	3	JDI	.85	-.27
Probst (2005; food processing plant 1)	1	US	80	46%	57%	43%	32	2	JSI	.73	3	JDI	.85	-.34
Probst (2005; food processing plant 2)	1	US	81	83%	47%	53%	37	2	JSI	.73	3	JDI	.85	-.25
Probst & Lawler (2006; Site 1)	1	US	94	50%	52%	48%	--	--	JSI	.90	18	JDI	.92	-.31
Probst & Lawler (2006; Site 2)	1	US	47	50%	52%	48%	--	--	JSI	.78	18	JDI	.90	-.38
Schaubroeck et al. (1996)	1	US	170	90%	87%	13%	33	10	JDS	.64	2	JDS	.74	-.27
Soylu (2008)	2	TKY	435	27%	50%	50%	--	--	Other	.89	8	Other	.92	-.56
Stewart & Barling (1996)	1	CAN	189	30%	100%	0%	38	10	Other	.70	18	C & W	.77	-.50
Tang et al. (2000)	1	US	295	65%	36%	64%	42	--	SS	.87	5	MSQ	.82	-.54
Weiss et al. (1967; Sample A- Nurses)	1	US	712	--	0%	100%	--	--	MSQ	.71	5	MSQ	.87	-.30
Weiss et al. (1967; Sample B- Supervisor /Managers)	1	US	332	--	50%	50%	--	--	MSQ	.81	5	MSQ	.88	-.43
Weiss et al. (1967; Sample C- Social workers/Teachers)	1	US	357	--	34%	66%	--	--	MSQ	.79	5	MSQ	.86	-.31
Weiss et al. (1967; Sample D- Toy Assemblers/Packers)	1	US	411	--	37%	63%	--	--	MSQ	.79	5	MSQ	.83	-.39
Weiss et al. (1967; Sample E- Office clerks/Secretaries)	1	US	217	--	11%	89%	--	--	MSQ	.76	5	MSQ	.88	-.43
Weiss et. Al (1967; Sample F)	1	US	323	--	100%	0%	--	--	MSQ	.80	5	MSQ	.86	-.35
Winefield (2003)	1	AUS	8101	50%	46%	54%	--	--	SS	.72	4	C&W	.88	-.40
Yeung & Tang (2001)	1	HK	193	77%	0%	100%	--	--	Other	.71	19	MSQ	.71	-.50

Table 3.3.

Meta-Analytic Studies on the Relationship between Job Insecurity and Intrinsic Job Satisfaction

Study	Source	Country	N	R-rate	% male	% female	Mean age	Mean tenure	JI scale	α	JI items	Satisfaction scale	α	*r*
Buitendach & De Witte (2005)	1	AFR	174	--	95%	5%	36	--	JISI	.84	10	MSQ	.74	-.15
Davy et al. (1997; Study 1)	1	US	300	46%	68%	32%	42	9	JFA	.88	3	MSQ	.82	-.43
Davy et al. (1997; Study 2)	1	US	188	90%	78%	22%	43	13	JFA	.89	3	MSQ	.81	-.35
Denton et al. (2002)	1	CAN	1311		6%	94%	45	6	SS	.86	10	SS	.72	-.23
Donaldson (1996)	2	CAN	225	33%	18%	82%	42	12	Other	.79	4	JDI	.82	-.13
Hollenbeck & Williams (1986)	1	US	112	--	31%	69%	--	--	SS	.78	5	SS	.78	-.18
Koustelios et al. (2003)	1	GRE	97	--	30%	70%	27	--	MSQ	.89	5	SS	.89	-.41
McFarlane Shore & Tetrick (1991)	1	US	330	43%	82%	18%	47	22	JDS	.56	2	JDS	.82	-.42
O'Neill (2005)	2	AUS	544	89%	83%	12%	41	13	EU/JIM	.82	5	C &W	.86	-.34
O'Neill (2007)	2	CAN	295	49%	52%	48%	43	12	EU/JIM	.80	5	C &W	.79	-.28
O'Neill (2008)	2	CAN	1004	47%	47%	53%	--	7	JLI/JIM	.90	6	C &W	.86	-.41
Probst (2002)	1	US	283	63%	37%	63%	42	13	JSI	.97	18	JDS	.86	-.12
Probst (2005; steel manufacturing)	1	US	273	58%	71%	29%	32	8	JSI	.73	3	JDI	.87	-.38
Probst (2005; tire manufacturing)	1	US	63	39%	64%	36%	27	5	JSI	.73	3	JDI	.87	-.24
Probst (2005; pharmaceutical)	1	US	184	62%	21%	79%	22	1	JSI	.73	3	JDI	.87	-.11
Probst (2005; software manufacturer)	1	US	73	60%	30%	70%	22	3	JSI	.73	3	JDI	.87	-.34
Probst (2005; food processing 1)	1	US	80	46%	57%	43%	32	2	JSI	.73	3	JDI	.87	-.29
Probst (2005; food processing 2)	1	US	81	83%	47%	53%	37	2	JSI	.73	3	JDI	.87	-.41

Table 3.3 (continued)

Study	Source	Country	N	R-rate	% male	% female	Mean age	Mean tenure	JI scale	α	JI items	Satisfaction scale	α	*r*
Schaubroeck et al. (1996)	1	US	170	90%	87%	13%	33	10	JDS	.64	2	JDS	.69	-.25
Stepina & Perrewe (1991)	1	US	117	66%	72%	28%	36	3	MSQ	.78	4	MSQ	.84	-.49
Tang et al. (2000)	1	US	295	65%	36%	64%	42	--	SS	.87	5	JDS	.83	-.50
Tiegs et al. (1992)	1	US	6405	--	--	--	--	--	JDS	.73	2	JDS	.84	-.51
Weiss et al. (1967 (Sample A - Nurses)	1	US	712	--	0%	100%	--	--	MSQ	.71	5	MSQ	.87	-.32
Weiss et al. (1967 (Sample B - Supervisor nurses/Managers)	1	US	332	--	50%	50%	--	--	MSQ	.81	5	MSQ	.88	-.46
Weiss et al. (1967 (Sample C - Social workers/teachers)	1	US	357	--	34%	66%	--	--	MSQ	.79	5	MSQ	.85	-.34
Weiss et al. (1967 (Sample D - Toy assemblers/Packers)	1	US	411	--	37%	63%	--	--	MSQ	.79	5	MSQ	.84	-.37
Weiss et al. (1967 (Sample E - Office clerks/Secretaries)	1	US	217	--	11%	89%	--	--	MSQ	.76	5	MSQ	.88	-.53
Weiss et al. (1967 (Sample F - Truck drivers/Warehousemen)	1	US	323	--	100%	0%	--	--	MSQ	.80	5	MSQ	.85	-.30
Williams & Cooper (1998)	1	UK	8503	--	--	--	--	--	JS/PMI	.77	5	C &W	.89	-.38

Table 3.4.

Meta-Analytic Studies on the Relationship between Job Insecurity and Extrinsic Job Satisfaction

Study	Source	Country	N	R-rate	% male	% female	Mean age	Mean tenure	JI scale	α	JI items	Satisfaction scale	α	*r*
Andolsek & Stebe (2004)	1	US	737	67%	--	--	45	--	SS	.73	2	WOS/ISSP	.75	-.22
Andolsek and Stebe (2004)	1	UK	537	50%	--	--	46	--	SS	.62	2	WOS/ISSP	.66	-.18
Davy et al. (1997; Study 1)	1	US	300	46%	68%	32%	42	9	JFA	.88	3	MSQ	.70	-.44
Davy et al. (1997; Study 2)	1	US	188	90%	78%	22%	43	13	JFA	.89	3	MSQ	.71	-.31
Donaldson (1996)	2	CAN	225	33%	18%	82%	42	12	Other	.79	4	JDI	.82	-.15
Hollenbeck & Williams (1986)	1	US	112	--	31%	69%	--	--	SS	.78	5	JDI	.75	-.16
Koustelios et al. (2003)	1	GCE	97	--	30%	70%	27	--	MSQ	.89	5	SS	.80	-.38
McFarlane Shore & Tetrick (1991)	1	US	330	43%	82%	18%	47	22	JDS	.56	2	JDS	.82	-.39
Meglino et al. (1989)	1	US	171	--	45%	55%	43	15	JDS	.55	2	JDS	.77	-.37
Probst (2002)	1	US	283	63%	37%	63%	42	13	JSI	.97	18	JDI	.90	-.13
Probst (2005; steel manufacturing)	1	US	272	58%	71%	29%	32	8	JSI	.73	3	JDI	.83	-.27
Probst (2005; tire manufacturing)	1	US	61	39%	64%	36%	27	5	JSI	.73	3	JDI	.83	-.33
Probst (2005; pharmaceutical)	1	US	184	62%	21%	79%	22	1	JSI	.73	3	JDI	.83	-.10
Probst (2005; software manufacturer)	1	US	74	60%	30%	70%	22	3	JSI	.73	3	JDI	.83	-.20
Probst (2005; food processing plant 1)	1	US	80	46%	57%	43%	32	2	JSI	.73	3	JDI	.83	-.39
Probst (2005; food processing plant 2)	1	US	81	83%	47%	53%	37	2	JSI	.73	3	JDI	.83	-.10
Schaubroeck et al. (1996)	1	US	170	90%	87%	13%	33	10	JDS	.64	2	JDS	.79	-.30
Tiegs et al. (1992)	1	US	6405	--	--	--	--	--	JDS	.73	2	JDS	.80	-.43
Tytherleigh et al. (2005)	1	UK	3808	38%	41%	59%	--	--	ASSET	.84	4	ASSET	.84	-.32
Weiss et. Al (1967 (Sample A - Nurses)	1	US	712	--	0%	100%	--	--	MSQ	.71	5	MSQ	.88	-.29

Table 3.4 (continued)

Study	Source	Country	N	R-rate	% male	% female	Mean age	Mean tenure	JI scale	α	JI items	Satisfaction scale	α	*r*
Weiss et al. (1967 (Sample B - Supervisor nurses/Managers)	1	US	332	--	50%	50%	--	--	MSQ	.81	5	MSQ	.88	-.41
Weiss et al. (1967 (Sample C - Social workers/teachers)	1	US	357	--	34%	66%	--	--	MSQ	.79	5	MSQ	.87	-.29
Weiss et al. (1967 (Sample D - Toy assemblers/Packers)	1	US	411	--	37%	63%	--	--	MSQ	.79	5	MSQ	.83	-.42
Weiss et al. (1967 (Sample E - Office clerks/Secretaries)	1	US	217	--	11%	89%	--	--	MSQ	.76	5	MSQ	.88	-.34
Weiss et al. (1967 (Sample F - Truck drivers/Warehousemen)	1	US	323	--	100%	0%	--	--	MSQ	.80	5	MSQ	.87	-.40

Note. *Source:* 1 = published (journal, book); 2 = peer reviewed (conference paper, dissertation); *Country* (where the study was conducted): US = United States; CAN = Canada; AUS = Australia; SWED = Sweden; DEN = Denmark; BEL = Belgium; FIN = Finland; UK = United Kingdom; AFR = Africa; CHN = China; GRM = Germany; NETH = The Netherlands; TKY = Turkey; ITY = Italy; HK = Hong Kong; GCE = Greece; *Job insecurity (JI) scale*: SS = Study-specific - a scale developed for a particular study; Other = scale developed in a previous study with unknown psychometric properties; B & E = Borg & Elizur, 1992; ASSET = Job insecurity subscale of "A Shortened Stress Evaluation Tool" (Faragher, Cooper, & Cartwright, 2004); JISI = Job Insecurity Survey Inventory (De Witte, 2000; 11-items); D & S = Dekker & Schaufeli, 1995; JTS/JIS = Job threat subscale of Job Insecurity Scale (JIS; Ashford et al., 1989); JP/JSS = Job permanence subscale of the Job Security Survey (JSS; Lahey & Kuhnert, 1988; 12-items); JCQ = Job security subscale of Job Content Questionnaire (JCQ; Karasek, 1985; 3-items); JDS = General job security or satisfaction with job security (2 items) subscales of the Job Diagnostic Survey (Hackman & Oldham, 1975;1980); JSI = Job Security Index (Probst, 1998, 2001; 18-items); PMI= Job security subscale of Pressure Management Indicator (Williams & Cooper, 1998); JSI= Job Security Index (Probst, 1998, 2001; 18-items); JDI = Satisfaction with job security subscale of the job diagnostic survey (Smith Kendall & Hulin, 1969; 5-items); MSQ = Satisfaction with job security subscale of Minnesota Satisfaction Questionnaire (Weiss et al, 1967); *Job satisfaction scale*: JDS = Global, intrinsic and extrinsic subscales of the JDS (Hackman & Oldham, 1975; 1980); QES = Quality of Employment Survey - Job satisfaction subscale (Quinn & Shepard, 1974; 5-items); OVERLJS = Overall job satisfaction (De Witte, 2000; Hellgren et al., 1997); JDI = Intrinsic and extrinsic subscales of the JDI (Smith Kendall & Hulin, 1969); JDS= General job satisfaction subscale from Job Diagnostic Survey (Hackman & Oldham, 1975; 5-items); WORKDISSAT = Work dissatisfaction (Caplan et al., 1975; 6-items); B & R = Brayfield & Rothe, 1951; JCQ = General job dissatisfaction subscale of the JCQ (Karasek, 1985; 5 items); WOS/ISSP = Work Orientations Survey-International Social Survey Programme; 1997; 2 extrinsic items-management & colleagues); ASSET = Global or extrinsic job satisfaction subscales of the ASSET (pay and benefits, work relationships). C & W = Cook & Wall (1979) intrinsic and/or extrinsic job satisfaction scales.

Main Effects

A summary of the meta-analysis results for job satisfaction criteria are presented in Table 3.5. Included in the tables are the number of studies investigating each relationship (*K*), the total number of individuals from these samples (*N*), the sample size weighted mean correlation (*r*), the correlation corrected also for measurement error (*ρ*), the estimated population standard deviation (*SD*), the fail-safe *N*, the 80% credibility intervals and 90% confidence intervals, and the two tests for homogeneity of correlations (i.e., percentage of variance explained by artefacts and the chi-square test). When describing the strength of effect sizes, the specifications provided by Cohen (1969) for small (.1), medium (.3) and large (.5) population correlations were used.

Table 3.5.

Meta-Analysis of the Relationship between Job Insecurity and Job Satisfaction

Criterion variable	K	*N*	*r*	*ρ*	SD*ρ*	Fail-Safe *N*	80% CV LL	80% CV UL	90% CI LL	90% CI UL	Sampling error variance	$\chi^2_{(K-1)}$
Global job satisfaction	59	43284	-.31	-.40	.14	33	-.68	-.12	-.64	-.58	7.65%	771.20*
Composite job satisfaction	38	19706	-.39	-.48	.08	36	-.64	-.31	-.79	-.74	20.42%	186.10*
Intrinsic job satisfaction	29	23459	-.40	-.49	.11	29	-.71	-.27	-.81	-.74	9.49%	316.12*
Extrinsic job satisfaction	25	16467	-.35	-.45	.10	19	-.64	-.25	-.72	-.54	14.68%	170.32*

Note: K = number of samples; N = combined sample size; *r* = weighted mean correlation; *ρ* = estimated "true" score correlation; SD*ρ* = corrected standard deviation; CV = credibility interval; CI = confidence interval; LL = lower limit; UL = upper limit. *p< .001.

Global Job Satisfaction

As indicated in Table 3.5, the population effect of job insecurity on global job satisfaction was of a medium strength (ρ = -.40; *K*= 59; *N* = 43284) and considerably higher than the weighted mean (*r* = -.31), demonstrating the impact of correcting for attenuation of the predictor and criterion. This finding is consistent with the previous meta-analysis by Sverke et al. (2002; ρ = -.41) and Cheng and Chen (2007; ρ = -.43).

Considerable variability in the strength of correlations was found across studies investigating global job satisfaction. The majority of studies (*K*=34) found small to moderate correlations, such as Burke and Greenglass's (2001) study on a sample of 1363 Canadian nurses (*r* = -.22). Similar results were reported by De Cuyper and De Witte (2005) for a Belgium sample (*r* = -.22), Abramis (1994) for a US sample (*r* = -.22) and Feather and Router (2004) for an Australian sample (*r* = -.17).

There were, however, some studies (*K*=13) reporting a weak relationship between job insecurity and global job satisfaction. For instance, one of the largest studies investigating global job satisfaction, by Chirumbolo and Hellgren (2003), found a correlation of -.11 for a national sample of 2564 blue-collar Swedish employees. Other large-sample studies conducted in China (Lee et al., 2005; *n* = 550); Canada (Donaldson, 1996; *n* = 225), and Australia (Iverson & Roy, 1994; *n* = 246) reported correlations of -.15, -.14, and -.15, respectively.

An equal number of studies (*K* = 13) reported moderate correlations exceeding .40. For instance, Lim (1996) investigated levels of job future ambiguity (Caplan et al., 1984) in a group of 306 US MBA graduates and found a correlation of -.48 with the general job satisfaction subscale of the JDS (Hackman & Oldham, 1984). Not surprisingly, the strongest correlations were reported for three of the largest study samples with the least susceptibility to sampling error or restricted ranges. For instance, Tiegs et al. (1992) reported a correlation of -.48 for satisfaction with job security and the general job satisfaction of the JDS based on Oldham, Hackman, and Stepina's (1979) normative database of 6405 workers from multiple industries and occupational levels.

Composite Job Satisfaction

A stronger population effect was found for studies using composite job satisfaction measures (ρ = -.48) based on 38 samples and 19,706 individuals. A comparison of this correlation with the weighted mean (*r* = -.39) demonstrates a considerable increase in the magnitude of the association after correcting for attenuation of the predictor and criterion measures.

Studies using measures of composite job satisfaction generally reported moderate correlations. For example, Probst (2005) reported small to moderate correlations between her cognitive JSI and the Job Descriptive Index (JDI; Smith, Kendall, & Hulin, 1969) based on survey data for five US samples representing the industries of steel manufacturing (*r* = -.32, *n* = 273), tire manufacturing (*r* = -.28, *n* = 63), software manufacturing (*r* = -.27, *n* = 73) and two food processing plants (Plant 1: *r* = -.34, *n* = 80; Plant 2: *r* = -.25, *n* = 81). Probst's sixth sample of 184 employees from the pharmaceutical industry was the only exception, reporting a weak correlation of -.10. Once again, studies reporting the strongest correlations tended to use the largest samples. The largest study for composite job satisfaction was conducted by Winefeld (2003) on a national Australian sample of 8101 academic and non-academic professionals. This study found a correlation of -.40 for a study-specific measure of job insecurity and Cook and Wall's (1979) intrinsic and extrinsic job satisfaction scale.

For global and composite job satisfaction, the sampling error variance was below 25% (global = 7.65%; composite = 20.42%) and the Q statistic was statistically significant, indicating that that the correlations obtained in the different samples are heterogeneous (come from different subpopulations). The difference in the upper and lower limits of the 80% credibility interval is quite large, thus indicating the presence of moderators.

Intrinsic and Extrinsic Job Satisfaction

Of all of the job satisfaction criteria, the corrected relationship between job insecurity and intrinsic job satisfaction was the strongest (ρ = -.49) based on 29 independent studies and 23,459 individuals. A somewhat lower corrected correlation was found for extrinsic job satisfaction (ρ = -.45; K= 25; N=16467). By contrast, the weighted mean correlations for intrinsic job satisfaction (r = -.40) and extrinsic job satisfaction (r = -.35) are considerably lower. Intrinsic and extrinsic job satisfaction both had stronger associations with job insecurity than global job satisfaction (ρ = -.40).

The relatively small difference between intrinsic and extrinsic job satisfaction is consistent with the qualitative review, where neither intrinsic nor extrinsic job satisfaction consistently demonstrated a more profound relationship with job insecurity. For instance, in one of the largest studies reviewed, Tiegs and colleagues (1992) found a correlation of -.51 for global job insecurity and intrinsic job satisfaction compared to -.43 for extrinsic job satisfaction. Conversely, Tang et al., (2000) surveyed a smaller sample of 295 US workers and found a slightly higher correlation for extrinsic job satisfaction (r

= -.59) relative to intrinsic job satisfaction (r = -.51), both of which were measured by the JDS.

With a statistically significant Q statistic, a considerable difference in the 80% credibility intervals, and sampling error variance that exceeded 25%, the results indicate the presence of moderators for both intrinsic and extrinsic job satisfaction.

Narrative Literature Review

Job Changes Insecurity and Job Satisfaction

As previously mentioned, it was not possible to conduct a separate meta-analysis on the relationship between job changes insecurity and job satisfaction. However, I gained insight into the magnitude of this relationship relative to job loss insecurity from a narrative review of the literature.

Research by Ashford et al. (1989) and Davy et al. (1997) found that the likelihood of losing one's job and features of that job were both related to job satisfaction and turnover intention. Kinnunen et al.'s (1999) longitudinal study spanning almost three years examined the influence of global job loss insecurity and the probability of negative job changes (Ashford et al., 1989) on emotional exhaustion and sickness absence. Using structural equations modelling, the researchers found that only job changes insecurity evaluated at Time 1 predicted emotional exhaustion (a dimension of burnout) at Time 2 (β= .25), which increased sickness absence at Time 3 (β = .27). Similar results were reported by Lee, Bobko, and Chen (2006), who administered Ashford et al.'s (1989) scale to a US (n =100-115) and Chinese (n =168-190) sample and found stronger correlations with global job satisfaction for the job features insecurity scale (US = -.28; China = -.35) relative to job loss insecurity (US = -.19; China = -.18).

In a rare longitudinal study investigating job satisfaction, Hellgren, Sverke and Isaksson (1999) used multiple regression analyses to examine the independent effects of job loss and job changes insecurity (referred to as quantitative and qualitative job insecurity, respectively) on overall job satisfaction after controlling for PA and NA. After entering job loss and job changes insecurity at Time 1, only PA emerged as a statistically significant predictor of job satisfaction at Time 2, resulting in a slight decrease in the predictive strength of qualitative job insecurity. The study also found that perceived job satisfaction remained relatively stable over time. While both qualitative and quantitative job insecurity predicted mental and physical health, only qualitative job insecurity predicted job satisfaction. These findings support the causal influence of PA on job satisfaction and the direct impact of job changes insecurity on job satisfaction even after controlling for mood dispositions.

Longitudinal Research

Of the limited number of longitudinal studies uncovered in this review, job insecurity has been shown to have significant effects on job satisfaction (Heaney et al., 1994; Hellgren et al., 1999) and mental strain (Hellgren et al., 1999; Iverson & Sabroe, 1988; Roskies et al., 1993) over time, even after controlling for baseline levels of these outcomes. These findings suggest that the effects of job insecurity grow stronger as the time of exposure increases. Others have provided longitudinal evidence indicating that job insecurity is detrimental to mental health only when the levels of self-reported insecurity are sustained for at least one year (Arnetz et al., 1991; Ferrie et al., 1998).

Hellgren and Sverke (2003) used structural equation modelling to analyze a two-wave longitudinal data set and found a significant cross-lagged effect of job insecurity on mental health complaints one year later, while the reverse effects of mental strain on subsequent job insecurity were non-significant. This study also controlled for five potentially confounding demographic variables at Time 1, including gender, age, organizational tenure, family status, and education. Mental health complaints were predicted by gender ($\gamma = -0.16$; $p < 0.05$) (with men reporting fewer health complaints than women); organizational tenure ($\gamma = -0.16$; $p < 0.05$); and family status ($\gamma = -0.16$; $p < 0.05$). Only education was predictive of job insecurity ($\gamma = -0.26$; $p < 0.05$). Age was unrelated to job insecurity or the two health measures. This study required a third wave of data to provide an adequate test of causal predominance.

Other studies have provided insight into the influence of organizational restructuring on the relationship between job insecurity and psychological well-being. For instance, Nelson, Cooper, and Jackson (1995) studied the impact of privatization of a major public sector organization ($N = 332$) and found that levels of job satisfaction and mental and physical health declined significantly during the transition and then improved after the reorganization. Perceptions of future uncertainty and external locus of control predicted job dissatisfaction, but only during the reorganization period. Based on these results, the authors concluded that "uncertainty seems to affect job satisfaction only when there is a promise of real upheaval" (p. 68). Another study by Ferrie and colleagues (2002) examined the change in job insecurity (measured by a single item) and its impact on psychological distress in a restructuring organization over two and half years. The results showed that the adverse effects of job insecurity increased with chronic exposure to the stressor and remained even after the restructuring had ended.

Overall, the aforementioned studies demonstrate the pervasive and enduring effects of job insecurity on psychological well-being. They have, however, relied on two waves of data and, in most cases, a series of hierarchical regressions, which prevented the researchers from determining the causal ordering of the variables. I am aware of only a single longitudinal study by Garst, Frese, & Molenaar (2000) that uses more than two data points and cross-lagged analyses to investigate the causal predominance of job insecurity and psychological well-being. Using six waves of data over five years, Garst and colleagues (2000) employed multivariate latent growth curve modelling and found that job insecurity generally predicted depression and psychosomatic complaints. However, there was also partial support for reverse causation. As Hellgren and Sverke (2003) have noted, although Garst and colleagues collected more than two waves of longitudinal data, no attempt was made to test for reciprocal causation. Additionally, the study did not control for NA, which may act as a common third variable producing spurious or partially spurious relations between stressors and strains (Zapf, Dorman, & Frese, 1996).

As discussed in Chapter I, studies are particularly susceptible to third variable effects attributable to NA when the independent and dependent variables both measure affect directly: for instance, the Hellgren and Sverke (2003) study, which employed a unidimensional job insecurity instrument directly measuring negative affective states such as feeling “worried” and “uneasy” about the prospect of job loss. By using such items, it is possible that NA may have accounted for a considerable portion of variance in job insecurity and mental health complaints. Based on a clear rejection of a structural model specifying interindividual differences, Garst and colleagues’ conclusion was that "there was no stable factor, be it negative affectivity or some other nonmeasured factor, that could explain all common variance between stressors and strain" (p. 431). However, the authors also acknowledged that "because we only tested for a complete interindividual differences model, there may still be some partial impact (e.g., negative affectivity) that was not captured in this model" (p. 431).

To my knowledge, only one study has examined the longitudinal effects of job insecurity on intrinsic and extrinsic facets of job satisfaction. Probst (2002) investigated the impact of organizational change on job security and job satisfaction using two waves of longitudinal data (n = 96) collected over a six-month period. Because layoffs are typically accompanied by pay decreases, lack of promotion opportunities, and demotions, Probst (2002, p.146-147) theorized that "employees with low job security will be less satisfied with their pay and promotion opportunities than individuals with high job security. However, job insecurity perceptions are not predicted to influence satisfaction with work, co-workers, or supervision because these latter facets are not likely to change as a direct result of higher or lower job security." As hypothesized, the results of structural equations modelling supported a direct longitudinal relationship between job insecurity and extrinsic but not intrinsic job satisfaction. Once again, however, two waves of data prevented a test of reciprocal causation.

A more rigorous test of causal relations requires a three-wave longitudinal data set using structural equations modelling (SEM), which enables the researcher to test for alternative causal models and takes into consideration the biasing effect of measurement error (Pedhazur & Pedhazur-Schmelkin, 1991; Willet, 1989). To my knowledge, no longitudinal study has used more than two waves of data to test alternative causal models of job insecurity and job satisfaction using SEM. Moreover, the two studies that have employed cross-lagged panel analyses examined mental strain rather than job satisfaction and neither controlled for dispositional affect.

Summary and Conclusions

The present meta-analysis sought to synthesize and clarify over three decades of research into the relationship between job insecurity and job satisfaction. Using a robust meta-analytic procedure, I examined the relative impact of job insecurity on overall job satisfaction (global and composite) and intrinsic and extrinsic job satisfaction. The results showed moderate negative associations between job insecurity and the four job satisfaction criteria. Job insecurity demonstrated a stronger negative association with intrinsic, extrinsic, and composite job satisfaction relative to global job satisfaction. These results suggest that greater explanatory power can be attained by measuring the separate dimensions of intrinsic and extrinsic job satisfaction and that a distinct pattern of relationships is occurring at the dimension-specific level.

While both intrinsic and extrinsic job satisfaction showed moderate correlations with job insecurity, a stronger association was found for intrinsic job satisfaction. However, since researchers have combined items measuring job changes and job loss insecurity and relied on cross-sectional studies, the relative impact of these correlated but distinct constructs on intrinsic and extrinsic job satisfaction remains unclear. Elucidating the causal strength and direction of these relationships requires a longitudinal examination using measures with robust psychometric properties. The results further indicate the presence of moderators for the four job satisfaction criteria examined.

Studies investigating the relationship between job changes insecurity and job satisfaction have reported statistically significant correlations of a moderate strength. Both cross-sectional and longitudinal studies comparing the influence of job loss and job changes insecurity on job satisfaction and psychological distress have generally found stronger correlations for job changes insecurity. However, the inconsistent measurement of job changes insecurity and the limited longitudinal research has prevented definitive conclusions from being made on the strength and direction of its causal relationship with job satisfaction. Although the longitudinal study by Hellgren et al. (1999) provides preliminary support for the causal precedence of job changes insecurity on job satisfaction, a three-wave longitudinal design is required to determine the sequential pattern of relationships. Moreover, since previous research has relied on global job satisfaction measures, little is known about how a person's insecurity over job changes and job loss might influence their intrinsic or extrinsic job satisfaction, or vice versa.

These studies make a strong case for researchers to incorporate dimension-specific measures of job satisfaction and job insecurity in order build more concise and theoretically meaningful explanatory models. Monitoring intrinsic and extrinsic dimensions of job satisfaction would also benefit organizations interested in identifying specific dimensions of work that are most adversely impacted by job insecurity. For instance, practitioners can determine i) whether overall dissatisfaction with one's job is attributed to intrinsic or extrinsic aspects of the job and ii) the extent to which job insecurity is contributing to dissatisfaction in either area. Information at this level of specificity is potentially of greater use to senior decision makers in guiding efforts to combat job insecurity.

A narrative review of the literature revealed two main concerns associated with the job insecurity–job satisfaction relationship. The first, which was addressed in Chapter II, is the inconsistent and inadequate measurement of job insecurity, where the most frequently used measures are study-specific with little if any psychometric evaluation. Several studies used single-item measures, which, in addition to a lack of validity and reliability, have been found to underestimate the strength of the relationship between job insecurity and several outcomes (Sverke & Hellgren, 2002). While some studies have employed more rigorous measures, there is very little consistency in the measurement models employed. Because of the diverse range of instruments assessing global job insecurity, cognitive or affective job insecurity, and job loss or job features insecurity, comparisons across studies are highly problematic. It is, indeed, difficult to argue that all of these measures are associated with a core job insecurity construct. By clearly delineating the four dimensions of job insecurity, the new measure developed in Chapter II should enable more definitive conclusions to be made on the relationship between job insecurity and individual and organizational outcomes.

A second concern is the limited number of longitudinal studies that have been conducted in the job insecurity domain: particularly with respect to job satisfaction, where no study has acquired more than two waves of panel data and employed covariance structure analysis to examine alternative causal models. There is, however, some longitudinal evidence for the enduring effects of job insecurity on job satisfaction and psychological distress even after controlling for these variables at Time 1. Preliminary support has also been found for the temporal precedence of job insecurity with respect to mental strain (Garst, Frese, & Molenaar, 2000; Hellgren & Sverke, 2003).

Interestingly, the single longitudinal study by Probst (2002) investigating the influence of job insecurity on intrinsic and extrinsic facets of job satisfaction found a statistically significant effect for extrinsic job satisfaction only.

From these findings, one would expect the causal relationship to flow from job insecurity to job satisfaction rather than the reverse. However, since previous longitudinal studies have generally relied on two waves of data and hierarchical regression, inferences regarding the strength and direction of causation are limited. These limitations were raised in a meta-analytic review by Sverke et al. (2002), who concluded, "To properly address how job insecurity causally relates to other factors (antecedents, moderators, and outcomes), more longitudinal research efforts are needed … more elaborate cross-lagged panel designs would make a valuable contribution to the literature" (p. 17).

Chapter VII builds on previous cross-sectional research by examining the longitudinal relationship between job insecurity on intrinsic and extrinsic job satisfaction using a three-wave longitudinal data set and SEM. A second objective of this chapter is to test the hypothesized influence of dispositional PA on job satisfaction and NA on job insecurity. Before these structural relationships can be examined longitudinally, the stability of the job insecurity and job satisfaction dimensions over time will need to be established in Chapter V and theoretical hypotheses developed in Chapter VI. In the following chapter, I will describe the methodology employed in these final two analyses.

CHAPTER IV

METHODOLOGY

"Lie in ambush behind appearances, patiently, and strive to subject them to laws. Thus may you open up roads through chaos and help the spirit on its course."
— Kazantzakis (1960, p. 120)

In the previous chapter, a meta-analytic review was conducted to determine the cross-sectional relationship between job insecurity and intrinsic and extrinsic job satisfaction. In this chapter, I describe the samples, data collection procedures, measures, and analytical strategy used to examine the causal relationships between dispositional affect, job insecurity, and job satisfaction over time. The use of survey data and the analysis of sample attrition, structural invariance and longitudinal causal modelling are the key elements of the research methodology.

Sample

In March of 2005, I sought to recruit an organization to participate in the longitudinal survey project by mailing over 275 letters of invitation to Corporate Executive Officers (CEO) and Human Resource Directors from an annual list of "Canada's Largest 300 Companies" (Financial Post, 2005). Additionally, I sent a group e-mail to the membership directory of the Canadian division of the Society for Industrial and Organizational Psychology (C-SIOP) and individual e-mails to members of the Society for Industrial and Organizational Psychology (SIOP) after gaining approval from the senior administrators.

Five organizations expressed interest in the research project and of those a formal agreement was secured with the Human Resources Director of a media and entertainment company based in North America. The present research formed part of a broader survey initiative I conducted aimed at helping the organization “better understand how its employment policies and current work environment affect employee well-being and organizational performance over time”. In return for the organization’s participation, I agreed to produce a final report outlining the survey results and recommendations.

At the time of data collection, the company consisted of approximately 2,500 employees and was divided into four divisions, including Corporate, Content, Radio, and Television with locations across the country. The workforce was comprised of eight major job categories: Executive, Senior Manager, Manager, Supervisor, Creative, Professional, Support and Technical staff. With several geographically dispersed radio and television stations, the respondents are likely to have varying levels of exposure to organizational changes, which was expected to maximize individual variation in perceived job insecurity. The organization was chosen for the study based on its size, senior management’s commitment to the research and workforce heterogeneity.

A significant challenge in conducting longitudinal field research is the rate of attrition that occurs due to factors such as employee turnover, transfer, absenteeism and dissatisfaction with the use of previous survey findings. While Anderson and Gerbing (1988) recommend a minimum sample size of 150 in order to enable a meaningful interpretation of structural equation modelling results, Hoetler (1983) considers 200 a critical sample size. Given the expected 30 to 50 percent attrition rate in longitudinal research (Schaie & Hertzog, 1982; Visser, 1982), I anticipated a population size of 2000 or more would be required to achieve a final longitudinal sample of at least 200 respondents. With approximately 2500 incumbents, the sample organization exceeded the target population size. A description of the organization and how the data sets were used at different points in the analysis are illustrated in Figure 4.1.

The longitudinal research project lasted approximately 3.5 years with longitudinal data collected in 12 month intervals, once in November 2006 (n = 1,185), again in November 2007 (n = 1,010) and finally in November 2008 (n = 793). As the largest sample, the Time 1 data set was designated the 'Validation Sample' and was used to establish the construct validity of the job insecurity measurement model described in Chapter II. From the main data set, 110 of the cases with missing information or univariate outliers were eliminated resulting in 1004 cases available for subsequent analyses. Using a listwise deletion procedure, this main sample was randomly split into two equal samples of n = 502 each.

Anderson and Gerbing (1988) recommend the random assignment of two subsamples where one sample is used to develop the measurement model and the other to validate the solution obtained. In line with this recommendation, one of these samples (n = 502) was used in its entirety to perform exploratory factor analysis (EFA). Subsample 2 was then randomly split into two equal subsamples of n = 251 each, and utilized for confirmatory factor analysis (CFA). One of these two samples was designated the calibration sample and the other the cross-validation sample. The cross-validation procedure involved a series of invariance tests, as specified by Bollen (1989), where conditions of equality were placed on the calibration and cross-validation samples.

Data from respondents who completed all of the survey measures on all three occasions formed the 'Longitudinal Sample' used to test for longitudinal invariance and causal relations between job insecurity, job satisfaction and dispositional affect.

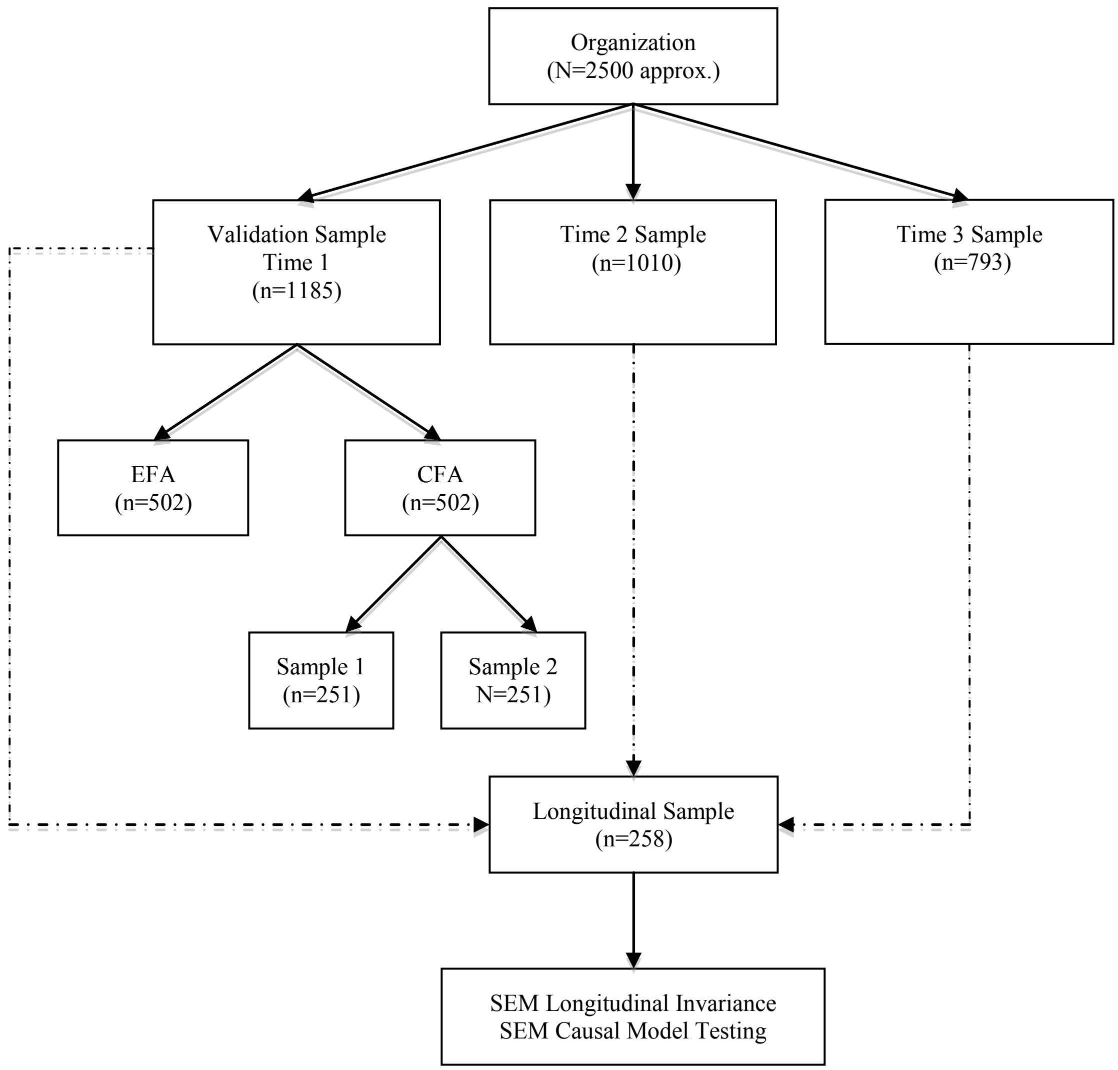


Figure 4.1. Samples and Sub-Samples used for Statistical Analyses.

Sample Demographics

Outlined in Table 4.1 are the demographics for the Time 1, 2 and 3 samples and the longitudinal sample. The demographics of the longitudinal sample were similar to those of the Time 1, 2 and 3 samples. Moreover, a review of personnel data provided by the Human Resources department of the host organization indicated that the longitudinal sample was representative of the organization in terms of gender distribution, average age, tenure, employment status (full-time, part-time, temporary/casual) and level of employment.

With a mixture of occupations spanning seven levels of employment, the longitudinal data set contains a high degree of occupational heterogeneity. Specifically, the sample was comprised of 38% professionals, 10% senior managerial or executive personnel, 19% middle managers, 6% supervisors, 16% Human Resources and administrative support, 10% technical staff and tradespersons, and 1% labourers. The sample was roughly split in terms of gender (53% male; 47% female) and the average age and tenure of respondents was 42 years and 10 years, respectively. The majority of respondents were employed full-time (93%), were non-union members (94%), and held either a post-secondary diploma (37%) or a University degree (33%).

Table 4.1.

Sample Demographics

	Longitudinal Samples Time 1	Time 2	Time 3	Matched Sample
Total respondents	1185	1010	793	258
(Response rate %)	(47%)	(40%)	(32%)	-
% Survey type				
English	91.6	94.2	93.9	100%
French	8.3	5.7	6.0	-
Mean age years	38.5	38.2	39.4	42.0
(Standard Deviation)	(10.7)	(11.6)	(10.6)	(10.9)
Mean tenure years	6.6	7.1	7.5	10.0
(Standard Deviation)	(7.0)	(7.3)	(8.6)	(8.0)
% Gender				
Male	46.6	51.4	49.1	52.7
Female	53.4	48.6	50.9	47.3
% Employment Status				
Full-time	89.3	94.4	94.0	92.6
Part-time	5.3	3.6	2.7	5.0
Temporary/Casual	4.7	2.0	3.2	2.3
Missing	.8	-	-	-
% Highest Level Education				
High school	6.9	7.2	7.9	8.9
Certificate (e.g. Technical College)	11.4	10.4	14.3	12.8
Trade Qualifications	1.8	1.3	2.2	1.2
Diploma	39.2	38.5	35.6	39.5
University Degree	32.8	31.2	33.3	27.9
Masters, PhD	3.2	2.8	3.7	2.7
Other	4.7	8.7	2.9	7.0
% Level of Employment				
Senior Manager/Executive	9.8	9.7	11.0	9.7
Middle Manager	16.5	17.0	18	19.4
Supervisor	5.0	4.0	3.9	6.2
Professional	39.9	43.6	43.6	38.0
HR/Administrative support	17.6	13.9	13.7	15.9
Technical/Tradesperson	9.8	10.7	7.9	10.1
Labourer and related	1.4	1.0	2.0	.8
% Union Membership				
Union member	8.9	7.8	6.3	6.2
Non-union member	91.1	92.2	93.7	93.8

Sample Attrition Analysis

Of the 1,004 respondents who completed the Time 1 survey, 258 cases successfully completed all three waves of data collection. Given the substantial rate of attrition over time, differences are to be expected in the longitudinal sample relative to those who have dropped out of the study. Of particular interest in the present study was the level of PA, NA, job insecurity and job satisfaction for the select group of individuals who remained in the organization. In order to determine whether there were statistically significant differences between those individuals who left the organization and those who stayed, a comparison was made between the mean scores on study variables at Time 1 with the scores of those belonging to the longitudinal sample. This analysis provided a profile of respondents most likely to complete all three waves of data collection.

A series of independent *t*-tests were performed on each of the variables of interest. Table 4.2 presents the results of the *t*-tests used to test for differences between the longitudinal respondents (n = 258) and non-respondents (n = 657). The original sample of non-respondents was reduced from 746 cases due to missing data. As indicated in the table, mean levels of extrinsic job satisfaction, PA, NA, and marginalization insecurity were consistent across the samples. However, the longitudinal sample had significantly higher levels of intrinsic job satisfaction and lower levels of insecurity over job loss and job changes.

Table 4.2.

Demographics at Time 1 between Longitudinal Respondents and Non-Respondents

Variable	Longitudinal Respondents (n = 258)	Longitudinal Non-Respondents (n = 657)	df	Analysis	*p*
				t	
Job loss insecurity	2.92 (1.40)	3.33 (1.57)	913	-.3662	.01
Job changes insecurity	2.75 (1.36)	3.02 (1.43)	913	-2.605	.01
Marginalization insecurity	2.20 (1.39)	2.48 (1.52)	913	-2.567	n.s
Intrinsic job satisfaction	5.42 (1.03)	5.15 (1.20)	913	3.181	.01
Extrinsic job satisfaction	4.32 (1.43)	4.13 (1.43)	913	1.808	n.s
NA	1.41 (.60)	1.53 (.71)	913	-2.399	n.s
PA	3.52 (.79)	3.48 (.82)	913	0.671	n.s

Note: n. s = not statistically significant; Critical values for two-tailed tests of significance are $t = 2.576$, $\alpha = .01$; Bonferroni adjustments for the family-wise test of significance were made to t-tests for the three job insecurity constructs, intrinsic and extrinsic job satisfaction, NA and PA.

Procedure

Survey Communications and Marketing

Several communication strategies have been found to enhance survey response rate and the quality of responses, including extensive pre-survey communications and marketing, reminder strategies, prize incentives, staff involvement and CEO endorsement (Jepson & Langford, 2002; Kraut, 1996). Given the importance of sample size in longitudinal research each of these tactics was incorporated into the data collection process.

A comprehensive consultation process was conducted prior to the data collection. A group of key representatives from a range of occupational categories and across employment levels was assembled on a voluntary basis. The purpose of this 'survey committee' was to act as a communication medium between the researcher and staff and to promote active participation in the project. The survey committee for the longitudinal sample consisted of six members representing different occupational levels. Teleconferences and in-person meetings were held with the committee on an ongoing basis to discuss issues related to survey design, implementation and project logistics. The survey went through an extensive review process by the committee prior to the survey administration.

Information on the survey objectives, data collection procedure, confidentiality and anonymity of data, and survey feedback process, was disseminated as broadly as possible to staff. The communications and marketing departments of both organizations were engaged to help produce and distribute posters, pamphlets, company newsletters, and postings on the company's intranet site. In addition, every effort was made to involve management and staff at all levels in the survey project, answer any questions and discuss the survey process and objectives. For instance, I travelled to several geographically dispersed locations to give presentations on the survey project. A video of this presentation along with the CEO's endorsement of the project was incorporated into a separate organization-wide training module to ensure widespread exposure to all locations.

Data Collection

All three waves of longitudinal data were collected through a comprehensive on-line questionnaire comprised of well-established measures with proven validity and reliability (Appendix C). The survey took approximately 30 minutes to complete, at which point each participant was invited to submit a 'lottery ballot' at a separate website. Respondents were informed that those who submitted ballots for all three phases of the survey would be automatically entered into a random draw for prizes including a $1,500 gift certificate towards a spa getaway for two, a $500 gift certificate towards fitness club memberships, and two $100 gift certificates redeemable at four popular Canadian retail stores. Contest rules were posted on the company intra-net site. The posting reminded staff that contact information provided on the lottery website could not be linked to survey responses since the websites and databases were independent.

Psychometric instruments relevant to the present study were repeated at each administration of the survey. At the end of each survey was an open-ended question asking respondents to provide comments on how they would like to see the organization improve. An average of 391 respondents provided qualitative comments across the three survey administrations. A date-of-birth code (day/month/year) was also requested in order to match responses longitudinally. Respondents were assured that, if they chose to volunteer their date of birth, their responses would remain confidential. Within the longitudinal sample, 87% of respondents reported their date of birth at Time 1, 91% at Time 2 and 93% at Time 3. For the pilot sample, 96% of respondents volunteered their date of birth.

For each of the three surveys an e-mail invitation with links to an English and French survey was sent to approximately 2,500 employees with e-mail addresses. Given the small proportion of French surveys submitted, and in the absence of a rigorous translation procedure (e.g., back translation and pre-test) only data from the English surveys were included in the analyses. Although respondents were given the option of completing a paper copy of the survey and mailing it to the author along with their lottery ballot, no staff chose this option. The e-mail inviting staff to complete the survey included a cover page signed by the CEO endorsing the survey initiative, linking it to broader corporate objectives, and encouraging employees to complete it. Recipients were also reminded of the prize incentives and the deadline for completion. The survey link was active for approximately one month with a reminder e-mail sent two-weeks after the initial invitation followed by a final reminder on the last day the survey was accessible. For the Time 3 survey, a fourth reminder was sent in order to ensure a sufficient number of matched responses were obtained.

The Time 1 survey was made available to employees from November 6 to December 14, 2006. A total of 1,185 surveys were submitted representing 47% of the employees who received the questionnaire (2,500). A total of 1,110 employees submitted the Time 2 surveys from November 14th to December 5th, 2007 for a response rate of 44%. Of these cases, 449 (40%) could be matched by date of birth to Time 1. The Time 3 survey was active from November 3rd to December 16th, 2008 resulting in a 32% response rate (n = 783) of which 258 (33%) could be linked to the matched sample for Time 1 and 2. Although these response rates are modest for voluntary surveys of this nature (Jepson & Langford, 2002) this is understandable in the present context given the sensitive nature of the information collected, the impact of survey fatigue (two other annual surveys were administered concurrently), and organizational dynamics such as downsizing and restructuring over the course of data collection.

Chronology of Longitudinal Events

Table 4.3 provides a chronological account of the key milestones for the research project along with pivotal events within and outside of the organization that are likely to have influenced perceptions of job insecurity and job satisfaction over the course of the project. The table is designed to provide a historical context in which the study was conducted. Of particular relevance to this thesis are corporate restructuring and downsizing (including the sale or acquisition of television and radio stations), in addition to changes in the state of the economy.

Almost a year prior to the Time 1 survey (November 6, 2006), two radio stations were eliminated in January, 2005 resulting in an unreported number of layoffs. Closer to the first wave of data collection was an announcement that the Content and Television divisions would be restructured with no indication of layoffs (September 12, 2006). This was followed by the acquisition of new radio stations (October 2, 2006) and the closure of another (November 20, 2006). While no layoffs were reported, these changes may have raised some concerns over job loss and future job changes, particularly in the Content and TV divisions.

In September 2007, just prior to the Time 2 survey (November 14, 2007), 53 employees were made redundant following the restructuring of the Television and Content divisions. These layoffs occurred in spite of the company reporting its highest revenue and profits to date. Human resource managers reported that the rationale for the planned redundancies was communicated to all terminated employees and remaining employees well in advance. The acquisition of one radio station and the sale of another in June and July of 2007, respectively, may have also elevated concerns over future job loss and job changes.

Although no layoffs occurred between the Time 2 and 3 survey administrations, two television stations and one radio station were acquired and one station was sold during this 12-month period. Of particular relevance to the Time 3 survey results was the dismal state of the economy with an official announcement of a global recession by the International Labour Organization (ILO) in December 2007 at the mid-point of the Time 3 administration (November 3 to December 16, 2008).

Table 4.3.

A Chronology of Significant Events throughout the Longitudinal Research Project

Date	Significant Event	Description
2005		
Jan	Closure	Company announces radio station closure
March	Sample recruitment begins	Approx. 275 letters of invitation mailed to CEOs and HR Directors from a list of Canada's largest 300 companies Group e-mails sent to SIOP and C-SIOP administrators
2006		
March-June	Planning and coordination	Formal agreement signed and survey committee assembled Meetings with survey committee to agree on project objectives, survey content and deliverables
Sept - Oct	Peer review of preliminary Job Insecurity Measure (JIM)	JIM reviewed by survey committee of the host organization
Sept	Revenue announcement	Company reports highest revenue & segment profit to date
Sept	Restructuring	Company announces new organizational structure for T.V and Content divisions
Oct	Acquisition	Two radio stations acquired
Nov - Dec	Survey communications & marketing	Distributed posters, brochures and newsletters announcing survey purpose, launch date, and prize draw Researcher delivers regional survey presentations
Nov	Closure	Company announces closure of 2 radio stations
Nov 6 - Dec 14	*Time 1 Survey*	E-mail invitation sent with survey link & CEO cover letter 1,185 surveys submitted for a 47% response rate
2007		
June - July	Acquisition	Company acquires three radio stations
July	Radio station sale	Company sells radio station
Sept	Revenue announcement	Company reports highest revenue and segment profit to date
Sept	Corporate Restructuring	Company announces restructuring of Content and T.V divisions resulting in 53 layoffs.
Nov 14 -Dec 5	*Time 2 Survey*	E-mail invitation sent with survey link & CEO cover letter 1,110 surveys submitted for 40% response rate
2008		
March	Acquisition	Company announces agreement to purchase T.V. station
Sept	Revenue announcement	Company reports increases in consolidated revenue and earnings per share increase from previous fiscal year
Sept-Oct	Acquisition and closure	Acquired a major T.V station and sold a radio station
Nov 3-Dec 16	*Time 3 Survey*	E-mail invitation sent with survey link & CEO cover letter 793 surveys submitted for 32%% response rate
2009		
Jan – May	Final data analysis, survey feedback & final report	Feedback presentations with senior executives, management and staff; Survey report distributed to all staff

Ethical Considerations

A number of important steps were taken to ensure the study complied with all requirements for conducting ethical research as stipulated by Curtin University of Technology's Human Rights Committee. Information related to the confidentiality and anonymity of responses was communicated to staff on the cover page of the survey and in preliminary communications (e.g., focus groups, brochures). First, all staff were reminded that participation was voluntary and were made aware that the completed surveys and related data belonged to the researcher and would remain completely confidential. Neither of the organizations requested information about individuals at any time during or after the study. Second, none of the questionnaires could be traced to the participants. Instead, participants were identified to the researcher via a date-of-birth code and demographic data denoting their occupational classification and field, necessary for the purposes of the research. Since only the organization had access to personnel data, neither the researcher nor the organization could link survey results to individuals. Third, electronic survey data was kept in password-protected files accessible only by the researcher. Finally, survey results were only reported for groups of 15 or more employees to ensure the privacy and integrity of the data collected. The contact information of the researcher was also provided so that any questions or concerns raised by participants could be addressed in a timely fashion.

Online Survey Technology

Following a comprehensive review of online survey providers and software programs, the provider chosen for the study was surveymonkey.com[2]. This online survey

[2] Based on feedback from the survey committee that the name of the survey provider may have been viewed by staff as unprofessional, the web-link was changed to surveymk.com.

tool has been used extensively in field research due to its technical reliability, affordability, and the range of features offered. Of particular importance for the present study are those features that maximize the response rate and ensure the ethical requirements of confidentiality and anonymity of responses are met. First and foremost, the provider adheres to a strict privacy policy and applies exhaustive measures such as sophisticated encryption methods to ensure data are kept secure and confidential. In addition, the survey software keeps track of the computer linking to the site. This means that the respondent can leave the survey at any point and by clicking the same link return to where he or she left off. Also, only one individual can complete the survey on a given computer, which acts as a deterrent against non-sampled persons completing the survey or individuals attempting to complete the survey more than once in a given administration. Finally, at any point in the administration process, the researcher can download an up-to-date spreadsheet containing qualitative and quantitative data but with no information that may compromise the anonymity of respondents.

Instrumentation

Psychometric instruments employed in the longitudinal study were: Job insecurity, positive and negative affectivity, and intrinsic and extrinsic job satisfaction. Instruments designed to measure these constructs along with biographical information are described in greater detail below. All of the measures have been used previously in Industrial and Organizational Psychology research and can be found in the source documents provided. The average alpha reliability coefficient across the three longitudinal samples is reported for the job insecurity and job satisfaction subscales.

Since NA and PA were only measured at Time 1, alpha coefficients for these variables were based on the Time 1 matched data set.

Job Insecurity

The 18-item final job insecurity measure (JIM) developed and validated in Chapter II was used to assess the four dimensions of job insecurity. *Job loss insecurity* and *job changes insecurity* were both measured with six-item scales, while *marginalization* and *organizational survival* were tapped using three items each (refer to Chapter II for details of items). The alpha coefficients for these scales are .89, .89, .87, and .88, respectively. Items were rated on a seven-point scale and scoring for the four subscales was based on a simple, unweighted average of the scale items.

Intrinsic and Extrinsic Job Satisfaction

Items were sampled from the job satisfaction scale developed by Warr, Cook & Wall (1979) consisting of 15 items. Measurement is on a seven-point scale ranging from 1 (“Very inaccurate”) to 7 (“Very accurate”). In order to reduce the number of manifest variables to be tested using covariance structure analysis, three indicators were used to assess specific facets of intrinsic job satisfaction (satisfaction with responsibility given, use of abilities, and variety in the job; $\alpha = .82$) and extrinsic job satisfaction (satisfaction with: pay, promotion, and career path; $\alpha = .82$). Preliminary exploratory factor analyses identified these items as loading exclusively onto their target factors.

Positive and Negative Affect

Positive and negative affect was assessed by the Positive and Negative Affectivity Schedule (PANAS) (Watson et al., 1988). This well-established scale contains a list of 20 mood-relevant adjectives, 10 indicating positive and 10 indicating negative mood states (positive and negative mood states are largely uncorrelated; *r* = -.03 in the present study). Each participant is instructed to "indicate to what extent you generally feel this way, that is how you feel on average" with responses made on a five-point scale ranging from 1 (very slightly or not at all) to 5 (extremely). For the present study, the use of all 20 items resulted in problems with model fit. Consequently, four 'marker' indicators were chosen for PA (interested, excited, inspired, and determined; α = .83) and NA (afraid, scared, nervous, and jittery; α = .82).

Biographical Measures

A range of personal information was requested from respondents including: gender, age, organisational tenure, education, employment level, employment status (Full-time, Part-time, Fixed Term Contract), marital status (married or currently living with a partner/unmarried), union membership (yes/no), supervisory status (yes/ no), and occupational classification.

Data Analysis

This section outlines the broad analytic framework used to examine the hypothesized structural model. The section begins with an overview of the quantitative data analysis procedure and statistical programs applied before describing the indices used to assess the 'fit' of the longitudinal model. While these indices mirror those used to examine the measurement model, they are described in greater detail here with specific reference to the longitudinal model testing.

Overview

The data analysis began by employing multi-wave, multi-variable modelling to examine the stability of the job insecurity and job satisfaction dimensions as well as the structure of the measurement scales and the reliability of scale items over time. This analysis provides empirical evidence that the construct is measured and interpreted in a commensurate way across multiple time periods and under different conditions (Hoyle & Smith, 1994).

Having determined the longitudinal invariance of the job insecurity and job satisfaction dimensions, the next step in the analysis involved assessing the causal relations between these variables and dispositional affect. Following the 'two-step model building' procedure proposed by Anderson and Gerbing (1988), the first step was to empirically confirm the discriminant validity of the job insecurity-job satisfaction measurement model using CFA. These findings combined with evidence supporting the longitudinal invariance of the measurement model, establishes the viability of the measurement model for testing structural relationships.

The analysis then proceeded to Step 2 of Anderson and Gerbing's (1988) model building strategy. That is, the hypothesized structural relations between dispositional affect, job insecurity and job satisfaction were tested longitudinally using structural equation modelling (SEM). Where measures and theories have not been tested previously, Anderson and Gerbing recommend that the measurement model be specified in a separate estimation procedure prior to the simultaneous estimation of the measurement and structural models. This is done in order to avoid the interaction effects between the measurement and structural model and allows more accurate relationships to be observed (Hair, Anderson, Tatham, & Black, 1992).

Causal Modelling

In contrast to cross-sectional studies, a repeated measures longitudinal design enables the researcher to empirically evaluate causal relationships by ruling out alternative hypotheses related to the causal ordering of variables (Frese, 1985). Also, by tracing participant responses over time the researcher is able to control for individual differences. As Lieberson (1985) asserts, "longitudinal data provide the only fully appropriate 'test' of a causal proposition's validity". Although two-waves of longitudinal data can provide insights into causal relations over time, three waves are required to test for reciprocal causation (Pedhazur & Pedhazur-Schmelkin, 1991; Willet, 1989). As Ployhart and Vandenberg (2010) argue two data points are insufficient because and all change from Time 1 to Time 2 is by default linear (i.e., a straight line), and it is impossible to determine the form of change over time (Rogosa, 1995). It is merely an increment of difference between two times, and thus we cannot assess whether change was steady or delayed or whether it plateaued and then changed again (Singer & Willett, 2003).

Several researchers have cautioned against over-attributing causation (Anderson & Gerbing, 1988; Bentler & Speckart, 1979; Taris, 2000) noting that longitudinal analyses by themselves cannot *prove* causation. Rather, causal *inferences* can be made when there is sufficient association between variables, when one variable clearly precedes another, and when there is no plausible alternative cause for the outcome (Frese, 1985; Williams & Podsakoff, 1989; Zapf et al., 1996). These inferences are strengthened by performing a full panel design with an adequate time lag, testing for structural stability over time, and using covariance structure analysis (Frese & Zapf, 1988; Williams &

Podsakoff, 1989; Zapf et al., 1996). Few studies in the job insecurity literature have employed structural equation modelling (SEM) for testing longitudinal effects. Several researchers (Williams & Podsakoff, 1989) advise the use of SEM instead of simpler techniques because SEM can: i) account for correlated measurement errors over time; ii) estimate different types of causation simultaneously in a multi-variable/multi-wave model; and iii) control for CMV and third variable problems (Zapf et al., 1996). Further, SEM can be used for determining causal priority or causal predominance of structural relationships. For instance, if lagged effects of both job insecurity and job satisfaction are found, SEM can be used to test whether the auto-regressive, reversed or reciprocal causal relationship is predominant (Byrne, 2006; Rogosa, 1980).

Statistical Programs

EQS Version 6.1 (Bentler, 2005) was employed for Confirmatory Factor Analysis (CFA) and Structural Equation Modelling (SEM). One important advantage of EQS, over alternative statistical packages such as LISREL and AMOS, is its accommodation for violations of multivariate normality using the Satorra-Bentler chi-square adjustment, a pre-condition for the use of maximum likelihood (ML) estimation methods. Although multivariate normality is a critically important assumption in SEM (Byrne, 2006), data sets with non-normal distributions are common in the behavioural sciences (Micceri, 1989), making these EQS corrections particularly advantageous. Although other SEM software have asymptotically distribution free (ADF) methods to accommodate non-normal multivariate data, the S-B chi-square has been shown to perform as well or better than such methods (Byrne, 2006). Beyond correcting for non-normality, the EQS program also provides an index of multivariate skewness and kurtosis - Mardia's normalized estimate - which indicates how much the model departs from normal distribution theory methods of structural modelling. These features, along with the relative ease with which models can be built and executed, support the use of EQS in the present study.

Goodness of Fit Indices

The appropriateness of the measurement and structural models will be examined using several indices of fit. Global assessments of fit will be based on the Satorra-Bentler scaled statistic (S-Bχ^2) and the difference in S-Bχ^2 and degrees of freedom. The S-Bχ^2 was developed as an alternative to the χ^2 statistic which is sensitive to sample size and has been found to generate a significant result even when cases have a relatively poor fit to the data (Bentler & Bonett, 1980). To address this limitation, the S-Bχ^2 incorporates a scaling correction for the χ^2 statistic when distributional assumptions are violated. Its computation takes into account the model, the estimation method, and the sample kurtosis values (Hu, Bentler, & Kano, 1992). Moreover, the S-Bχ^2 has been shown to provide a closer approximation of χ^2 than the uncorrected test statistic, to have robust standard errors, and to perform as well or better than the usual asymptotically distribution-free methods generally recommended for non-normal multivariate data (Bentler, 1992; Chou, Bentler, & Satorra, 1991; Curran, West, & Finch, 1996). Following the recommendation of Curran and colleagues, both the ML χ^2 and the S-Bχ^2 are reported in the present study when there is reason to suspect that the data are not multivariate normal.

Given the known dependency of the chi-square statistic on sample size (Bentler & Bonett, 1980; Jöreskog & Sörbom, 1989), several alternative incremental fit indices that take a more pragmatic approach to the evaluation process have been recommended

(Bollen & Long, 1993; Marsh, Balla, & McDonald, 1988). In this study, the “2-index presentation strategy” recommended by Hu and Bentler (1999, p.5) was adopted to minimize Type 1 and Type 2 error rates. The two indices chosen are the Comparative Fit Index (CFI), based on the Bentler-Bonett normed fit index (NFI), and the Standardised Root Mean Residual (SRMR). The CFI is derived from the comparison of a restricted model (i.e., one in which the structure is imposed on the data) with the null model, and as such provides a measure of complete co-variation in the data. An added feature of the Robust CFI (RCFI), also offered by EQS 6.1, is its capacity to adjust for degrees of freedom in the model and corrects for multivariate non-normality in the data. Both the CFI and RCFI are reported in the present study. Ranging from zero to 1.00, a CFI value equal or greater than .95 indicates a “well-fitting” model while a lower limit of .08 is considered acceptable (Byrne, 1994a). As a complement to the RCFI, which is used to identify model misspecifications in factor loadings, the SRMR is the second index used to capture misspecifications factor co-variances. Values below .08 for the SRMR are deemed acceptable (Hu & Bentler, 1999), while those less than .05 would indicate a well-fitting model (Byrne, 2006). Values above the .08 cut-off would indicate a misspecification of the model contributing to overall model misfit.

A third index chosen is the root mean square error of approximation (RMSEA), which compares model discrepancy with population parameters and provides confidence intervals to evaluate model fit. The RMSEA is relatively independent of sample size, and unlike other indices exhibits distributional properties that are known. This feature allows models to be tested on the basis of confidence intervals (CI). Point estimates of .05 or less indicate a good fit, while a value between .05 and .08 would represent reasonable fit

(Browne & Cudeck, 1993). MacCallum, Browne, and Sugawara (1996) noted that RMSEA values ranging from 0.08 to .10 suggest a mediocre fit while values above .10 indicate poor fit.

Point estimates, however, cannot capture the degree of imprecision in estimating this fit, as MacCallum et al. (1996) have observed. These researchers have presented a framework for evaluating model fit based on confidence intervals. Narrow confidence intervals suggest a more precise assessment of fit. When the entire 90% CI of the RMSEA is below .05 the decision is made to reject the hypothesis of “not-close fit” but not of “close fit”. By contrast, when the entire CI interval is above .05, the hypothesis of “close fit” is rejected but not that of the “not-close fit”. When the CI “straddles” .05 the decision is more ambiguous since both hypotheses of “close fit” and “not-close fit” cannot be rejected (i.e., both are plausible).

However, in order to determine whether a hypothesis about model fit is false, adequate power needs to be demonstrated. For this to occur, power analysis for tests of model fit require the specification of null and alternative hypotheses, and these translate into an effect size (i.e., the extent to which the null hypothesis is incorrect). MacCallum et al. (1996), have provided calculations for power and determination of sample size when the null hypothesis is $\leq .05$, the alternative hypothesis is equal to .08, using an alpha level of .05, and a power of .80. All model fit evaluations will be based, therefore, on the MacCallum et al. (1996) framework, after demonstrating adequate power and sample size.

Importantly, measurement and structural models can be modified on the basis of the parameter estimates, standardized residuals and modification indices (Hair, Anderson, Tatham, & Black, 1992). However, these modifications should be made where sound theoretical reasons are provided for doing so (Byrne, 2006).

Summary

In summary, this chapter has provided an overview of the sample, procedures, instrumentation, statistical analysis and programs used to test the hypothesized structural model. In the next chapter, I describe the first step in the analysis, the examination of longitudinal invariance.

CHAPTER V

LONGITUDINAL INVARIANCE OF JOB INSECURITY AND JOB SATISFACTION

> "…researchers should no longer treat stable measurement continua as a given, particularly in research in which the focus is on the measurement of change."
>
> — Vandenberg & Self (1993, p. 567)

Chapter II provided evidence in support of a four-dimensional job insecurity measurement model. Confirmatory factor analyses of cross-sectional data established the validity and reliability of four correlated but distinct scales capturing insecurity concerning job loss, job changes, marginalization, and organizational survival. These scales further demonstrated measurement invariance across two independent samples. Important distinctions between global, intrinsic and extrinsic job satisfaction were then examined in Chapter III followed by a meta-analytic review of their associations with job loss and job changes insecurity.

In this chapter, multi-wave, multi-variable modelling is employed to examine the stability of the job insecurity and job satisfaction dimensions as well as the structure of the measurement scales and the reliability of scale items over time. The analysis sought to determine whether the same dimensions and latent variables are driving participants' responses across time waves. It is now widely recognized that the ability to meaningfully interpret longitudinal analyses becomes compromised to the extent that unstable measurement exists (Meredith, 1993; Schaubroeck & Green, 1989; Schmitt, 1982; Vandenberg & Lance, 2000; Vandenberg & Self, 1993). By failing to test for longitudinal invariance we are assuming that the measurement continua remain the same on each occasion when in fact these constructs may have undergone change. For instance, experiences encountered over time may cause individuals to redefine the latent construct or alter how the measurement scale is interpreted (Golembiewski, Billingsley, & Yeager, 1976; McArdle, 2007; Schmitt, 1982; Vandenberg & Self, 1993). Thus, in order to avoid "comparing apples with oranges", the researcher must ensure that the construct is measured and interpreted in a commensurate way across multiple time periods and under different conditions (Hoyle & Smith, 1994).

Although few in number, some longitudinal studies support the stability of job insecurity and job satisfaction over time with statistically significant correlations between baseline measures of job insecurity and measures of job satisfaction at a second point in time (Dekker & Schaufeli, 1995; Heaney et al., 1994; Hellgren & Isaksson, 1999; Probst, 2002). Using SEM, Hellgren and Sverke (2003) and Kinnunen et al., (2003) found empirical support for longitudinal models where job insecurity at Time 1 influenced subsequent job insecurity one year later. However, the use of only two waves of data prevented these studies from testing a third possibility; that of a cumulative effect where job insecurity experienced at Time 1 continues to influence job insecurity at Time 3, in addition to the effects at Time 2.

In a rare study using more than two waves of data, Mauno, Leskinen and Kinnunen (2001) analyzed the stability of a four-item global measure of job loss insecurity (e.g., "I am worried about the probability of being fire") and a shortened version of Ashford et al.'s (1989) Job Insecurity Survey (JIS) using a three-wave longitudinal data set (N = 109) and SEM. While the global job insecurity scale and two of the JIS scales (*importance* and *powerlessness*) demonstrated stability and reliability over time, the *probability of job changes* scale could not be estimated longitudinally. It must be noted that items from the original job changes scale measuring specific job features (e.g., promotion, quality of supervision, sense of community, status in the organization) were excluded from the analysis in favour of changes to the job as a whole (e.g., layoffs, job transfer, shift to part-time status, salary cuts). One limitation of this study noted by the authors is its particularly small sample size.

Analyzing structural invariance and stability is especially relevant to the present study where longitudinal events, such as the economic recession, subsequent downsizing, and management's response to these events, may have caused respondents to redefine the meaning of job insecurity and job satisfaction or their measurement scales. For instance, employees may have an initial understanding of what job insecurity is, but after experiencing threats to their job they come to believe, due to the economic crisis, that job insecurity is a more serious matter than they had previously thought. Without evidence that the multidimensional experience of job insecurity and job satisfaction are stable over time, subsequent mean comparisons and causal associations cannot be legitimately drawn (Lloyd, 2010; Vandenberg & Lance, 2000). Thus, determining the structural invariance and stability of these scales was considered a necessary prerequisite to testing the hypothesized structural model. Having previously established the measurement invariance and reliability of the job insecurity scales using cross-sectional data and given the known psychometric properties of the job satisfaction scales, it was expected that these measures would demonstrate structural invariance and stability.

Method

A detailed description of the three-wave longitudinal sample (n = 258 for T_1 T_2 and T_3), data collection procedure, and measurement instruments related to the present analyses was provided in Chapter IV (Methodology). To reiterate, three indicators drawn from Warr, Cook & Wall's (1979) job satisfaction measure were used to assess intrinsic job satisfaction (satisfaction with responsibility given, use of abilities, and variety in the job; $\alpha = .82$) and extrinsic job satisfaction (satisfaction with pay, promotion and career path; $\alpha = .82$) based on exploratory factor analyses.

Statistical Analyses

Multi-wave, multi-variable (MWMV) models were used to analyze the structure and stability of the multi-dimensional job insecurity construct using EQS 6.1. The longitudinal structure of the dimensions were assessed through confirmatory factor analysis and invariance analysis procedures as reported by Alanen, Leskinen, and Kuusinen (1998), and applied by Mauno and Kinnunen (2000), and Mauno, Leskinen, and Kinnunen (2001).

Each of the four job insecurity constructs was tested individually in four steps. A joint analysis was not performed because the evidence of stability would have been obscured by having too many parameters. That is, including all of the constructs in a single model could result in a good fit and yet not all of the independent stability tests. First, a model (Model 1.0) was generated without the imposition of longitudinal constraints (i.e., lambda or λ), or the freeing of theta delta (i.e., Time 1 indicators) or theta epsilon (Time2 and T3 indicators) error covariances (e.g., $\theta\delta_{1.1}$, $\theta\delta_{2.1}$, $\theta\varepsilon_{1.1}$, $\theta\varepsilon_{2.1}$, etc.). Second, the error covariances of each indicator across time were set free (Model 1.1), if these were shown to be statistically significant. Such systematic measurement errors have been shown to correlate substantially over time, due to retest or other effects (Ecob, 1987; Jöreskog & Sörbom, 2001). Third, in Model 1.2 the factor loadings were constrained equal over time (e.g., $\lambda x_{1.1} = \lambda y_{2.1} = \lambda y_{3.1}$). Fourth, in

Model 1.3 in addition to the conditions imposed on Steps 2 and 3, the path coefficients gamma and beta, linking the identical construct between Time 1 and Time 2 and between Time 2 and Time 3, were set equal (e.g., $\gamma_{1.1} = \beta_{1.1} = \beta_{2.1}$).

Within the nested model procedure, these above four consecutive models were tested for equality of the constrained parameters through chi-square difference tests, that is, the likelihood-ratio chi-square statistic, and the Satorra-Bentler (2001) scaled chi-square, which corrects for multivariate non-normality of the data. In addition, for a more comprehensive evaluation of each model, the following supplementary indices of absolute fit were consulted: the standardized root mean square residual (SRMR), and the root mean error of approximation (RMSEA). An incremental fit index was also used, the comparative fit index (CFI), which compares the estimated model with a Null or Independence model. These indices were introduced earlier to the reader. To compare alternative models, a rule-of-thumb measure of “fit”, the normed chi-square, tests for parsimony by examining the ratio of chi-square divided by the degrees of freedom (Jöreskog, 1969). For this index a ratio of less than 2 represents a close fit.

Results

Job Loss Insecurity

For the *job loss* dimension, Table 5.1 shows the results associated with Model 1.3, where the following values were obtained: RCFI = .963, SRMR .058, and RMSEA = .060 with the 90% confidence interval (CI) ranging from 0.48 to .071. Since these values for the RMSEA index straddle .05, the recommended upper limit of the CI according to MacCallum, Browne, and Sugawara (1996), the hypothesis of a reasonably good fitting model cannot be rejected. All point estimates exceeded the recommended values (Hu & Bentler, 1999), and collectively these results suggest an adequate fit to the data.

The reliability coefficients for the individual manifest variables at Time 1 ranged from .45 to .67, and these continued to be adequate during subsequent administrations; that is, these reliabilities ranged from .56 to .64 at Time 2, and from .60 to .70 at Time 3, showing a slight improvement in reliability over time. For the job loss manifest variable, that is the scale, the Cronbach alpha coefficients at the three measurement points were $\alpha_1 = .884$, $\alpha_2 = .900$, and $\alpha_3 = .915$.

The standardized path coefficients .69 and .73 shown in Figure 5.1, between the same measurements over time, may be interpreted as correlations. These values are high, and Table 5.1 also shows that a participant's evaluation of job loss to be invariant over the three administrations of the survey. The stability coefficients for the latent construct over time indicate that insecurity over job loss remained relatively stable during this period, as the chi-square difference tests showed (i.e., the minimum fit function chi-square, and the S-B scaled chi-square difference tests), even when the loadings of the indicators were constrained to be equal longitudinally. Furthermore, Figure 5.1 shows that 48% of the variance in job insecurity at Time 2, and 54% of the variance at Time 3 was explained by the previous measurement.

Overall, the equality of stability coefficients has been supported, and the inclusion of the job loss dimension, within a more expanded structural model in subsequent analyses, is appropriate.

Table 5.1.

Stability of the Job Loss Insecurity Dimension

Models	χ^2	df	$\Delta\chi^2$	Δdf	S-Bχ^2	ΔS-Bχ^2	Δdf	RCFI	SRMR	RMSEA
Null	3,248.637	153	--	--	--	--	--	--	--	--
Model 1.0	631.279	133	--	--	531.029	--	--	.871	.060	.108 (.098, .117)
Model 1.1	255.112	116	376.167^{***}	17	222.089	257.220^{***}	17	.965	.050	.060 (.048, .072)
Model 1.2	270.671	125	$15.559^{n.s.}$	9	240.538	$15.205^{n.s.}$	10	.963	.058	.060 (.048, .071)
Model 1.3	271.047	126	$0.376^{n.s.}$	1	240.997	$0.376^{n.s.}$	1	.963	.059	.060 (.048, .071)

Note 1: χ^2 = minimum fit function chi-square; S-Bχ^2 = Satorra-Bentler scaled chi-square; RCFI = robust comparative fit index; SRMR = standardized root mean square residual; RMSEA = root mean square error of approximation. * = $p < .05$, ** = $p < .01$, *** = $p < .001$; n.s. = difference not statistically significant.

Note 2: Model 1.0 = factor loadings unequal, β-coefficients unequal, no error auto-covariances; Model 1.1 = factor loadings unequal, β-coefficients unequal, error auto-covariances estimated; Model 1.2 = factor loadings longitudinally equal, β-coefficients unequal; Model 1.3 = factor loadings longitudinally equal, β-coefficients equal. Comparisons are between Model 1.0 and Model 1.1, Model 1.1 with Model 1.2, and Model 1.2 with Model 1.3.

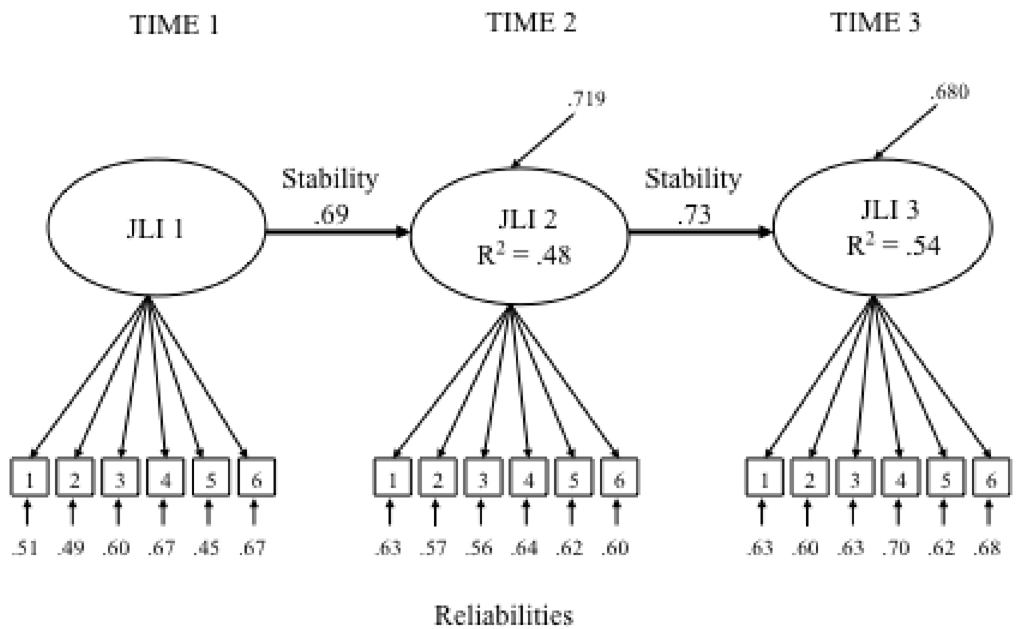


Figure 5.1. Three-wave analyses of the job loss insecurity (JLI) dimension showing stability coefficients and indicator reliabilities of the construct over occasions.

Job Changes Insecurity

Table 5.2 shows the stability results of the *job changes* dimension. For Model 1.3 the following values were obtained: RCFI = .969, SRMR .064, and RMSEA = .052 with the 90% confidence interval (CI) ranging from 0.40 to .063. Since these values for the RMSEA index straddle .05, MacCallum et al. (1996) have suggested that the hypothesis of a reasonably good fitting model cannot be rejected. Also, all point estimates exceeded the recommended values (Hu & Bentler, 1999), and collectively these results suggest an adequate fit to the data.

The reliability coefficients for the individual manifest variables at Time 1 ranged from .49 to .72, and these continued to be adequate during subsequent administrations; that is, these reliabilities ranged from .52 to .77 at Time 2, and showing only a slight reduction in reliability from .45 to .68 at Time 3. For the JCI manifest variable (i.e., the scale), the Cronbach alpha coefficients at the three measurement points were α_1 = .902, α_2 = .903, and α_3 = .915.

The standardized path coefficients .67 and .72 shown in Figure 5.2, between the same measurements over time, may be interpreted as correlations. These values are high, and Table 5.2 also shows that a participant's evaluation of job change to be invariant over the three administrations of the survey. The stability coefficients for the latent construct over time indicate that insecurity over job changes remained relatively stable during this period, as the chi-square difference tests showed (i.e., the minimum fit function chi-square, and the S-B scaled chi-square difference tests), even when the loadings of the indicators were constrained to be equal longitudinally. Furthermore, Figure 5.2 shows that 44.50% of the variance in job changes at Time 2, and 52.39% of the variance at Time 3 was explained by the previous measurement.

Overall, the equality of stability coefficients has been supported, and the inclusion of the job changes dimension, within a more expanded structural model in subsequent analyses, is appropriate.

Table 5.2.

Stability of the Job Changes Insecurity Dimension

Models	χ^2	df	$\Delta\chi^2$	Δdf	S-Bχ^2	ΔS-Bχ^2	Δdf	RCFI	SRMR	RMSEA
Null	3,072.316	153	--	--	--	--	--	--	--	--
Model 1.0	472.675	133	--	--	373.637	--	--	.918	.062	.084 (.074, .094)
Model 1.1	253.954	118	218.721^{***}	35	204.060	153.283^{***}	15	.971	.056	.053 (.041, .065)
Model 1.2	266.885	128	$12.931^{\text{n.s.}}$	10	218.070	$13.196^{\text{n.s.}}$	10	.969	.064	.065 (.054, .076)
Model 1.3	266.888	129	$0.003^{\text{n.s.}}$	1	218.479	$0.101^{\text{n.s.}}$	1	.969	.064	.052 (.040, .063)

Note 1: χ^2 = minimum fit function chi-square; S-Bχ^2 = Satorra-Bentler scaled chi-square; RCFI = robust comparative fit index; SRMR = standardized root mean square residual; RMSEA = root mean square error of approximation. * = $p < .05$, ** = $p < .01$, *** = $p < .001$; n.s. = difference not statistically significant.

Note 2: Model 1.0 = factor loadings unequal, β-coefficients unequal, no error auto-covariances; Model 1.1 = factor loadings unequal, β-coefficients unequal, error auto-covariances estimated; Model 1.2 = factor loadings longitudinally equal, β-coefficients unequal; Model 1.3 = factor loadings longitudinally equal, β-coefficients equal. Comparisons are between Model 1.0 and Model 1.1, Model 1.1 with Model 1.2, and Model 1.2 with Model 1.3.

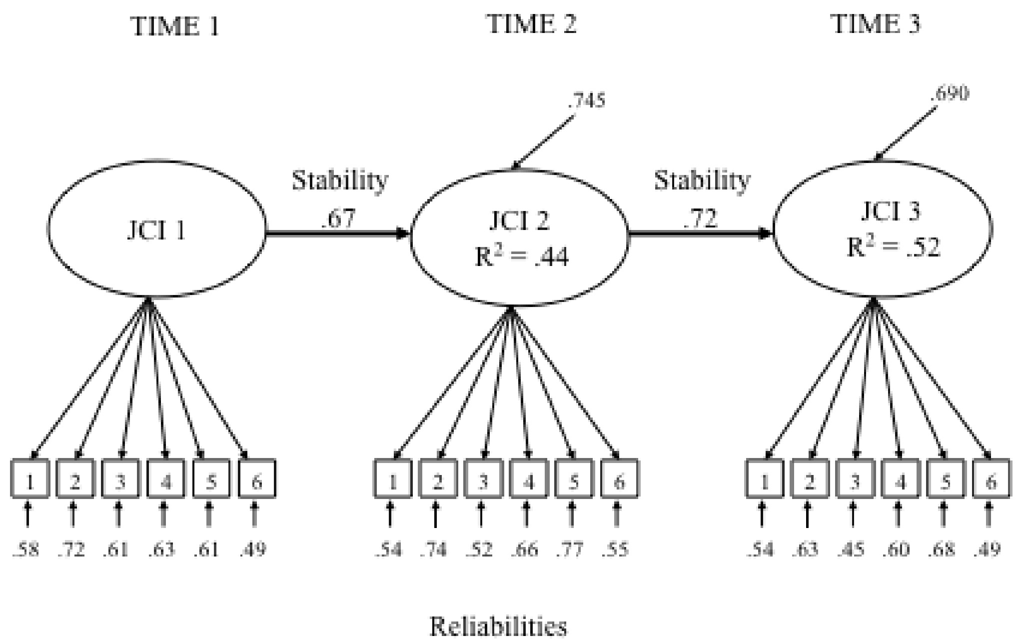


Figure 5.2. Three-wave analyses of the job changes insecurity (JCI) dimension showing stability coefficients and indicator reliabilities of the construct over occasions.

Marginalization Insecurity

Table 5.3 shows the stability results of the *marginalization* dimension. For Model 1.3 the following values were obtained: RCFI = .996, SRMR .058, and RMSEA = .024 with the 90% confidence interval (CI) ranging from 0.00 to .058. These values for the RMSEA index straddle .05, MacCallum et al. (1996) have suggested that the hypothesis of a reasonably good fitting model cannot be rejected. Also, all point estimates exceeded the recommended values (Hu & Bentler, 1999), and collectively these results suggest an adequate fit to the data.

The reliability coefficients for the individual manifest variables at Time 1 ranged from .45 to .86, and these continued to be adequate during subsequent administrations; that is, these reliabilities ranged from .52 to .90 at Time 2, and showing a slight improvement in reliability, which ranged at Time 3 from .70 to .89. While two of the three indicators showed excellent reliabilities over the three time points (i.e., > .75), one indicator "I am often excluded from discussions or meetings that affect me" was less reliable. This item may be tapping into organizational administrative procedures rather than informal interactions with others; that is, it does not capture the state of isolation from other organizational members, when the individual has been tainted or discredited (Goffman, 1970).

For the marginalization manifest variable (i.e., the scale), the Cronbach alpha coefficients at the three measurement points were $\alpha_1 = .873$, $\alpha_2 = .884$, and $\alpha_3 = .861$. The standardized path coefficients of .56 and .65 shown in Figure 5.3, between the same measurements over time, may be interpreted as correlations. These values are high, and Table 5.3 also shows a participant's evaluation of marginalization to be invariant over the three administrations of the survey. The stability coefficients for the latent construct over time indicate that insecurity over marginalization remained relatively stable during this period, as the chi-square difference tests showed (i.e., the minimum fit function chi-square, and the S-B scaled chi-square difference tests), even when the loadings of the indicators were constrained to be equal longitudinally. Furthermore, Figure 5.3 shows that 31.11% of the variance in marginalization at Time 2, and 42.70% of the variance at Time 3 was explained by the previous measurement.

Overall, the equality of stability coefficients has been supported, and the inclusion of the marginalization dimension, within a more expanded structural model in subsequent analyses, is appropriate.

Table 5.3.

Stability of the Marginalization Insecurity Dimension

Models	χ^2	df	$\Delta\chi^2$	Δdf	S-Bχ^2	ΔS-Bχ^2	Δdf	RCFI	SRMR	RMSEA
Null	1,030.779	36	--	--	--	--	--	--	--	--
Model 1.0	64.834	25	--	--	42.412	--	--	.982	.062	.052 (.022, .078)
Model 1.1	34.267	19	30.567^{***}	6	23.236	17.986^{**}	6	.996	.054	.029 (.000, .065)
Model 1.2	39.404	23	$5.137^{\text{n.s.}}$	4	27.580	$4.245^{\text{n.s.}}$	4	.995	.058	.028 (.000, .061)
Model 1.3	39.795	24	$0.391^{\text{n.s.}}$	1	27.643	$0.231^{\text{n.s.}}$	1	.996	.058	.024 (.000, .058)

Note 1: χ^2 = minimum fit function chi-square; S-Bχ^2 = Satorra-Bentler scaled chi-square; RCFI = robust comparative fit index; SRMR = standardized root mean square residual; RMSEA = root mean square error of approximation. * = $p < .05$, ** = $p < .01$, *** = $p < .001$; n.s. = difference not statistically significant.

Note 2: Model 1.0 = factor loadings unequal, β-coefficients unequal, no error auto-covariances; Model 1.1 = factor loadings unequal, β-coefficients unequal, error auto-covariances estimated; Model 1.2 = factor loadings longitudinally equal, β-coefficients unequal; Model 1.3 = factor loadings longitudinally equal, β-coefficients equal. Comparisons are between Model 1.0 and Model 1.1, Model 1.1 with Model 1.2, and Model 1.2 with Model 1.3.

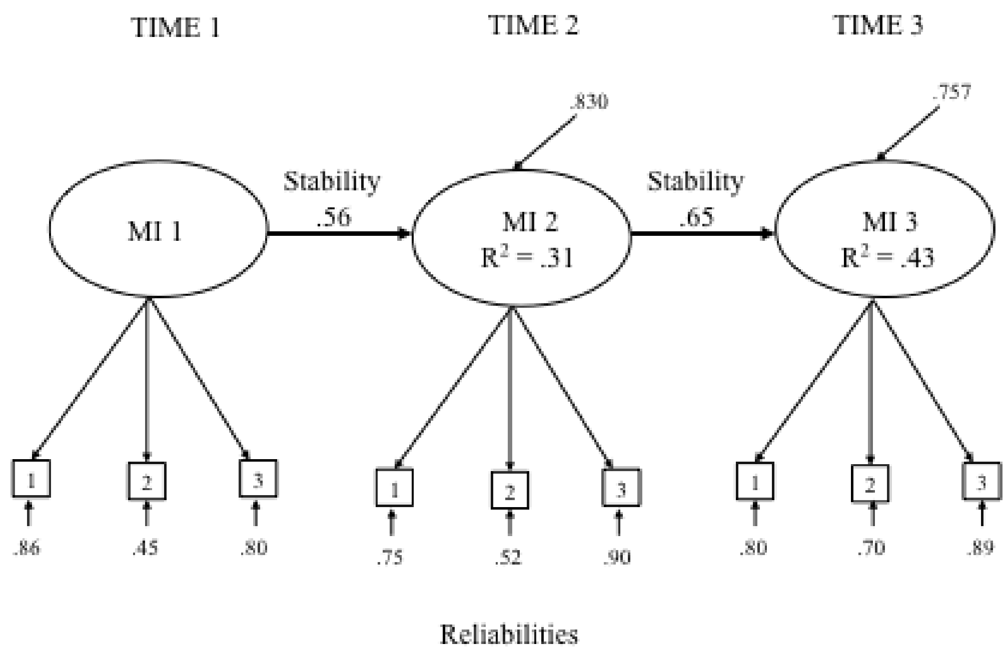


Figure 5.3. Three-wave analyses of the marginalization insecurity (MI) dimension showing stability coefficients and indicator reliabilities of the construct over occasions.

Organizational Survival Insecurity

Table 5.4 shows the stability results of the *organizational survival* dimension. For Model 1.3 the following values were obtained: RCFI = .956, SRMR .084, and RMSEA = .096 with the 90% confidence interval (CI) ranging from 0.73 to .119. These values for the RMSEA index are all above .05, and MacCallum et al. (1996), given these results, suggest that the hypothesis of a reasonably good fitting model should be rejected. Also, apart from the RCFI, the point estimates for SRMR and RMSEA exceeded the recommended values (Hu & Bentler, 1999). Collectively these results suggest an inadequate fit to the data.

The reliability coefficients for the individual manifest variables at Time 1 ranged from .54 to .83, and these continued to be adequate during subsequent administrations; that is, these reliabilities ranged from .53 to .91 at Time 2, and from .56 to .90 at Time 3. For the organizational survival manifest variable (i.e., the scale), the Cronbach alpha coefficients at the three measurement points were $\alpha_1 = .856$, $\alpha_2 = .886$, and $\alpha_3 = .892$. These alpha reliability values are high, but Table 5.4 also shows that a participant's evaluation of survival did not remain invariant over the three administrations of the survey. The stability coefficients for the latent construct over time (i.e., the standardized path coefficients .65 and .58 shown in Figure 5.4) indicate that survival did not remain stable during this period, as the chi-square difference tests showed in Table 5.4 (i.e., the minimum fit function chi-square, and the S-B scaled chi-square difference tests), when the loadings of the indicators were constrained to be equal longitudinally. Although Model 1.3 shows a non-significant increment in chi-square, Model 1.2 was rejected, because the loadings over time were not invariant; that is, the comparison between Model 1.1 versus Model 1.2 showed a statistically significant difference (χ^2 (4) = 20.899, p < .001; S-B χ^2 (4) = 13.625, p < .01). These results suggest that the meaning of the construct has changed over time, and that the hypothesis of the equality of stability coefficients cannot be upheld. Figure 5.4 also shows that 42.54% of the variance in survival at Time 2, and 38.22% of the variance at Time 3 was explained by the previous measurement. One would have expected the percent of variance explained at Time 3 to be higher than the percent of variance recorded at Time 2. Overall, these results render the inclusion of this construct in further structural analyses inappropriate.

Table 5.4.

Stability of the Organizational Survival Dimension

Models	χ^2	df	$\Delta\chi^2$	Δdf	S-Bχ^2	ΔS-Bχ^2	Δdf	RCFI	SRMR	RMSEA
Null	894.220	36	--	--	--	--	--	--	--	--
Model 1.0	82.473	25	--	--	65.226	--	--	.953	.065	.095 (.072, .117)
Model 1.1	58.881	19	23.592^{***}	6	47.255	17.837^{**}	6	.967	.067	.090 (.065, .117)
Model 1.2	79.780	23	20.899^{***}	4	61.554	13.624^{**}	4	.955	.083	.098 (.075, .121)
Model 1.3	80.639	24	$0.859^{\text{n.s.}}$	1	62.183	$0.654^{\text{n.s.}}$	1	.956	.084	.096 (.073, .119)

Note 1: χ^2 = minimum fit function chi-square; S-Bχ^2 = Satorra-Bentler scaled chi-square; RCFI = robust comparative fit index; SRMR = standardized root mean square residual; RMSEA = root mean square error of approximation. * = $p < .05$, ** = $p < .01$, *** = $p < .001$; n.s. = difference not statistically significant.

Note 2: Model 1.0 = factor loadings unequal, β-coefficients unequal, no error auto-covariances; Model 1.1 = factor loadings unequal, β-coefficients unequal, error auto-covariances estimated; Model 1.2 = factor loadings longitudinally equal, β-coefficients unequal; Model 1.3 = factor loadings longitudinally equal, β-coefficients equal. Comparisons are between Model 1.0 and Model 1.1, Model 1.1 with Model 1.2, and Model 1.2 with Model 1.3.

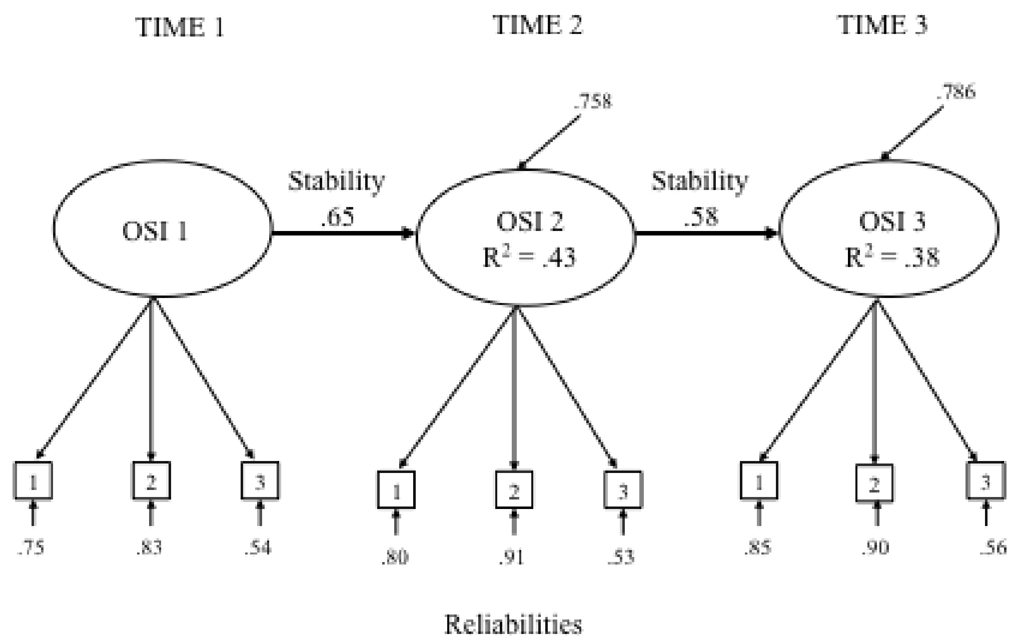


Figure 5.4. Three-wave analyses of the organizational survival insecurity (OSI) dimension showing stability coefficients and indicator reliabilities of the construct over occasions.

Intrinsic Job Satisfaction

Table 5.5 shows the stability results of the *intrinsic job satisfaction* dimension. For Model 1.3 the following values were obtained: RCFI = .981, SRMR .075, and RMSEA = .044 with the 90% confidence interval (CI) ranging from 0.00 to .072. Since these values for the RMSEA index straddle .05, MacCallum et al. (1996) have suggested that the hypothesis of a reasonably good fitting model cannot be rejected. Also, all point estimates exceeded the recommended values (Hu & Bentler, 1999), and collectively these results suggest an adequate fit to the data.

The reliability coefficients for the individual manifest variables at Time 1 ranged from .34 to .88, and these continued to be adequate during subsequent administrations; that is, these reliabilities ranged from .39 to .85 at Time 2, and .31 to .93 at Time 3. For the manifest variable of the intrinsic job satisfaction scale, the Cronbach alpha coefficients at the three measurement points were $\alpha_1 = .813$, $\alpha_2 = .834$, and $\alpha_3 = .801$.

The standardized path coefficients .60 and .71 shown in Figure 5.5, between the same measurements over time, may be interpreted as correlations. These values are high, and Table 5.5 also shows that a participant's evaluation of the intrinsic job satisfaction construct to be invariant over the three administrations of the survey. The stability coefficients for the latent construct over time indicate that the construct remained relatively stable during this period, as the chi-square difference tests showed (i.e., the minimum fit function chi-square, and the S-B scaled chi-square difference tests), even when the loadings of the indicators were constrained to be equal longitudinally. Furthermore, Figure 5.5 shows that 36.0% of the variance in intrinsic job satisfaction at Time 2, and 50.0% of the variance at Time 3 was explained by the previous measurement.

Overall, the equality of stability coefficients has been supported, and the inclusion of the intrinsic job satisfaction dimension, within a more expanded structural model in subsequent analyses, is appropriate.

Table 5.5.

Stability of the Intrinsic Job Satisfaction Dimension

Models	χ^2	df	$\Delta\chi^2$	Δdf	S-Bχ^2	ΔS-Bχ^2	Δdf	RCFI	SRMR	RMSEA
Null	1,332.996	36	--	--	--	--	--	--	--	--
Model 1.0	168.778	25	--	--	105.162	--	--	.875	.093	.112 (.090, .134)
Model 1.1	54.189	19	114.589^{***}	6	34.912	64.671^{***}	6	.975	.074	.057 (.025, .086)
Model 1.2	56.458	23	$3.269^{n.s.}$	4	34.824	$1.186^{n.s.}$	4	.981	.074	.045 (.00, .073)
Model 1.3	58.535	24	$3.077^{n.s.}$	1	36.039	$1.227^{n.s.}$	1	.981	.075	.044 (.00, .072)

Note 1: χ^2 = minimum fit function chi-square; S-Bχ^2 = Satorra-Bentler scaled chi-square; RCFI = robust comparative fit index; SRMR = standardized root mean square residual; RMSEA = root mean square error of approximation. * = $p < .05$, ** = $p < .01$, *** = $p < .001$; n.s. = difference not statistically significant.

Note 2: Model 1.0 = factor loadings unequal, β-coefficients unequal, no error auto-covariances; Model 1.1 = factor loadings unequal, β-coefficients unequal, error auto-covariances estimated; Model 1.2 = factor loadings longitudinally equal, β-coefficients unequal; Model 1.3 = factor loadings longitudinally equal, β-coefficients equal. Comparisons are between Model 1.0 and Model 1.1, Model 1.1 with Model 1.2, and Model 1.2 with Model 1.3.

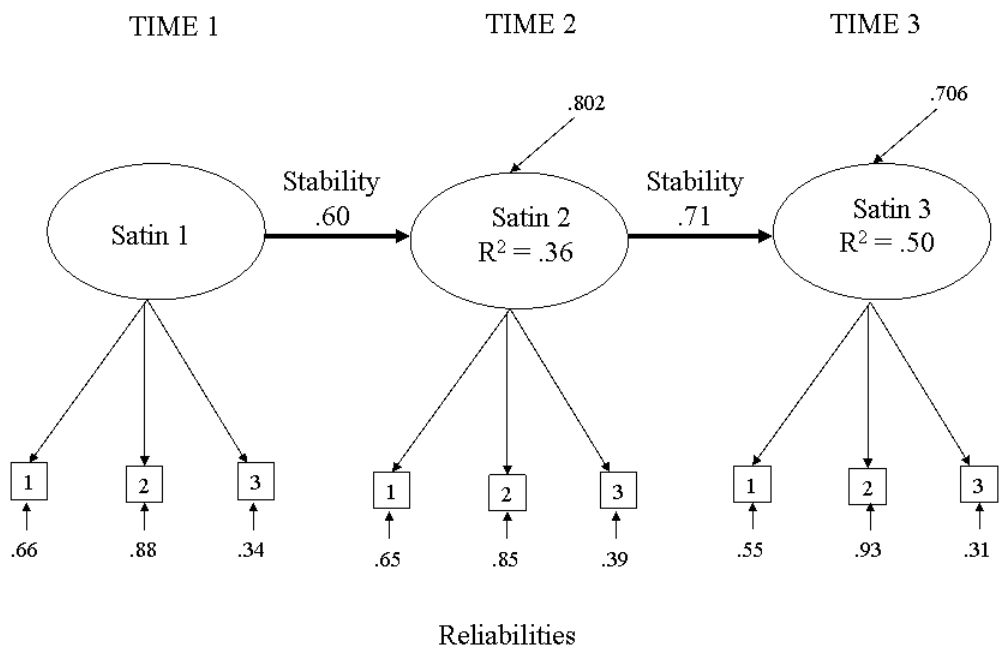


Figure 5.5. Three-wave analyses of the intrinsic job satisfaction dimension showing stability coefficients and indicator reliabilities of the construct over occasions.

Extrinsic Job Satisfaction

Table 5.6 shows the stability results of the *extrinsic job satisfaction* dimension. For Model 1.3 the following values were obtained: RCFI = .992, SRMR .061, and RMSEA = .045 with the 90% confidence interval (CI) ranging from 0.00 to .073. Since these values for the RMSEA index straddle .05, MacCallum et al. (1996) have suggested that the hypothesis of a reasonably good fitting model cannot be rejected. Also, all point estimates of the indices exceeded the recommended values (Hu & Bentler, 1999), and collectively these results suggest an adequate fit to the data.

The reliability coefficients for the individual manifest variables at Time 1 ranged from .32 to .96, and these continued to be adequate during subsequent administrations of the instruments; that is, these reliabilities ranged from .38 to .90 at Time 2, and .26 to .90 at Time 3. For the manifest variable of the extrinsic job satisfaction scale, the Cronbach alpha coefficients at the three measurement points were $\alpha_1 = .832$, $\alpha_2 = .852$, and $\alpha_3 = .807$.

The standardized path coefficients .70 and .78 shown in Figure 5.6, between the same measurements over time, may be interpreted as correlations. These values are high, and Table 5.6 also shows that a participant's evaluation of the extrinsic job satisfaction construct to be invariant over the three administrations of the survey. The stability coefficients for the latent construct over time indicate that the construct remained relatively stable during this period, as the chi-square difference tests showed (i.e., the minimum fit function chi-square, and the S-B scaled chi-square difference tests), even when the loadings of the indicators were constrained to be equal longitudinally. Furthermore, Figure 5.6 shows that 49.0% of the variance in Extrinsic Job Satisfaction at Time 2, and 60.8% of the variance at Time 3 was explained by the previous administrations of the instrument.

Overall, the equality of stability coefficients has been supported, and the inclusion of the extrinsic job satisfaction dimension, within a more expanded structural model in subsequent analyses, is appropriate.

Table 5.6.

Stability of the Extrinsic Job Satisfaction Dimension

Models	χ^2	df	$\Delta\chi^2$	Δdf	S-Bχ^2	ΔS-Bχ^2	Δdf	RCFI	SRMR	RMSEA
Null	1,736.640	36	--	--	--	--	--	--	--	--
Model 1.0	302.719	25	--	--	235.621	--	--	.856	.099	.181 (.160, .202)
Model 1.1	39.060	19	263.659***	6	32.470	170.776***	6	.991	.063	.053 (.017, .082)
Model 1.2	43.165	23	4.105$^{n.s.}$	4	36.202	3.595$^{n.s.}$	4	.991	.063	.047 (.011, .075)
Model 1.3	43.390	24	0.225$^{n.s.}$	1	36.315	0.180$^{n.s.}$	1	.992	.061	.045 (.000, .073)

Note 1: χ^2 = minimum fit function chi-square; S-Bχ^2 = Satorra-Bentler scaled chi-square; RCFI = robust comparative fit index; SRMR = standardized root mean square residual; RMSEA = root mean square error of approximation. * = $p < .05$, ** = $p < .01$, *** = $p < .001$; n.s. = difference not statistically significant.

Note 2: Model 1.0 = factor loadings unequal, β-coefficients unequal, no error auto-covariances; Model 1.1 = factor loadings unequal, β-coefficients unequal, error auto-covariances estimated; Model 1.2 = factor loadings longitudinally equal, β-coefficients unequal; Model 1.3 = factor loadings longitudinally equal, β-coefficients equal. Comparisons are between Model 1.0 and Model 1.1, Model 1.1 with Model 1.2, and Model 1.2 with Model 1.3.

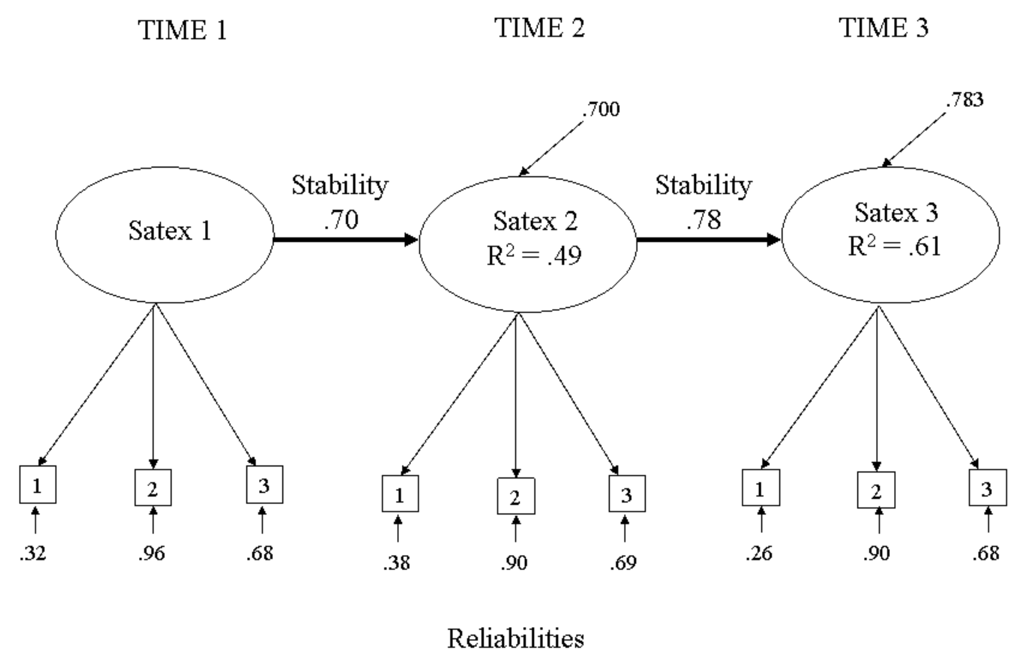


Figure 5.6. Three-wave analyses of the extrinsic job satisfaction dimension showing stability coefficients and indicator reliabilities of the construct over occasions.

Summary and Conclusions

The purpose of this chapter was to examine the stability of the multidimensional job insecurity and job satisfaction constructs prior to testing the proposed causal model. Once measurement invariance and construct stability are established, change in observed scores over time can be attributed to change in the levels of the latent constructs. This analysis is, therefore, a necessary first step before proceeding to structural analyses.

In summary, the stability analyses revealed that five out of six dimensions tested were considered reliable for examining their structural characteristics over time. Specifically, the *job loss*, *job changes*, *marginalization*, *intrinsic* and *extrinsic job* *satisfaction* dimensions were shown to be stable over time, while the *survival* dimension did not, and as a result was excluded from further consideration.

Tables 5.1-5.3 and 5.5-5.6 show that Model 1.0 was consistently the least acceptable model given the chi-square values and incremental fit indices. Based on the normed chi-square ratio, a low of 2.59 for *marginalization* and a high of 12.11 for *extrinsic job satisfaction* were obtained. The poor fit is attributable to the systematic measurement error (i.e., the covariances of the errors of manifest variables over time), which were not taken into consideration for this model.

Dramatic improvement in model fit was evident in Model 1.1 when these errors were set free to covary. Model 1.1 was, therefore, considered the baseline model by which to compare subsequent nested models. Examination of Tables 5.1 to 5.6 shows that in every instance the best fitting model was Model 1.3, where the loadings of the manifest variables and the path coefficients of the constructs were constrained equal over time.

The stability of the job loss insecurity scale is consistent with previous research by Mauno and colleagues (2003) who demonstrated the longitudinal stability of a global job insecurity scale over three time intervals; and a two-wave longitudinal study by Hellgren and Sverke (2003) demonstrating the stability of a three-item measure of job loss insecurity. The present research builds on these findings by demonstrating the longitudinal invariance of job changes and marginalization insecurity.

In the study by Mauno and colleagues, their probability of job changes scale was shown to be unstable over time. These authors noted two reasons for the instability of their scale, including the almost three-year time interval for their study and the presumed dependence of this scale on the objective circumstances of the organization, which changed significantly over the period of data collection. By contrast, this study has employed a shorter time interval of approximately 2 years and a job changes insecurity scale with items related to job features (e.g., "I am expecting unfavourable changes to my job"; "the rewards of my job are likely to diminish") rather than the total job (e.g., layoffs, job transfer, shift to part-time status, salary cuts). Thus, the distinct features of the measure used in this study may also explain the divergent findings.

Although the organizational survival scale demonstrated adequate reliability across the three time periods, the latent construct was found to be unstable over time. Between T2 and T3 some event may have triggered a redefinition of the organizational survival construct. It is noteworthy that during this period the global economic recession reached its peak and the most significant wave of downsizing occurred at the host organization. Thus, having experienced a work environment of relative stability it is easy to see how these dramatic changes within the organization and the broader financial market would have caused employees to redefine what they consider to be a serious threat to organizational survival.

The behaviour of senior management may have also influenced the instability of the organizational survival dimension. In the absence of a perceived threat to the organization's survival between T1 and T2, it is reasonable that employee expectations of senior management would be relatively low. However, the perceived failure to respond effectively to the economic crisis at T2 may have caused employees to re-evaluate what was required from senior decision-makers to ensure the continued viability of the organization. Specifically, greater emphasis may have been placed on the strategic behaviours that foster organizational survival – "having clear goals and a definite strategy for achieving them", "preparing in advance and planning for the future"; and taking steps to "build the organization and make it successful".

Two possible outcomes are expected from the economic recession and response from senior management. The first is a recalibration of the rating scale where, for instance, the environmental cues and behaviours demonstrated by senior management to earn a rating of four by employees at T1, may have only resulted in a three at T2. Alternatively, the environmental changes at T2 may have altered the employees' frame of reference to such a degree that they came to completely redefine what it means to manage strategically- the essence of the organizational survival construct. In either case, mean differences in organizational survival cannot be accurately interpreted over time since the constructs are not comparable.

The instability of the organizational survival scale should not be viewed as grounds for abandoning the construct as a dimension of job insecurity. Indeed, the validation study presented in this thesis builds on previous research (Lahey, 1984; O'Neill, 2005) to establish the construct as a salient job insecurity factor, while strong longitudinal evidence supports the direct causal influence of objective organizational performance indices on job security (Schneider et al., 2003). Similar constructs related to environmental uncertainty have also appeared in theoretical frameworks as antecedents predicting job insecurity (Hartley et al., 1991; Jacobson, 1991a; Klandermans & van Vuuren, 1999). These findings suggest the need to further develop the organizational survival scale so that it can be applied with confidence in longitudinal studies.

The items of the organizational survival scale focus on situational cues from senior management on the financial status of the company and strategic plans for future growth. This type of information is rarely shared with employees who must typically rely on rumours, clues from their immediate supervisor or perhaps publicly available information such as rising or falling share prices (Mirvis & Marks, 1986; Schweiger & DeNisi, 1991). As a consequence, individual ratings on these items are likely to be as unstable as the information these ratings are drawn from. Thus, improvements could be made to the organizational survival scale by constructing proximal items assessing the extent to which employees depend on informal sources of information (e.g., rumours, clues from a supervisor) to determine the organization's performance and capacity for future growth. Such items are expected to elicit more stable scale ratings since employees would draw from their immediate experience rather than less reliable information from external sources. Future research should, therefore, examine the construct validity and longitudinal stability of this revised organizational survival insecurity scale.

In conclusion, these findings, along with those of Chapter II, indicate that the 14-item, three-dimensional job insecurity measure (JIM) and the intrinsic and extrinsic job satisfaction scales are valid, reliable and longitudinally invariant instruments. That is, even in the face of major organizational changes, the psychological meaning of the job insecurity and job satisfaction dimensions remained relatively stable and changes in the scale ratings reflect actual changes and not measurement error. The measures can, therefore, be used with confidence in longitudinal studies with a clear interpretation of the findings. Such is the purpose of Chapter VII, which tests a structural model linking dispositional affect with the three stable job insecurity dimensions (job loss, job changes, and marginalization), and intrinsic and extrinsic job satisfaction. In the chapter that follows, structural hypotheses emanating from the theoretical and empirical literature are presented.

CHAPTER VI

LINKING DISPOSITIONAL AFFECT, JOB INSECURITY, AND JOB SATISFACTION

> "A theory is the more impressive the greater the simplicity of its premises is, the more different kinds of things it relates, and the more extended is its area of applicability."
> —Albert Einstein (1949)

In the previous chapter, I established the longitudinal invariance of the three job insecurity scales (job loss, job changes, and marginalization) and intrinsic and extrinsic job satisfaction dimensions. Meta-analytic evidence presented in Chapter III showed that job insecurity had stronger correlations with intrinsic (ρ = -.48) and extrinsic job satisfaction (ρ = -.44) relative to global job satisfaction (ρ = -.40). These results provide an empirical justification for examining job satisfaction at the dimension-specific level. However, because the studies reviewed are cross-sectional in nature, the strength and direction of causal relations remains unresolved. The literature review also revealed a paucity of research investigating whether NA or PA impact this relationship.

The purpose of this chapter is to develop theoretical hypotheses describing the potential links between job insecurity, job satisfaction, and dispositional affect. Structural relationships are proposed between PA, NA, job insecurity (job loss, job changes, and marginalization), and intrinsic and extrinsic job satisfaction. This framework provides a theoretical basis for testing structural paths in Chapter VII. Deriving structural hypotheses from a strong theoretical foundation is a necessary first step in order to avoid exploring the data, and it serves to minimize the chances of "overfitting" the model (James, Mulaik, & Brett, 1982).

Theoretical Hypotheses

Job Insecurity and Job Satisfaction

Within the field of occupational stress and well-being, prominent theories identify job insecurity as a type of work-related stressor that is potentially detrimental to the psychological and physical health of employees (Karasek & Theorell, 1990; Katz & Kahn, 1978; Siegrist, 2000; Warr, 1986). A "stressor," according to Lazarus and Folkman (1984), is something individuals experience in their environment that demands more than they have resources to handle. Given the central role of work in the fulfilment of basic economic, social, and developmental needs (Jahoda, 1982), we would expect the fear of job loss to have a strong psychological impact on those affected. Much of the anxiety may be attributed to a lack of certainty over when layoffs or the loss of valued job features will occur and, if these events do occur, who will be affected. It is this prolonged uncertainty and lack of control associated with job insecurity that renders it a particularly stressful phenomenon for individuals (Greenhalgh & Rosenblatt, 1984; Joelson & Wahlquist, 1987).

Other theorists have explained the relationship between job insecurity and psychological well-being in terms of psychological contract theory (De Witte et al., 2005; Sverke et al., 2004). The psychological contract refers to the reciprocal obligations between the employee and the employer above and beyond the formal employment contract (Argyris, 1964; Rousseau, 1995). In exchange for employer obligations—such as job security and equitable pay—employees are expected to offer loyalty to their employer. Violations of the psychological contract have been shown to elicit strong emotional reactions in employees (Morrison & Robinson, 1997) and are powerful determinants of employee attitudes and behaviour (Guzzo, Noonan, & Elron, 1994; Schein, 1980). Thus, as a perceived breach of the psychological contract, job insecurity is expected to have a detrimental effect on both job satisfaction and state affect (Sverke et al., 2004).

Consistent with the aforementioned models, a predominant view among scholars is that job insecurity will result in diminished psychological well-being and not vice versa (De Witte, 1999; Greenhalgh & Rosenblatt, 1984; Hartley et al., 1991; Sverke et al., 2002). This unidirectional hypothesis is expected to apply to both job satisfaction and affective well-being, which are typically conceptualized as “stress reactions” (De Witte, 2006). This thesis proposes that the psychological mechanisms linking job insecurity to pure affective states are distinct from those related to job satisfaction, which represents both cognitive and, to a lesser extent, affective components. The need for a separate theoretical explanation for job satisfaction becomes further apparent when intrinsic and extrinsic facets of the construct are examined separately. That is, the influence of job insecurity on extrinsic facets, such as salary and career advancement, are likely to differ from intrinsic facets, such as the use of one’s abilities and variety on the job.

Drawing from Alderfer’s (1969) existence, relatedness and growth (ERG) theory of need fulfilment and Warr’s (1986) vitamin model, this thesis offers a more concise theoretical framework describing the relationship between job insecurity and the separate dimensions of intrinsic and extrinsic job satisfaction. When examined at this level of precision, a complex pattern of relationships is proposed involving both direct and reverse causal relationships. Specifically, it is predicted that the negative influence of job insecurity on job satisfaction documented in the literature will be causally predominant for intrinsic job satisfaction, while a reverse causal relationship is proposed for extrinsic job satisfaction. The theoretical basis for these hypotheses is discussed below.

Job insecurity and intrinsic job satisfaction. It is reasonable to expect that the more insecure workers are over job loss, job changes, and marginalization the more difficult it would be to enjoy the intrinsically rewarding aspects of a job. The negative association between the three job insecurity dimensions and intrinsic job satisfaction is consistent with Warr's (1986, 2007) vitamin model, which describes twelve interrelated job features said to influence job specific well-being (e.g., job satisfaction) and context-free well-being (e.g., affective well-being): 1) opportunity for personal control (job control), 2) opportunity for skill use, 3) externally generated goals (job demand), 4) variety, 5) environmental clarity (feedback, future predictability, role clarity), 6) opportunity for interpersonal contact (social support), 7) availability of money, 8) physical security (good working conditions), 9) valued social position (e.g., occupational prestige), 10) supportive supervision, 11) career outlook (job security, opportunities for promotion and advancement) and, 12) equity (fairness in employment relations).

According to Warr's (2007) model, job security (defined as the probability of job loss) and opportunities for promotion and advancement are subsumed under the broader concept of *career outlook*. As Warr states, "Recent changes in the labor markets of developed countries have been accompanied by greater between-role flexibility and the requirement for more individuals to acquire different skills throughout their paid employment … active management of one's career thus requires forward planning and appraisal of the prospects offered by one's current and other positions" (p. 133).

A central element of both job changes and job loss insecurity—the inability to predict and control the future of one's job—also appears under the *environmental clarity* group of job features.[3] Additionally, job changes insecurity would threaten a second core facet of environmental clarity, namely "the clarity of role requirements and normative expectations about behaviour" (Warr, 2007, p. 86). Warr (2007) explains the impact of environmental clarity on psychological well-being:

> Low predictability reduces people's self-efficacy, because they are less able to assess probabilities and risks … If people cannot predict future developments and the consequences of their actions with moderate confidence, they cannot act to influence their environment in a desired manner; low environmental clarity thus brings about powerlessness as well as unpredictability. In these ways, goal achievement is impaired in settings of low environmental clarity through both unpredictability and low potential for personal control.

Marginalization insecurity is also captured in Warr's model since this experience would pose a threat to an employee's *opportunity for interpersonal contact*. This feature refers to both the quantity of social contact (e.g., social density, frequency of interaction) and the quality of the interactions (e.g., social support, effective communication). The model builds on Jahoda's (1982) latent deprivation theory, which posited that social contact at work was fundamental to a person's psychological well-being because it provided a larger social network, reduced isolation and loneliness, and offered shared experiences with others. More recently, contemporary theorists have linked relatedness (a sense of connectedness or belonging in the social world) to enhanced psychological well-

[3] Warr (2007) theorizes that job security may also be viewed as an aspect of environmental clarity. He notes, however, that environmental clarity encompasses the predictability of varied positive and negative outcomes and, in this sense, is defined more broadly than job security in the context of career prospects.

being, intrinsic motivation, and personal resilience across the life span (Baumeister & Leary, 1995; Ryan & Deci, 2001). Conversely, sub-optimal functioning—in the form of apathy, alienation and irresponsibility—is predicted to result when an environment thwarts this basic need. Insofar as marginalization insecurity reflects a deficit in both the quantity and quality of relationships at work, a strong negative association with well-being and intrinsic motivation is expected.

Based on Warr's model and the present meta-analytic evidence demonstrating a linear association between job insecurity and intrinsic job satisfaction, the following hypothesis is put forth for examination:

$H_{3.1}$ Job insecurity (job loss, job changes, and marginalization) will have a direct negative impact on intrinsic job satisfaction.

Job insecurity and extrinsic job satisfaction. As discussed in Chapter I, job security has been featured prominently in early theories of human motivation that emphasize need fulfilment (Herzberg et al., 1959; Maslow, 1954, 1970). The term "need" in this context is defined as the physiological or psychological deficiencies that one feels a compulsion to reduce or eliminate (Schermerhorn, Hunt, & Osborn, 1991). Within Maslow's hierarchy, *safety needs* for security, protection, and stability are positioned above the most basic *physiological needs* for food, water, sex, etc. and below the *social needs* for love, affection, and a sense of belongingness in one's personal relationships. These "lower order" needs were viewed as more important (potent) than higher order needs such as *self-esteem* (e.g., the need for respect, prestige, recognition, sense of competence, and mastery) and *self-actualization* (i.e., the need to grow and use one's abilities to the fullest extent) in that they had to be satisfied before the other needs could serve as motivators. Maslow's theory would predict, for example, that when workers are struggling to earn a sufficient income to provide for their family (a safety need), management practices geared towards recognition and personal growth (a self-actualization need) would have little motivational effect.

Herzberg's (1959) two-factor theory extended Maslow's notion of lower order needs by specifying contextual features of the work environment that he labelled *hygiene* factors. In addition to job security, these factors included: salary; organizational policies and administration; job status; technical supervision; interpersonal relations with one's supervisor, subordinates, and peers; personal life; and physical working conditions. Similar to Maslow's lower order needs, hygiene factors were pre-potent in the sense that they could not make people satisfied with their work, they only prevented them from being dissatisfied. Job satisfaction, on the other hand, is determined by intrinsic aspects of one's job, such as increased task responsibility, inherent interest in the task, and occupational growth. These *motivators* satisfy the basic human need to exercise our capabilities and are instrumental to psychological growth. Herzberg's theory represented a sharp departure from the conventional "one-factor" view that any job-related factor may be a source of both satisfaction and/or dissatisfaction.

Despite widespread acceptance of Maslow and Herzberg's theories in the management and organizational behaviour literature, the models have been the subject of enduring debate and have yet to receive consistent empirical support (Koltko-Rivera, 2006; Sachau, 2007). Some empirical evidence, however, suggests that the structure of human needs in the workplace are best represented by the three need categories proposed by Alderfer's (1972) ERG theory rather than the five proposed by Maslow or the two by Herzberg (Rauschenberger, Schmitt, & Hunter, 1980; Wanous & Zwany, 1977).

Alderfer (1972) argued that human needs should be arranged in three levels rather than Maslow's five-need categories or Herzberg's two factors. These were labelled as a) *existence* needs, encompassing Maslow's physiological and safety needs; b) *relatedness* needs, representing the desire for satisfying interpersonal relationships, including elements of Maslow's need for "self esteem"; and c) *growth* needs or desires for continued personal growth and development (collapsing aspects of Maslow's "esteem" and "self-actualization" categories). When the existence needs were satisfied, a higher level of relatedness and growth needs would be sought.

Alderfer shared Maslow's contention that lower-order needs that were not met would dominate an individual's behaviour and interests and prevent progress up the hierarchy (the *satisfaction-progression* principle). However, ERG theory added a *frustration-regression* principle. That is, when a higher-level need cannot be satisfied, a person will invest more effort in the lower-order need. For instance, if a person's attempts to satisfy growth needs are continually frustrated, relatedness needs will again surface as key motivators. In addition, while Maslow's theory focused on one need at a time, ERG theory contends that more than one need may be activated simultaneously. In this way, the combined satisfaction-progression and frustration-regression principles offer a more flexible approach to understanding human needs than do Maslow or Herzberg's strict hierarchy.

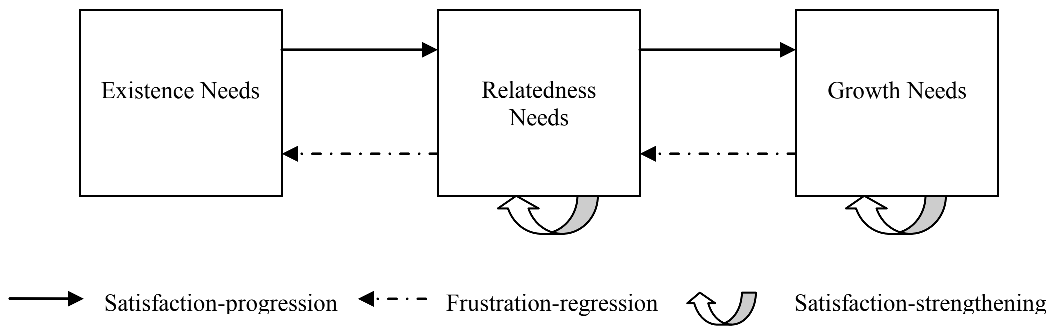


Figure 6.1. Alderfer's (1972) ERG theory of motivation.

Since satisfaction with salary and with career advancement represent two lower-order existence needs that would be threatened by job loss and job changes, I propose that these facets of the job will play a causal role in shaping job loss and job changes insecurity. More precisely, a worker's concern over future job loss or undesirable job changes would be largely contingent on the degree to which such events would pose a threat to basic financial needs and the disruption or destruction of their career path. Leana and Feldman (1988, 1990), in their research examining the predictors of employee emotional and behavioural reactions to downsizing, found that financial distress and previous attachment to the job were the two strongest predictors of psychological distress. Job loss and job changes are particularly threatening in that not only would they have an impact on a person's own existence needs, they would invariably affect their ability to provide for family members and others who rely on their income. Conversely, satisfaction with pay and career prospects would provide a protective buffer against the onset of job loss and job changes insecurity.

Some researchers have argued that insecurity over job changes constitutes less of a threat relative to job loss insecurity (Hellgren et al., 1999; Reisel & Banai, 2002a) in that job features such as skill variety and autonomy may be reduced or eliminated, posing no similar financial threat to that of job loss. However, the measure used in this study captures changes to the job—such as "diminishing rewards" and an expectation of "fewer resources to meet the performance requirements of the job"—which would pose a threat to salary and career prospects. In addition, a number of empirical studies indicate that employees perceive organizational change as a significant threat to not only their job security but also to their personal career path, financial well-being, and other extrinsic benefits, such as power, prestige, and a sense of community at work (Ashford, 1988; Callan, 1993; Terry & Jimmieson, 2003). As such, job changes insecurity would also constitute a threat to these basic existence needs.

The proposed association between job insecurity and satisfaction with career prospects and progression is also aligned with Warr's (1986) vitamin model. As previously mentioned, job security and opportunities for promotion and career advancement are two key elements of career outlook. According to Warr, a healthy career outlook requires both job security, which enables an employee to plan for the future, and on-the-job experience and expertise that will help an employee qualify for higher-level positions—or at least the prospect that such positions will become available in the future. Thus, when viewed in the broader context of an employee's future career, the need for job security and career advancement are inextricably linked. This conceptual link is also reflected in job insecurity measures such as the Job Future Ambiguity scale (Caplan et al., 1975), which captures the amount of certainty a person has about future job *and* career security (e.g., “what your future career picture looks like?”, “whether your job skills will be of use and value five years from now?”).

Marginalization insecurity corresponds to Alderfer’s relatedness needs. The frustration-regression principle of ERG theory helps to explain how chronic dissatisfaction with pay and career prospects would lead to heightened perceptions of marginalization insecurity. The less a person is able to satisfy existence needs through satisfactory pay and career progression, the more these needs will be desired and the less energy a person will have to pursue relatedness needs. The resulting lack of social interaction may in turn contribute to perceptions that one is being marginalized. Indeed, Alderfer (1969; p. 146) describes the opposite of relatedness as “a sense of distance or lack of connectedness,” which is at the heart of marginalization insecurity. ERG theory would further predict that marginalized individuals experiencing a frustration of relatedness needs would eventually regress to place even greater emphasis on existence needs, such as salary and career prospects, creating a downward spiral. Lower levels of extrinsic job satisfaction are therefore also expected to cause greater marginalization insecurity.

In Chapter II, marginalization insecurity was conceptualized as a function of out-group membership based on a social stigma attached to unemployment. Given the limited time and resources available to leaders, particularly during periods of downsizing, it is expected that the lion’s share of extrinsic rewards would go to in-group members who are typically high performers enjoying special privileges and rewards (Graen & Uhl-Bien, 1995). Consequently, dissatisfaction with salary and career prospects may reflect actual reward inequity, which would contribute to perceptions of marginalization insecurity for members of the out-group. As mentioned in Chapter I, reward inequity is measured in terms of distributive justice, and several studies have linked perceived organizational justice with lower levels of job insecurity (Chovwen & Ivensor, 2009; Francis & Barling, 2005; Kausto et al., 2005; Probst, 1999; Salter, 1999).

Taken together, these theoretical considerations lead to the following hypothesis:

$H_{3.2}$ Extrinsic job satisfaction will have direct, negative influence on job insecurity (job loss, job changes, marginalization).

Intrinsic and Extrinsic Job Satisfaction

Although I was unable to uncover a longitudinal study that has examined the causal relationship between intrinsic and extrinsic job satisfaction, strong positive correlations between the constructs have been reported by Warr (1979; $r = .72$) and Weiss et al. (1967; $r = .60$). Similar to the influence of PA on extrinsic job satisfaction, individuals who are intrinsically satisfied with their job are more likely to be actively engaged in their work leading to enhanced job performance, which would manifest in career advancement and higher salaries. Indeed, meta-analytic research has linked job satisfaction to overall job performance ($\rho = .30$; Judge, Thoresen et al., 2001) and organizational citizenship behaviour ($\rho = .30$; LePine et al., 2002)

An alternative causal relationship, in which satisfaction with salary and career prospects influences intrinsic job satisfaction, is also theoretically plausible. As previously mentioned, job satisfaction is defined in terms of individuals' perceptions and evaluation of their job, and this perception is based on a comparison of actual outcomes against individual expectations, needs and values. Given that a person's self-concept is closely tied to one's occupation (Jahoda, 1982) and that the relative worth of a job is often measured in terms of salary and career advancement, satisfaction with these extrinsic rewards could influence the intrinsic rewards employees derive from their work. However, since no empirical support could be found for this relationship, the predominant causal direction is expected to flow from intrinsic to extrinsic job satisfaction, leading to the following hypothesis:

$H_{3.3}$. Intrinsic job satisfaction will have a direct positive influence on extrinsic job satisfaction.

Dispositional Affect and Job Satisfaction

As mentioned in the introductory chapter, PA and NA are expected to independently influence work conditions and psychological states with PA more strongly associated with positive attitudinal variables and NA with negative stressors and strains (e.g., Burke et al., 1993; Cropanzano et al., 1993; Munz et al., 1996). Research generally supports this proposition with NA showing stronger associations with emotional exhaustion (NA = .52, PA = -.32; Thoresen et al., 2003), depression and somatic symptoms (Burke et al., 1993; Chen & Spector, 1991; Dormann & Zapf, 2001; Moyle, 1995; Schaubroeck et al., 1992; Spector, Chen et al., 2000; Thoresen et al., 2003; Williams et al., 1996); and PA demonstrating stronger correlations with positive attitudes such as job satisfaction (PA=.49, NA=-.33; Connolly & Viswesvaran, 2000) and organizational commitment (PA = .35, NA = -.27; Thoresen et al., 2003).

There have been some contradictory findings with respect to job satisfaction, where a meta-analysis by Thoresen and colleagues (2003) reported a slightly higher mean corrected correlation of -.37 for NA and .33 for PA. However, the association between NA and job satisfaction diminishes considerably when examined longitudinally (De

Jonge et al., 2001; Spector, Chen et al., 2000; Watson & Slack, 1993). For instance, Watson and Slack (1993) found that state PA was correlated .29 with overall job satisfaction two years later, while NA was not significantly related at either Time 1 (r = -.09) or Time 2 (r = -.18). On the strength of these findings, a stronger case can be made for the longitudinal relationship between PA and job satisfaction relative to NA.

PA and Extrinsic Job Satisfaction

It is theoretically plausible that the association between PA and job satisfaction may be operating through both extrinsic and intrinsic dimensions. With respect to extrinsic job satisfaction, research has shown that individuals high in PA tend to interpret extrinsic rewards more favourably. For instance, PA has been shown to positively influence perceptions of pay equity (Vandenbos, 2003) and explain significant variance in pay satisfaction after controlling for actual salary levels, overall job satisfaction, and demographic characteristics (Shaw et al., 1999). These findings support Larsen and Ketelaar's (1989) "signal sensitivity" theory, which holds that PA corresponds with the neurological system responsible for sensitivity to rewards. High PA employees are also more likely to proactively shape their work environments to be more favourable by asking for pay raises (Staw, Sutton, & Pelled, 1994) and self-selecting into environments that are more attractive in terms of salary and career status than their low PA counterparts (Judge et al., 2000; Spector et al., 1995a).

PA may also influence actual salary and career progression indirectly through enhanced job performance. Indeed, there is now compelling theoretical and empirical evidence supporting the causal influence of PA on supervisory ratings of technical job performance and organizational citizenship behaviours (Barrick & Mount, 1993; Deluga

& Mason, 2000; George & Brief, 1992; Harter et al., 2002; Hosie, Sevastos, & Cooper, 2006; Judge, Thoresen et al., 2001). A recent meta-analytic review by Lyubomirsky, King, and Diener (2005) linked PA to success at work (ρ = .27) as measured by supervisory ratings of performance, customer service ratings, organizational citizenship behaviour, and income. Importantly, this review included longitudinal evidence indicating that PA is the cause rather than the effect of strong job performance.

It is reasonable to expect that employees high in PA will be more likely to attract positive responses from supervisors and co-workers, resulting in higher performance ratings both in terms of task proficiency and organizational citizenship behaviour. Several studies have demonstrated that positive mood inducement leads to enhanced sociability, cooperativeness, generosity, and helpfulness (George & Brief, 1992; Isen & Baron, 1991; Lucas & Diener, 2003; Staw et al., 1994). Other studies have shown that individuals higher in PA are more likely to be positively assessed by others (Cardy & Dobbins, 1986; Krystofiak, Cardy, & Newman, 1988); to appear more energized (Staw & Barsade, 1993); to receive more social support (Caplan et al., 1975; McGovern, Jones, & Morris, 1978); to be invited to join supervisory cliques (Graen, 1976); and to be selected for more prestigious positions (McGovern et al., 1978; Rasmussen, 1984).

There are a number of theoretical mechanisms linking PA to *actual* job performance. George and Brief (1996) explained the relationship in terms of Vroom's (1964) *expectancy theory* of motivation, in which people higher in PA were purported to have greater achievement expectations for job performance. According to expectancy theory, people evaluate the probability that certain actions or events will lead to certain outcomes (expectancy judgements) and also appraise the attractiveness of those outcomes (utility or valence judgements). Both forms of judgement have been shown to be more favourable for individuals higher in PA (Seo, Feldman Barrett, & Bartunek, 2004; T. A. Wright & Staw, 1999).

Another possibility is that PA may influence job performance through elevated *self-efficacy* (Baron, 1990; Forgas et al., 1990) and heightened *optimism* about future circumstances (Wright & Bower, 1992). Wood and Bandura (1989) defined self-efficacy as the "belief in one's capabilities to mobilize the motivation, cognitive resources, and courses of action needed to meet situational demands" (p. 409). Thus, individuals higher in self-efficacy and optimism are expected to set more challenging performance goals (Locke & Latham, 1990) and persevere towards their goals in spite of performance set-backs (Staw et al., 1994).

Finally, Frederickson's (2001) broaden-and-build theory holds that positive emotions broaden an individual's attentional focus and behavioural repertoire, and as a consequence build social, intellectual, and physical resources. Some of these resources include improved social relationships (Isen & Baron, 1991; Lucas & Diener, 2003); cognitive flexibility; problem solving; and creativity (Aspinwall, 1998; Ganster, 2005; Isen, 2000)—all of which would contribute to enhanced job performance.

PA and Intrinsic Job Satisfaction

A positive association between PA and intrinsic job satisfaction is expected based on research indicating that PA influences perceptions of work characteristics. Individuals with a positive disposition tend to rate characteristics of the task or the job as more enriched than those low in PA (Brief et al., 1995; James & Jones, 1980; Judge, Locke, Durham, & Kluger, 1998; Kraiger, Billings, & Isen, 1989; Necowitz & Roznowski, 1994). Employees high in trait optimism also tend to occupy jobs with high levels of complexity and the five core job characteristics associated with intrinsic motivation (autonomy, variety, identity, feedback, and significance) (Spector, Jex, & Chen, 1995b). Similarly, people with positive self-evaluations tend to engage in complex tasks associated with greater job satisfaction (Bono & Judge, 2003; Srivastava, Locke, & Judge, 2002).

Not surprisingly, a recent meta-analysis by Bowling and colleagues (2008) reported a strong corrected correlation between PA and facet satisfaction "with the work itself" (K = 10; N = 2,174; $\rho = .52$). As with extrinsic job satisfaction, signal sensitivity theory would explain the tendency for high PA individuals to be more responsive to an intrinsically rewarding job. Also, through their heightened levels of engagement and enthusiasm, high PA employees may be more inclined to actively influence or "craft" the intrinsic aspects of a job by choosing more favourable tasks, negotiating different job content, and assigning greater meaning to their tasks or jobs (Parker & Ohly, 2008).

Dispositional Affect and Job Insecurity

Of the many studies investigating the impact of job insecurity on psychological well-being, the role of dispositional affect is rarely examined (Näswall et al., 2005). In some studies, PA (Hellgren et al., 1999; Näswall et al., 2005) and the related construct of dispositional optimism (Bosman, Buitendach, & Rothman, 2005) have been linked to decreased job insecurity, while positive associations have been found for NA (Näswall et al., 2005; Roskies & Louis-Guerin, 1990), trait neuroticism (Nelson et al., 1995), and a pessimistic life orientation (van Vuuren et al., 1991b). Other personality traits such as internal locus of control (Ashford et al., 1989; Näswall et al., 2005), self-esteem

(Kinnunen, Feldt, & Mauno, 2003; Klandermans, van Vuuren, & Jacobson, 1991; Orpen, 1994), and a high sense of coherence (Roskies & Louis-Guerin, 1990) have also been associated with lower levels of job insecurity.

Most recently, Näswall and colleagues (2005) used hierarchical regression analyses to test the moderating effects of PA and NA on the relationship between job insecurity and job satisfaction and mental health. After controlling for demographic variables, the amount of variance in job satisfaction accounted for by PA (R = -.26; $p <$ .001) was twice as high as job insecurity (R = .13; p = < .001), while NA was not a significant predictor of job satisfaction (R = .06). Although the relationship between job insecurity and job satisfaction remained statistically significant after PA, NA, and locus of control were entered in Step 2 of the regression equation, the addition of these personality dispositions resulted in a significant increase in the amount of variance explained (ΔR^2 = .10; p = < .001). By contrast, main effects were found for NA (R = .44; p = < .001) and, to a lesser extent, PA (R = -. 35; $p < .001$) on mental health complaints, while only NA was related to job-induced tension (R = .44; $p < .001$). After controlling for the three personality dispositions and demographic variables, the relationship between job insecurity and mental health complaints was rendered non-significant (R = .04).

In a rare two-wave longitudinal study using multiple regression, Hellgren, Sverke and Isaksson (1999) compared the effects of qualitative and quantitative job insecurity on job satisfaction, mental health, and job-induced tension. After controlling for qualitative and quantitative job insecurity at Time 1, job satisfaction at Time 2 was predicted by PA (R = .13; $p < .05$) and qualitative job insecurity at Time 1 (R = -.26; p = .001), while NA (R = -.05) and quantitative job insecurity (R = -.05) failed to reach significance. By contrast, both PA and NA were significant predictors of general mental health (PA: R = .22; $p < .001$; NA: $R = -.24$; $p < .001$) while the negative influence of qualitative and quantitative job insecurity remained. The authors concluded that "research is clearly warranted to unravel if mood dispositions have direct effects, indirect effects, or moderate the negative effects of job insecurity on employee attitudes and well-being" (p. 191).

Studies investigating the potential moderating effect of affective dispositions on the relationship between job insecurity and well-being have yielded mixed results. Roskies, Louis-Guerin, & Fournier (1993) found a significant interactive effect for NA and job insecurity on mental health with those high in NA and job insecurity reporting higher levels of strain, while those low in NA experienced less strain when job insecurity was high. This study also found that NA and PA were significant predictors of mental strain, accounting for 34% of the total variance explained, effects that were even stronger than job insecurity. However, Näswall and colleagues (2005) found no interactive effects for NA or PA with job insecurity for the outcomes of job satisfaction, mental health complaints, and job-induced tension.

Summary

It is now common practice to control for NA and, to a lesser extent, PA in studies using self-report measures of stressors and strains. Although PA has been shown to account for a significant portion of variance in job insecurity, its association with job satisfaction is much stronger. Therefore, direct causal paths are predicted from PA to intrinsic and extrinsic job satisfaction, while any longitudinal effects of PA on job insecurity are likely to operate through job satisfaction.

NA, on the other hand, demonstrates a weak association with job satisfaction in longitudinal research but may explain a significant amount of incremental variance in job insecurity and mental strain. Although there is mixed evidence of interactive effects for dispositional affect and job insecurity with respect to mental health complaints, no such effects have been found for job satisfaction. These findings support a direct path from NA to job insecurity and from PA to intrinsic and extrinsic job satisfaction. It is appropriate to treat PA and NA as exogenous variables since they represent *dispositions* which are generally stable over time (Costa & McCrae, 1988; Watson, 1988a; Watson et al., 1988; Watson & Tellegen, 1985), partially heritable (Arvey et al., 1989) and a have neurological basis (Davidson, 1998; Watson et al., 1999; Whittle et al., 2005). By contrast, job insecurity and job satisfaction are attitudinal *states*, which, by definition, are more malleable. Therefore, the most plausible and theoretically justifiable hypotheses are:

$H_{3.4.}$ PA has a direct positive influence on intrinsic and extrinsic job satisfaction.

$H_{3.5}$. NA has a direct positive influence on job insecurity (job loss, marginalization, and job changes)

Summary and Conclusions

In this chapter, I sought to provide a theoretical framework to explain the psychological processes linking dispositional affect, job insecurity, and job satisfaction. The hypothesized relationships are illustrated in Figure 6.2. This framework represents three important points of departure from the job insecurity literature. First, it places the three job insecurity constructs in a concise theoretical network, which clearly delineates facets of intrinsic and extrinsic job satisfaction. Second, I hypothesize an inverse causal relationship in which extrinsic job satisfaction drives job insecurity, while the unidirectional relationship that has dominated the job insecurity literature is predicted for intrinsic job satisfaction. Finally, the model recognizes a substantial body of empirical research suggesting that dispositional PA and NA may play a substantive role as causal antecedents with structural paths running from PA to intrinsic and extrinsic job satisfaction and from NA to job insecurity. In the following chapter, these hypotheses will be tested longitudinally using SEM.

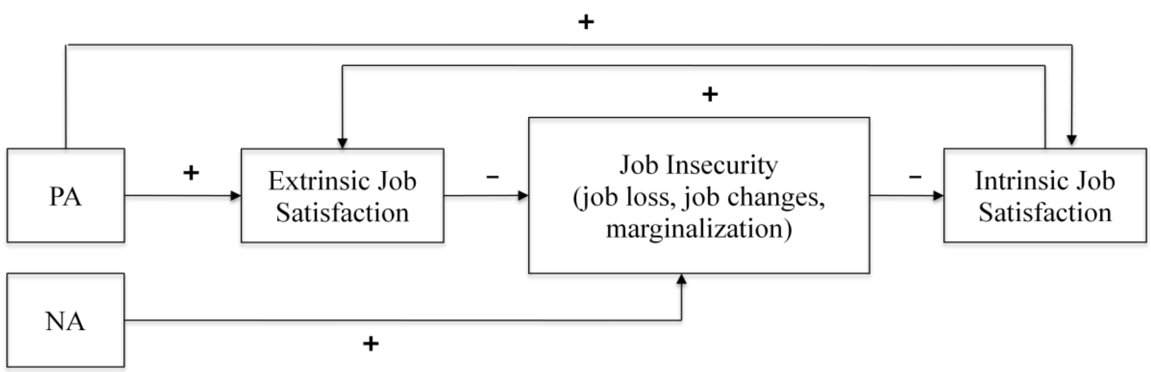


Figure 6.2. Theoretical framework linking dispositional affect, job insecurity and job satisfaction.

CHAPTER VII

TESTING A CAUSAL MODEL OF DISPOSITIONAL AFFECT, JOB INSECURITY AND JOB SATISFACTION

> "Longitudinal research is indisputably important in examining causal relationships, yet few researchers answer the perpetual call for such research in psychology"
> —Glomb, Munson, Bergman, & Drasgow (1999; p. 14)

The purpose of this chapter is to test a three-wave structural model of job insecurity, job satisfaction and dispositional affect based on the theoretical hypotheses presented in the previous chapter. Hypotheses related to job insecurity and job satisfaction were derived from Warr's Vitamin model of psychological well-being, need fulfilment theories of work motivation, and the meta-analytic findings presented in Chapter III. It was predicted that the three dimensions of job insecurity would have a direct influence on intrinsic job satisfaction ($H_{3.1}$) while individuals experiencing greater extrinsic job satisfaction would report less job insecurity ($H_{3.2}$). In addition, the well-documented association between intrinsic job satisfaction and job performance is expected to manifest in greater extrinsic job satisfaction ($H_{3.3}$). Finally, the hypothesized influence of PA on job satisfaction ($H_{3.4}$) and NA on job insecurity ($H_{3.5}$) is based on dispositional theories and preliminary research investigating the direct and interactive effects of PA and NA.

The Measurement Model of Job Insecurity and Job Satisfaction

In the previous chapter, the stability of the five-dimensional structural model was tested and found to be valid for the purposes of longitudinal data. However, before testing the three-wave structural model, a confirmatory factor analysis (CFA) was carried out to establish the discriminant validity of the dimensions. The theoretical model consisted of seven dimensions: two dispositional (measured only at T_1), three job insecurity, and two job satisfaction constructs measured on three separate occasions. The analysis was based on the EQS 6.1 program with maximum likelihood (ML) data estimation procedure, and input the covariance matrix of the manifest variables defining each congeneric construct. The three alternative models tested for the CFA were a null model, which assumed independence among the indicators (i.e., each indicator represented a unique factor); a one-dimensional model, where all the indicators loaded onto one factor only; and a model where each of the seven factors were distinguishable constructs.

Results of the analyses are shown in Table 7.1. In comparison to the Seven-Factor model, the Null and the One-Factor models were easily rejected as alternatives, due to the chi-square values and other global fit indices. By contrast, the Seven-Factor model showed a reasonable fit to the data. Specifically, the standardized root mean square error (SRMR) value of 0.06 meets the requirements for an acceptable fit (i.e., cut-off value <.08), while the root mean square error of approximation (RMSEA) point estimate is below the threshold of.05. However, because the entire confidence interval is not below but straddles.05, the fit of the model cannot be emphatically classed as "very good"; it is, nevertheless, an acceptable fit to the data, while the incremental robust comparative fit index (RCFI) is .94, slightly below the cut-off value of .95.

Table 7.1.

Measurement Model of Job Insecurity and Job Satisfaction

Models	χ^2	df	S-B χ^2	RCFI	SRMR	RMSEA
1. Null	3,829.894[a]	406	--	--	--	--
2. One-Factor	3,282.155[b]	378	1,995.427	.528	.126	.132 (.126, .137)
3. Seven-Factor	633.482[b]	356	568.207	.938	.060	.049 (.041, .056)

Note: N = 248. Analysis is based on T_1 data. [a] = Robust χ^2; [b] = RLS χ^2 (Re-weighted Least Squares chi-square) is the ordinary Normal Theory RLS, which yields ML (maximum likelihood) estimates; S-Bχ^2 = Satorra-Bentler scaled chi-square; RCFI = robust comparative fit index; SRMR = standardized root mean square residual; RMSEA = root mean square error of approximation. Power for evaluating RMSEA was 1.00 for models.

Overall, the Seven-Factor measurement model is viable for testing the job insecurity-job satisfaction structural model, if one considers also the evidence from the stability coefficients of the constructs over the three-wave data sets, which were described earlier in this thesis.

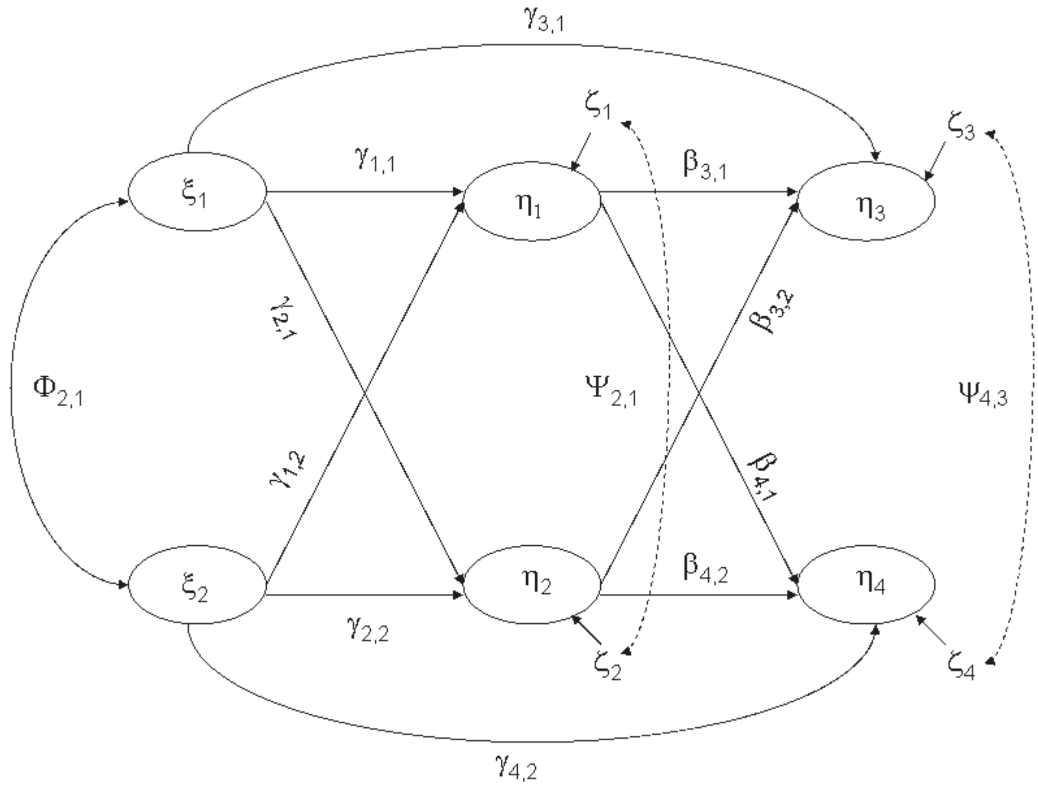
In Chapter V, evidence was presented that indicated that the constructs comprising the model to be tested in this study were stable over time. Although, this measurement test was undertaken separately for each construct, the results from the full structural model (i.e., five constructs measured over three occasions, and two constructs on only one occasion) showed that these loaded substantially on their target factors and were measured reliably. For example, of the 71 manifest variables 82% (58/71) had a loading greater than .70 (> .90 = 13%; > .80 = 32%; > .70 = 37%) on their designated factor, and only 18% (13/71) a loading of > .60.

The Structural Model

Preliminaries

For testing the various structural relations, as an example, Figure 7.1 shows a path diagram using Greek symbols, consistent with the more precise LISREL notation. The exogenous constructs are symbolised with KSI (ξ), while all the endogenous constructs are labelled ETA (η). Covariances among the exogenous constructs are symbolised with PHI (Φ). A path leading from an exogenous to an endogenous construct is symbolised with GAMMA (γ), while a path leading from one endogenous construct to another endogenous construct is symbolised with BETTA (β).

Attached to each endogenous construct is a disturbance term symbolised with ZETA (ζ). This term accounts for all causal influences that are not attributable to any other construct that has a direct path to a focal endogenous construct. The covariances among the disturbance terms ζ are symbolised with PSI (Ψ), and in Figure 7.1 these were "set free" (*i.e.*, modelled) within occasions to determine whether other constructs omitted from the structural model have a common effect on the two endogenous constructs (e.g., η_1 and η_2, or η_3 and η_4). The decision to model the covariances of the disturbance terms (e.g., ζ_1 and ζ_2) stems from the practice that the assumption of independence among the terms of multidimensional constructs is too restrictive (Millsap, 2002).



Note: Construct manifest variables lambda-x and lambda-y are not shown.

Figure 7.1. Three-wave structural model with LISREL notation.

Methods of Analysis

All results of the analysis will be based on *robust* statistics provided by EQS 6.1, where each case is weighted (e.g., 0 to 1) to mitigate the impact of influential cases. This procedure is necessary, because when data are strongly influenced by individual cases, the population covariance matrix cannot be estimated accurately from the sample covariance matrix. Adjustments based on robust procedures for non-normal data produce more efficient estimates of standard errors, and test statistics (Yuan & Bentler, 1998, 1999). EQS 6.1 also prints the results of both the un-weighted and the weighted case procedures and associated Z-scores. Because the weighted case procedure has been adopted for this study, statistically significant parameters calculated with the un-weighted procedure will be considered less stringent than those of the weighted procedure and, therefore, not taken further into account.

For testing the job insecurity and job satisfaction longitudinal model, the measurement errors for the manifest variables (theta-delta for the exogenous variables symbolized with $\theta\delta$, and theta-epsilon for the endogenous variables symbolized with $\theta\varepsilon$) were allowed to co-vary over occasions (Bollen, 1989; Ecob, 1987; Jöreskog & Sörbom, 2001) to take into consideration the systematic variation of indicator variables (i.e., lambda-x for the exogenous variables, and lambda-y for the endogenous variables symbolized with λ_x and λ_y, respectively), in addition to measurement error. Freeing these parameters result in a better fitting model when compared to a more restrictive model, which assumes that these measurement errors are independent over occasions.

Also, the covariances among the disturbance terms of endogenous constructs (Ψ) were set free also within occasions (i.e., T_2 and T_3). As was mentioned earlier, these disturbance coefficients account for causal influences that are not related to any of the other constructs that have direct paths to the endogenous construct. Improvements in model fit should be expected when the disturbance covariances among endogenous constructs are set free (Millsap, 2002). This makes theoretical sense. For example, we would expect that the three separate dimensions of the multi-dimensional job insecurity construct to be significantly inter-correlated, as would the two job satisfaction constructs. When inter-correlations among disturbance terms are statistically significant, it may suggest that constructs omitted from the model have common effects on more than one endogenous construct.

The rationale for setting free the covariances of the disturbances in the model is based on the results of the psychometric meta-analysis presented in Chapter III, which has shown that the job insecurity and job satisfaction constructs are moderately and inversely associated (i.e., intrinsic job satisfaction $\rho = -.49$, and extrinsic job satisfaction $\rho = -.45$).

Model Evaluation

Model evaluation will be based on absolute measures of fit: the root mean square error of approximation (RMSEA), and the root mean square residual (RMSR). The point estimate generated by RMSEA is based on a discrepancy per degree of freedom, and represents the goodness-of-fit that could be expected if the model were estimated in the population. Unlike the majority of indices available in SEM, an advantage of this index is that the developers (MacCallum et al., 1996) have provided calculations for determining the power of the test. A good fitting model has a point estimate value of .06 (Hu & Bentler, 1999), although a more accurate evaluation of a "good" fit should be based on a confidence interval that is entirely below the .05 threshold; but while the RMSEA index is similar to the root mean square residual (RMSR or its standardized form for ease of interpretation the SRMSR) it differs from it, because instead of using the *population* it uses the *sample* for the estimation of the value (Steiger, 1999). If the model fits perfectly, the SRMR index is zero, while a reasonably good-fitting model has a point estimate below .08 (Hu & Bentler, 1999).

A third index, the comparative fit index (CFI), represents comparisons between the estimated model and the null model, a baseline model in this instance. An acceptable cutoff value for this incremental fit measure is ≥ .95 (Hu & Benlter, 1999).
Because all the models tested will be nested, it will also be possible to carry out a chi-square difference test, with their associated degrees of freedom, to determine whether the comparison is statistically different from zero. Usually this test is performed between a baseline model, that has comparatively fewer degrees of freedom, and an alternative model, that has a greater number of constrained parameters and, therefore, more degrees of freedom.

Structural Models

A structural equation modelling procedure was carried out to test the hypothesized model using EQS 6.1. Figure 7.2 shows a model with seven exogenous variables at T_1 – five job attitude (i.e., three job insecurity, and two job satisfaction constructs) and two dispositional variables (i.e., PA and NA). To draw inferences about the relationship between job insecurity and job satisfaction over the three measurement periods, I tested the following four structural models. In all the models tested I controlled for the effects of the two dispositional constructs; that is at Time 1 I regressed the T_2 job insecurity constructs on NA, and intrinsic and extrinsic job satisfaction on PA[4].

Model I (Saturated). This full model was used as baseline to make comparisons between competing nested models (see Table 7.2). It is the most saturated structural model of the models tested in this study (i.e., it had less degrees of freedom that other competing models), because all auto-regressive and cross-lagged paths were freely calculated. Specifically, after controlling for the effects of PA on the two job satisfaction constructs, and NA on the job insecurity constructs at Time 1 (T1), an auto-regressive model was specified (i.e., paths that linked a construct measured later with the same construct measured earlier), which included, in addition, mutual prediction among constructs; that is, the cross-lagged structural paths from the multi-dimensional insecurity constructs (i.e., job loss insecurity, job changes insecurity, and marginalization insecurity) predicting the two job satisfaction constructs (intrinsic and extrinsic job satisfaction), and the two job satisfaction constructs predicting the insecurity constructs at Time 2 (T2) and Time 3 (T3). All other models tested in this study are nested within this more general model.

Model II (Cross-Lagged). This model sets all cross-lagged paths free among constructs, but constrains to zero all auto-regressive direct paths from T_1 to T_3 constructs; that is, earlier measurements of the same constructs do not have a mediating effect on their T_3 counterparts. In addition, I controlled for PA and NA at T_1, consistent with the Model I specification as explained earlier.

[4] The two dispositional constructs PA and NA, which have been used as controls, have been measured only at Time 1. It would be highly unlikely that these two constructs would show significant changes over the data collection time.

Model III (Auto-Regressive). This model constrains to zero all cross-lagged paths among constructs, but frees all auto-regressive paths, arguing direct and mediation effects of earlier measurements on the same construct at T_3; that is, each construct at T_1, for example job insecurity, predicted job insecurity at T_2 and job insecurity at T_3 was predicted by both job insecurity measurements at T_1 and T_2. No cross-lagged effects were modeled. Again at T_1 I controlled for the effects of PA and NA.

Model IV (Parsimonious). This model was based on the results of the best-fitting model tested (i.e., the Saturated Model I specified above, which has the lowest degrees of freedom). In Model IV all non-statistically significant paths were constrained to zero.

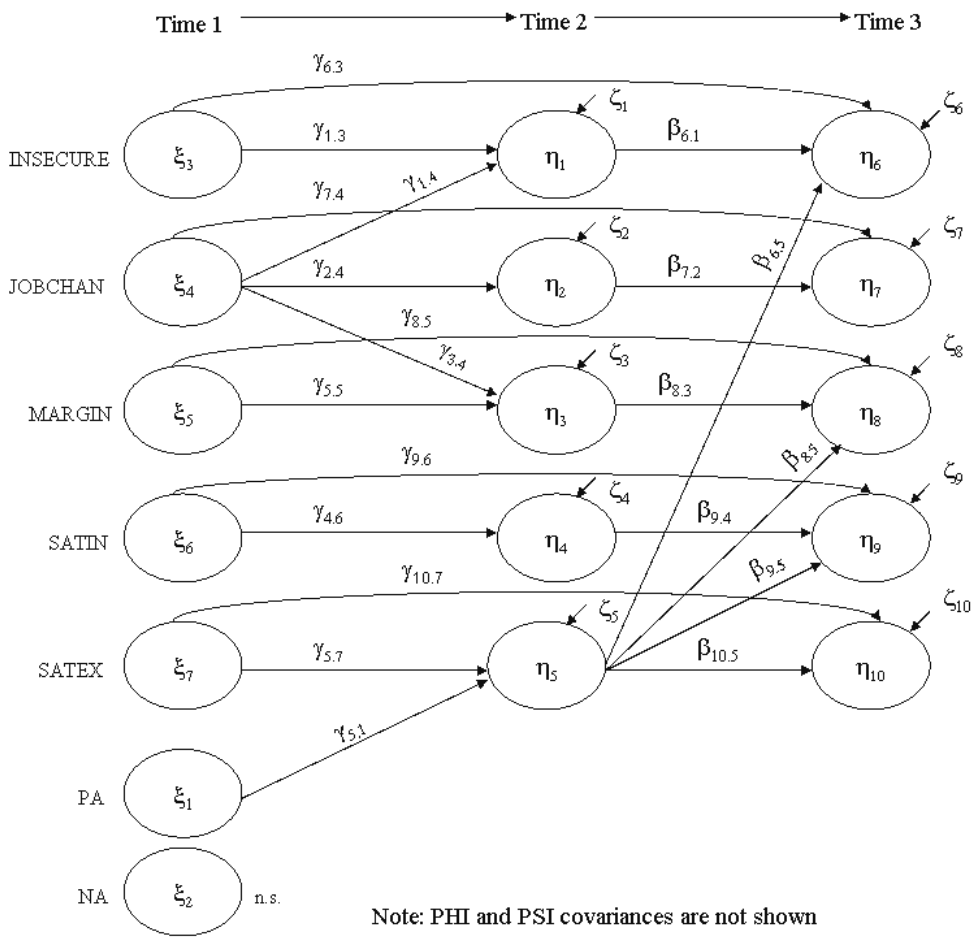


Figure 7.2. Longitudinal structural model of job insecurity and job satisfaction identifying the collective free parameters for Models II and IV using LISREL notation.

Results

After controlling for NA and PA at T_1 (i.e., NA for the three job insecurity and PA for the two job satisfaction constructs)[5], as was described earlier, Model I was specified as a combination of an auto-regressive and cross-lagged structural model. The results shown in Table 7.2 suggest that this was an acceptable model. Specifically, the likelihood-ratio chi-square statistic of 3,657.598 ($p < .001$) was rather large, but with 2,265 degrees of freedom this was expected. The Satorra-Bentler scaled chi-square statistic, which is used to improve the distribution of standard test statistics when the assumption of multivariate normality is violated (Satorra & Bentler, 1994), was reduced to 3,295.363. To assess whether this model was representative of the observed data, a rule-of-thumb index, the *normed chi-square* (i.e., the ratio of the chi-square divided by the degrees of freedom), has been suggested by Jöreskog (1969) with an upper ratio threshold of 2.0[6]. In the present case this value was 1.61, which was well within the conservative acceptable range.

Of the three incremental fit indices shown in Table 7.2, only the robust comparative fit index (CFI) did not reach the recommended threshold value of ≥ 0.95; instead, the CFI was 0.91. However, the other two indices - the standardized root mean square residual (SRMR), and the root mean square error of approximation (RMSEA) – were 0.061 and 0.043, respectively. Both were within the acceptable point estimates (Hu & Bentler, 1999). In addition, for the RMSEA index the entire confidence interval was below the 0.05 threshold suggestive of a “good” fitting model (MacCallum et al., 1996).

[5] This procedure has been adopted for all of the models shown in Table 7.1.

[6] Some researchers have also recommended a more liberal threshold of 3.0 (Carmines & McIver, 1981), while others have even suggested an upper limit of 5.0 (Wheaton, Muthen, Alwin, & Summers, 1977), to indicate a reasonable fit.

Model I was specified as a saturated model, and served as the baseline model against which a number of other competing models were assessed. As a first step, Model III, with only its auto-regressive paths set free (i.e., all cross-lagged paths were constraint to zero), was compared with the saturated or baseline model (i.e., Model I). Before the evaluation of the models via a difference minimum fit function chi-square test (Bollen, 1989), or a difference scaled chi-square test (Satorra & Bentler, 2001), the fit of Model III may also be assessed through measures of absolute fit and incremental fit indices as shown in Table 7.2.

Fixing the 40 cross-lagged paths, and allowing only the auto-regressive free estimations of parameters, resulted in an increase in chi-square with a value of 3,741.684 with 2,305 degrees of freedom. As was expected, the Satorra-Bentler (1994) correction showed a reduction in the scaled chi-square statistic with a value of 3,373.630. Among the fit indices, only the RMSEA point estimate and confidence interval remained the same, while the SRMR (0.090) and the RCFI (0.907) showed a slight deterioration. The comparison between Model III and Model I (i.e., the difference between the auto-regressive model and the baseline model) showed that there was a statistically significant difference between the two models (minimum fit function $\chi^2_{Dif} = 84.089$, $p < .001$; SB $\chi^2_{Dif} = 79.051$, $p < .001$[7]). Therefore, constraining the cross-lagged paths to zero resulted in deterioration in model fit. This suggests that the omitted cross-lagged paths are important to the model, and ought to be further considered.

The next step was to investigate whether Model II (i.e., the cross-lagged only specification) when compared to Model I (the saturated or baseline model) was a viable alternative. After controlling for PA and NA at T_1, and constraining the 5 auto-regressive paths to zero (i.e., the direct paths from T_1 to T_3 for the five constructs), the results showed an improvement in model fit when compared to Model III. This, however, was to be expected since there were only five degrees of freedom separating Model I from Model II. Specifically, the results of the analysis showed that the likelihood-ratio chi-square statistic of 3,680.841 ($p < .001$) was rather large, but with 2,270 degrees of freedom the *normed chi-square* showed an acceptable ratio of 1.62. The Satorra-Bentler scaled chi-square statistic, which was applied to make adjustments to the standard test statistics, when the assumptions of multivariate normality of data are violated (Satorra & Bentler, 1994), was reduced to 3,315.829.

Comparison between Other Nested Models

It was of theoretical interest also to test other model pairs, as for example, Model IV (Parsimonious) versus Model II (Cross-Lagged), rather than the Baseline Model I as the comparison model. This procedure is possible, because Models IV and II (and the other two pairs that will be mentioned) are nested within each other and have different degrees of freedom; that is the two models are basically variants of the same model with different constrained parameters.

I have used first the chi-squares from the Satorra-Bentler (2001) correction, which adjusts for multivariate non-normality of data: Parsimonious χ^2 (2,301) 3,333.551 – Cross-Lagged χ^2 (2,270) 3,315.829. The results of the comparison were not statistically significant (S-B Scaled Difference χ^2 (31) = 16.393, $p > .05$). I then followed the above analysis with the conventional method, and the results were consistent with the first analysis: χ^2 (31) = 3,698.095 – 3,680.841 = 17.254, $p > .05$. At first glance, this comparison may suggest that either model is probable. However, a closer examination will reveal that Model II (Cross-Lagged) has only 5 degrees of freedom more than the Baseline Model I, and the difference between these models is statistically significant, while Model IV (Parsimonious) has 36 degrees of freedom more than Model I, and the difference between these models is not statistically significant (see Table 7.2).

The specifications of both models are presented in Figures 7.3 (Cross-Lagged Model II) and 7.4 (Parsimonious Model IV). A closer examination of the free parameters will show that there are a few differences. For example, compared to Model II in Figure 7.3, Model IV in Figure 7.4 lacks the five direct auto-regressive paths from T_1 to T_3 for the five endogenous constructs. Also missing from Figure 7.4 is the path from *extrinsic job satisfaction* T_2 to *job loss insecurity* T_3. When this path was set free in Model IV, the results were not statistically significant, and it suggests that the direct path from T_1 to T_3 of the *job loss insecurity* latent variable reduced the effect of the *extrinsic job satisfaction* construct. This sensitivity analysis would lead one to the conclusion that the most promising model of the ones tested is Model IV. All other paths in the model are common to both models and, therefore, robust.

Two other pairs of comparisons were possible. The first is Model III (Auto-regressive) vs. Model IV (Parsimonious) using the S-B Scaled Difference χ^2 (4) 3,373.631 – 3,333.551 = 44.618 $p < .001$; and the conventional analysis χ^2 (4) 3,741.687 – 3,698.095 = 43.598, $p < .001$. The second is a comparison of Model III (Auto-regressive) vs. Model II (Cross-Lagged) applying the S-B Scaled Difference χ^2 (35) 3,373.631 – 3,333.551 = 58.200, $p < .01$; and the conventional analysis χ^2 (35) 3,741.687 – 3,680.841 = 60.846, $p < .001$.

Both model pair differences are statistically significant, and therefore are not candidates for the best fitting model of those tested. That is, in comparison to the Parsimonious Model IV all the other models are inadequate. Therefore, only the results of Model IV will be discussed in detail in the pages that follow.

It is recommended that post hoc modifications to a model be verified with a second sample. However, this was not possible in the present study due to missing responses from participants who did not respond to all three surveys during the data collection period that lasted in excess of two years.

In the absence of a cross validation sample, some have suggested the computation of a correlation between the estimated parameters from the original model (i.e., the saturated model), and the estimated parameters from the final model (i.e., the parsimonious model), using, in this instance, free path parameters common to both models. A correlation greater than $r = .90$ between the twenty-three pairs of coefficients would be an indication that the relationships remained stable despite the elimination of a number of non-significant parameters. This was the case with the present data set, and the results showed that the correlation was high ($r = .967$, $p < .001$). The critical path parameters in the model remained unaffected, a clear indication that these excluded parameters were not critical to the final model.

Table 7.2.

Comparisons between the Baseline Model & Nested Models

Models	χ^2	df	$\Delta\chi^2$	Δdf	S-Bχ^2	ΔS-Bχ^2	Δdf	RCFI	SRMR	RMSEA
Null	15,933.839	2,485	--	--	--	--	--	--	--	--
I. Baseline (Saturated)	3,657.598	2,265	--	--	3,295.363	--	--	.910	.061	.043 (.040, .046)
II. Cross-Lagged	3,680.841	2,270	23.243***	5	3,315.829	17.738**	5	.909	.064	.043 (.040, .046)
III. Auto-regressive	3,741.687	2,305	84.089***	40	3,373.631	79.051***	40	.907	.090	.043 (.040, .046)
IV. Parsimonious	3,698.095	2,301	40.497 n.s.	36	3,333.551	37.727 n.s.	36	.910	.069	.043 (.039, .046)

Note 1: N = 248*;* ML χ^2 maximum likelihood estimates; S-Bχ^2 = Satorra-Bentler scaled chi-square; RCFI = robust comparative fit index; SRMR = standardized root mean square residual; RMSEA = root mean square error of approximation. Tests of comparisons between models are shown in parentheses.

* = $p < .05$, ** = $p < .01$, *** = $p < .001$; n.s. = difference not statistically significant. Power for evaluating RMSEA was 1.00 for all models.

Note 2: Model I = Autoregressive & Cross-Lagged mutual prediction with control constructs PA & NA. Model II = Intrinsic job satisfaction is a better predictor of job insecurity. Model III = Extrinsic job satisfaction is a better predictor of job insecurity. Competing models IV & V = Job insecurity predicts job satisfaction, and job satisfaction predicts job insecurity. Model VI = Parsimonious model where all statistically significant paths are set free, while all statistically non-significant paths are constrained to zero. Model VII = Autoregressive model after controlling for PA & NA at T_1.

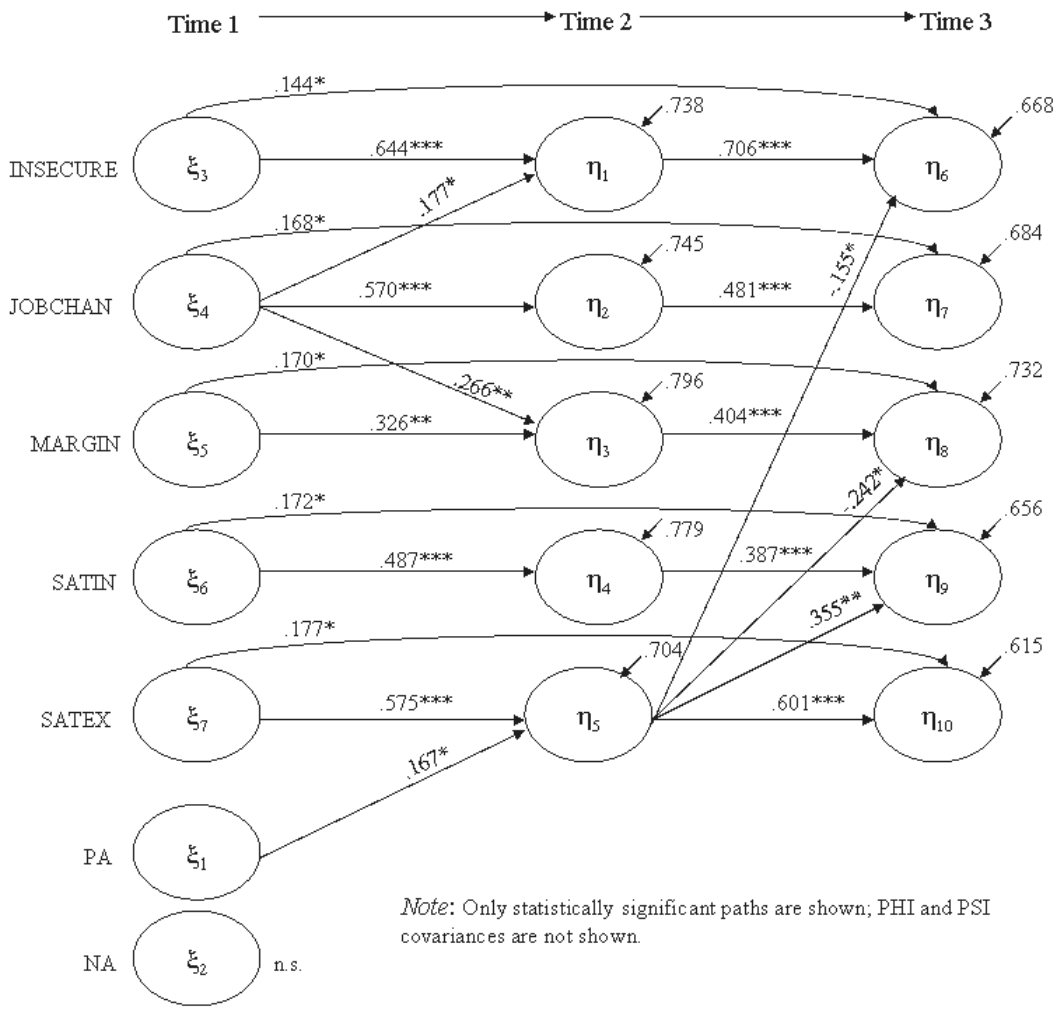


Figure 7.3. Cross-Lagged Model (Model II).

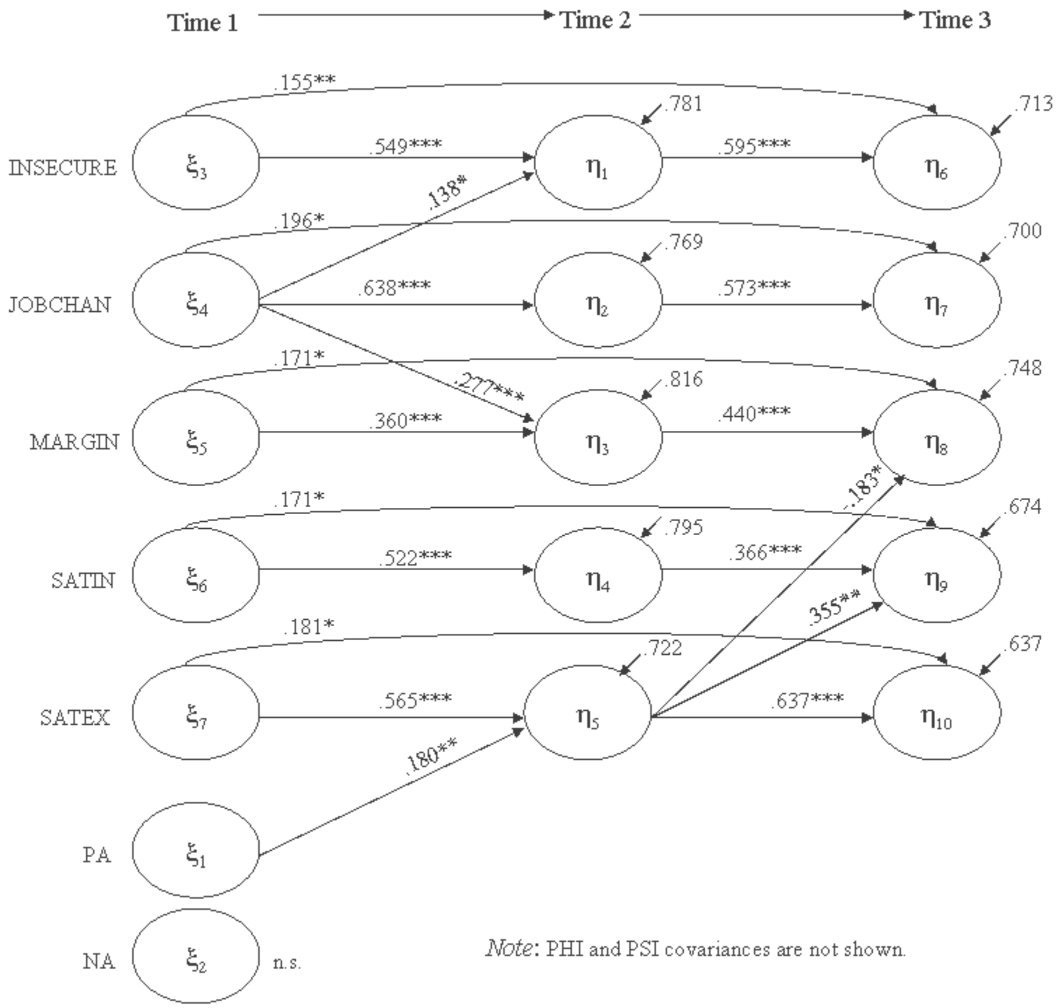


Figure 7.4. Parsimonious Model (Model IV).

Inter-correlations among Exogenous Constructs for the Parsimonious Model

Table 7.3 shows the phi (Φ) matrix of exogenous variables for T_1 data. Consistent with previous research PA and NA are independent dimensions (i.e., $\Phi_{2,1} = -.065$, p > .05). PA and NA, however, were significantly correlated with the job insecurity and job satisfaction constructs, which supports the decision to control for these two dispositional variables in the analysis. Specifically, PA was inversely correlated with the job loss insecurity dimension (i.e., probability of being laid-off, $\Phi_{3,1} = -.426$, $p <.001$, job changes insecurity $\Phi_{4,1} = -.628$, $p < .001$, and marginalization insecurity $\Phi_{5,1} = -.436$, $p < .001$), while NA is positively correlated with job loss insecurity $\Phi_{3,2} = .339$, $p <.001$, job changes insecurity $\Phi_{4,2} = .302$, $p < .001$, and marginalization insecurity $\Phi_{5,2} = .275$, $p < .001$. PA was significantly related to intrinsic job satisfaction ($\Phi_{6,1} = .592$, $p < .001$) and extrinsic job satisfaction ($\Phi_{7,1} = .626$, $p < .001$). By contrast, NA shows a low and inverse correlation with intrinsic job satisfaction ($\Phi_{6,2} = -.235$, $p < .01$), while its correlation with extrinsic job satisfaction is not statistically significant ($\Phi_{7,2} = -.086$, $p > .05$).

As was expected for a multi-dimensional construct, the three dimensions of job insecurity were significantly inter-correlated. Moderate correlations were between job loss insecurity and job changes ($\Phi_{4,3} = .567$, $p < .001$), job insecurity and marginalization ($\Phi_{5,3} = .494$, $p < .001$), and between job changes and marginalization ($\Phi_{5,4} = .518$, $p < .001$).

Inverse and statistically significant inter-correlations ($p < .001$) were obtained between intrinsic job satisfaction and the multi-dimensional construct of job insecurity (i.e., $\Phi_{6,3} = -.436$, $\Phi_{6,4} = -.482$, $\Phi_{6,5} = -.481$, for job loss insecurity, job changes insecurity, and marginalization insecurity, respectively) and extrinsic facet job satisfaction (i.e., $\Phi_{7,3} = -.391$, $\Phi_{7,4} = -.590$, $\Phi_{7,5} = -.431$, for job loss insecurity, job changes insecurity, and marginalization insecurity, respectively). The two job satisfaction constructs were strongly related as was expected ($\Phi_{7,6} = .666$, $p < .001$).

Table 7.3.

Phi Matrix Showing Inter-correlations among Exogenous Constructs at Time 1 for Model IV (Parsimonious)

Constructs	ξ_1	ξ_2	ξ_3	ξ_4	ξ_5	ξ_6	ξ_7
ξ_1. Positive Affectivity	--	$-.065^{n.s.}$	$-.426^{***}$	$-.628^{***}$	$-.436^{***}$	$.592^{***}$	$.626^{***}$
ξ_2. Negative Affectivity		--	$.339^{***}$	$.302^{***}$	$.275^{***}$	$-.235^{**}$	$-.086^{n.s.}$
ξ_3. Job Loss Insecurity			--	$.573^{***}$	$.491^{***}$	$-.436^{***}$	$-.391^{***}$
ξ_4. Job Changes Insecurity				--	$.521^{***}$	$-.482^{***}$	$-.590^{***}$
ξ_5. Marginalization Insecurity					--	$-.481^{***}$	$-.431^{***}$
ξ_6. Intrinsic Job Satisfaction						--	$.666^{***}$
ξ_7. Extrinsic Job Satisfaction							--

Note: N = 248. * = $p < .05$; ** = $p < .01$; *** = $p < .001$; n.s. = not statistically significant.

Inter-correlations among Disturbance Terms for the Parsimonious Model

Table 7.4 shows the inter-correlations of the disturbance terms (Ψ Matrix) separately within T_2 and within T_3. Although all the correlations were moderate and statistically significant at T_2, some associations showed marked variations at T_3. For example, the correlation of the disturbance terms for job loss insecurity and marginalization insecurity was $\Psi_{8,10} = .439$, $p < .001$ and $\Psi_{13,15} = .314$, $p < .01$ at T_2 and T_3, respectively. The disturbance term association between job loss insecurity and intrinsic satisfaction at T_2 was $\Psi_{8,11} = -.398$, $p < .001$, but this was non-significant at T_3 (i.e.,$\Psi_{13,16} = -.138$, $p > .05$). The association between the disturbance term for job changes insecurity and intrinsic job satisfaction was reduced considerably from T_2 to T_3, $\Psi_{9,11} = -.486$, $p < .001$ and $\Psi_{14,16} = -.210$, $p < .05$, respectively. The same pattern of relationship was found for the association between marginalization insecurity and intrinsic job satisfaction for T_2, $\Psi_{10,11} = -.529$, $p < .001$ and T_3 $\Psi_{15,16} = -.250$, $p < .05$.

Generally, all the associations showed a reduction in the covariation among disturbance terms between T_2 and T_3, suggesting that the structural model over time is better able to explain the covariances among the endogenous latent variables. However, there was one exception in this trend; the disturbance term between job loss insecurity and extrinsic facet job satisfaction, showed an increase (i.e., from $\Psi_{8,12} = -.281$, $p < .01$ to $\Psi_{13,17} = -.386$, $p < .001$).

Table 7.4.

Psi Matrix Showing Within Time (Time 2 and Time 3) Inter-correlations of Disturbance Terms among Endogenous Constructs for Model IV (Parsimonious)

	ζ_9	ζ_{10}	ζ_{11}	ζ_{12}	ζ_{14}	ζ_{15}	ζ_{16}	ζ_{17}
ζ_8. Job Insecurity (T2)	.587***	.439***	-.398***	-.281**				
ζ_9. Job Changes (T2)	--	.485***	-.486***	-.590***				
ζ_{10}. Marginalization (T2)		--	-.529***	-.493***				
ζ_{11}. Intrinsic Satisfaction (T2)			--	.577***				
ζ_{12}. Extrinsic Satisfaction (T2)				--				
ζ_{13}. Job Insecurity (T3)					.582***	.314**	-.138n.s.	-.386***
ζ_{14}. Job Changes (T3)					--	.370***	-.210*	-.526***
ζ_{15}. Marginalization (T3)						--	-.250*	-.388***
ζ_{16}. Intrinsic Satisfaction (T3)							--	.395***
ζ_{17}. Extrinsic Satisfaction (T3)								--

Note: * = p < .05; ** = p < .01; *** = p < .001; n.s. = not statistically significant.

Direct and Indirect Effects

The *job loss insecurity* construct (ξ_3) at T_1 had direct ($T_1 \rightarrow T_3$), and indirect effects ($T_1 \rightarrow \underline{T_2} \rightarrow T_3$) on the T_3 job loss insecurity construct (η_6) through the T_2 measurement (η_1). That is, for the construct at T_3 (η_6), in addition to the gamma path direct effects on the T_2 measurement, $\gamma_{1.3} = .549$[7], $Z = 8.414$[8], $p < .001$, there was also a direct effect on the T_3 measurement, $\gamma_{6.3} = .155$, $Z = 2.627$, $p < .01$. In addition, there was a statistically significant beta indirect path (β) through the T_2 measurement, $\beta_{6.1} = .322$, $Z = 5.846$, $p < .001$. An indirect effect on the T_3 construct is the product of the two path coefficients; that is the product of the path leading from the T_1 *job loss insecurity* to the T_2 *job loss insecurity*, by the path leading from the T_2 *job loss insecurity* to T_3 *job loss insecurity*, or in LISREL notation $\gamma_{1,3}\, \xi_3 * \beta_{6,1}\, \eta_6$.

The same pattern of relationship was found for the *job changes insecurity* (ξ_4) construct for the direct effects, $\gamma_{7.4} = .196$, $Z = 2.556$, $p < .02$ ($T_1 \rightarrow T_3$) and $\gamma_{2.4} = .638$, $Z = 9.393$, $p < .001$ ($T_1 \rightarrow T_2$). The indirect effect (i.e., $T_1 \rightarrow \underline{T_2} \rightarrow T_3$), the product of the two path coefficients ($\gamma_{2,4}\, \xi_4 * \beta_{7,2}\, \eta_7$), was also statistically significant, $\beta_{7.2} = .345$, $Z = 5.540$, $p < .001$.

For the *marginalization* construct, the pattern found for the other two insecurity constructs was present for both direct effects ($T_1 \rightarrow T_3$) $\gamma_{8.5} = .171$, $Z = 2.559$, $p < .02$, and ($T_1 \rightarrow T_2$) $\gamma_{3.5} = .360$, $Z = 4.219$, $p < .001$, and for the indirect effect ($T_1 \rightarrow \underline{T_2} \rightarrow T_3$) through the T_2 measurement $\beta_{8.3} = .158$, $Z = 3.096$, $p < .01$, ($\gamma_{3,5}\, \xi_5 * \beta_{8,3}\, \eta_8$).

[7] Coefficients shown are in standardized form.
[8] Critical values of Z for two-tailed test: $Z = 1.96$, $p = .05$; $Z = 2.33$, $p = .02$; $Z = 2.58$, $p = .01$; $Z = 3.29$, $p = .001$;

For *intrinsic job satisfaction*, the two direct effects were statistically significant - ($T_1 \rightarrow T_2$) $\gamma_{4.6} = .522$, Z = 6.318, $p < .001$, and ($T_1 \rightarrow T_3$) $\gamma_{9.6} = .171$, Z = 2.495, $p < .02$, and for the indirect effect ($T_1 \rightarrow \underline{T_2} \rightarrow T_3$) the product of the two path coefficients ($\gamma_{4,6}\, \xi_6 * \beta_{9,4}\, \eta_9$) was also statistically significant $\beta_{9.4} = .191$, Z = 2. 811, $p < .01$.

For *extrinsic job satisfaction*, there were direct effects ($T_1 \rightarrow T_3$) $\gamma_{10.7} = .181$, Z = 2.427, $p < .02$, and ($T_1 \rightarrow T_2$) $\gamma_{5.7} = .565$, Z = 7.804, $p < .001$. The indirect effect (i.e., $T_1 \rightarrow \underline{T_2} \rightarrow T_3$), the product of the two path coefficients ($\gamma_{5.7}\, \xi_7 * \beta_{10.5}\, \eta_{10}$), was also statistically significant, $\beta_{10.5} = .361$, Z = 4.756, $p < .001$.

In addition to the indirect effects within the auto-regressive model of associations, there were also indirect effects from the following three sources: *job changes insecurity*, PA, and *extrinsic job satisfaction*. Within the multi-dimensional job insecurity construct, the product of the two path coefficients linking two paths - consisting of *job changes insecurity* (T_1) to *job loss insecurity* (T_2); and *job loss insecurity* (T_2) to *job loss insecurity* (T_3) - was statistically significant ($\gamma_{1.4}\, \xi_4 * \beta_{6.1}\, \eta_6$), $\beta_{6.1} = .080$, Z = 1.980, $p < .05$. The *job changes insecurity* construct, in addition to the direct effect mentioned earlier, also had an indirect effect on the *marginalization insecurity* construct at T_3.

In diagrammatic form, the association is Job Changes Insecurity (T_1) $\rightarrow$ Marginalization Insecurity $T_2 \rightarrow$ Marginalization Insecurity T_3, or in LISREL notation ($\gamma_{3.4}\, \xi_4 * \beta_{8.3}\, \eta_8$), $\beta_{8.3} = .121$, Z = 3.069, $p < .01$. However, there were also two other indirect paths from *PA* and *extrinsic job satisfaction* to *marginalization insecurity.* Diagrammatically these associations were PA $T_1 \rightarrow$ Extrinsic Job Satisfaction $T_2 \rightarrow$ Marginalization T_3; and Extrinsic Job Satisfaction $T_1 \rightarrow$ Extrinsic Job Satisfaction $T_2 \rightarrow$ Marginalization T_3. In LISREL notation the first association is ($\gamma_{5.1}\, \xi_1 * \beta_{8.5}\, \eta_8$), $\beta_{8.5}$ = -

.034, Z = -1.978, $p < .05$, and the second ($\gamma_{3.7}\,\xi_7 * \beta_{8.3}\,\eta_8$), $\beta_{8.3} = -.107$, Z = -2.431, $p <$ .05. Both have an inverse relationship with the T_3 *marginalization insecurity* outcome. The other indirect effects concern the two job satisfaction constructs. For *intrinsic job satisfaction* both *PA* and *extrinsic job satisfaction* have indirect effects on the T_3 *intrinsic job satisfaction* construct. The path PA T_1 → Intrinsic Job Satisfaction T_2 → Intrinsic Job Satisfaction T_3, ($\gamma_{4.1}\,\xi_1 * \beta_{9.4}\,\eta_9$), $\beta_{9.4} = .105$, Z = 2.520, $p < .02$, and the path Extrinsic Job Satisfaction T_1 → Extrinsic Job Satisfaction T_2 → Intrinsic Job Satisfaction → T_3, ($\gamma_{5.7}\,\xi_7 * \beta_{9.5}\,\eta_9$), $\beta_{9.5} = .181$, Z = 3.088, $p < .01$.

Finally, for the *extrinsic job satisfaction* construct the path is PA T_1 → Extrinsic Job Satisfaction T_2 → Extrinsic Job Satisfaction T_3, and the notation is ($\gamma_{5.1}\,\xi_1 * \beta_{10.5}\,\eta_{10}$), $\beta_{10.5} = .115$, Z = 2.692, $p < .01$.

The sum of all the direct and indirect effects of these associations are the total effects on each of the T_3 constructs.

Percent of Variance Explained

The variance of a disturbance parameter (zeta or ζ) accounts for any causal influences on the endogenous latent variable (i.e., any target latent variable measured at T_2 or T_3), which are not associated with any other latent variable that has a direct path to the endogenous (i.e., target) variable. The coefficient zeta represents, therefore, error of prediction due to omitted causal influences from other latent variables not incorporated in the structural model. The percent of variance explained for the target latent variable may be easily calculated as ($1 - \zeta^2$). For example, the zeta coefficient for *extrinsic job* *satisfaction* at T_3 was $\zeta = .634$ and, therefore, the percent of variance explained is $(1 - .637^2)$[9] = .5940 or 59.40%.

An examination of the variances of the disturbance terms showed that the percent of variance explained for T_2 latent variables ranged from 33.4% for *marginalization insecurity* to 47.8% for *extrinsic job satisfaction*, increasing at T_3 to 44.4% and 59.8%, respectively.

All five latent variables showed a modest increase in explained variance from T_2 to T_3: 10.3% for *job loss insecurity* (from 39.1% to 49.4%), 10.6% for *job changes insecurity* (from 40.9% to 51.5%), 11% for *marginalization insecurity* (from 33.4% to 44.4%), 12% for *extrinsic job satisfaction* (from 47.8% to 59.8%), and 17.8% for *intrinsic job satisfaction* (from 36.9% to 54.7%). Overall, the two job satisfaction dimensions were marginally better predicted than the three job insecurity constructs.

Summary and Conclusions

In this chapter, evidence was presented to show that the measurement model of the seven congeneric latent variables was acceptable, and with other supporting evidence from the structural stability of the five endogenous variables in Chapter V, permitted the longitudinal analysis of the data. Two control latent variables were used with all analyses: PA and NA, which have been reported in the literature to act as nuisance variables in self-report data.

In addition to a Null Model, four alternative models were tested for fit: a Saturated Model I, a Cross-Lagged Model II, an Auto-regressive Model III, and a Parsimonious Model IV. Results of analyses with robust statistics and global indices of fit, in addition to chi-square difference tests for nested models based on conventional

[9] The disturbance term coefficients shown are in standardized form.

methods and the Satorra-Bentler (2001) Scale Difference test, showed that the Parsimonious Model IV was the most probable for interpretation. Results of the analyses indicated that all direct and indirect auto-regressive paths were statistically significant over time. Cross-lagged paths were statistically significant from *job changes insecurity* T_1 to *job loss insecurity* and *marginalization insecurity* both at T_2.

Contrary to expectations ($H_{3.5}$), NA did not have any effect on the job insecurity multi-dimensional construct. PA, however, had direct effects on the *extrinsic job satisfaction* latent variable ($H_{3.4}$) and an indirect effect on the *intrinsic job satisfaction* and *marginalization insecurity* latent variables at T_3. A surprising result was the statistically significant path leading from *extrinsic job satisfaction* T_2 to *intrinsic job satisfaction* T_3, where the reverse was expected ($H_{3.3}$). As predicted ($H_{3.2}$), *extrinsic job satisfaction* also had a path (negative) from T_2 to *marginalization insecurity* at T_3. Although job insecurity was predicted to influence intrinsic job satisfaction ($H_{3.1}$), no direct or indirect paths were identified from any of the job insecurity latent variables to intrinsic job satisfaction.

An average of 50% of the variance in the five endogenous constructs was explained by the three-wave data set, indicating that other latent constructs, which were omitted from the model, could have enhanced the prediction. Overall, the results suggest that job insecurity dimensions do not impact job satisfaction, but rather satisfaction with the extrinsic aspects of work, such as pay and future career prospects, may act as protective buffers to lessen the effects of job insecurity.

In the final chapter that follows, I will discuss the theoretical and practical implications of these results and those of previous chapters along with the strengths and limitations of these studies and future research directions.

CHAPTER VIII

GENERAL SUMMARY AND DISCUSSION

> "There is nothing as practical as a good theory."
>
> — (Lewin, 1952, p. 169)

The primary aim of this thesis was to examine the relative impact of NA and PA on the causal relationship between job insecurity and job satisfaction. In this chapter, I summarize the central research findings and discuss the theoretical and practical implications of these findings. Avenues for future research are then considered before examining the strengths and limitations of the research design.

This research has made a unique contribution to the literature by employing a three-wave longitudinal design to establish the nature and strength of causal relations between dispositional affect, job insecurity, and job satisfaction. Prior to conducting this investigation, I employed a series of rigorous analytical procedures to ensure the measures embedded in the structural model demonstrated robust psychometric properties, including construct validity, reliability, sample invariance, and structural stability over time. This measurement model included a new three-dimensional job insecurity measure capturing job loss, job changes, and marginalization insecurity. A meta-analytic review of over three decades of research was also conducted to determine the strength of associations between job insecurity and intrinsic and extrinsic job satisfaction relative to global job satisfaction. The results of these preliminary studies provided a strong empirical foundation from which to develop and test the proposed causal model.

General Summary

How Important are NA and PA?

The hypothesized influence of NA on job insecurity and PA on job satisfaction was examined based on research indicating that a significant component of job satisfaction is rooted in PA (Thoresen et al., 2003; Watson & Slack, 1993), and that NA may act as a source of bias or a substantive variable influencing the relationship between stressors and strains (Spector et al., 2000). The use of a three-wave longitudinal data set and structural equations modelling (SEM) provided a strong test of causal relations and helped to circumvent problems of common method variance (CMV) with self-report data.

Contrary to the view that NA may play a substantive role in the stress process beyond that of a nuisance variable (Spector et al., 2000), this study found no significant paths from NA to any of the three job insecurity dimensions. Other longitudinal studies in the broader stress literature have found that NA did not significantly influence the relationship between self-reported job stressors and either job satisfaction (Watson & Slack, 1993) or mental strain (De Jonge et al., 2001; Spector, Chen et al., 2000).

Taken together, these results suggest that the experience of job insecurity cannot be attributed to NA. Rather, any influence of NA on job insecurity appears to be confined to cross-sectional research and attributable to CMV rather than a substantive causal relationship between the underlying constructs. Indeed, this study found NA to be positively correlated with all three job insecurity dimensions when these constructs were analyzed cross-sectionally at T_1. However, when examined longitudinally these relationships disappeared, thus demonstrating the advantages of longitudinal analyses in controlling for CMV and establishing more parsimonious causal models. Even in cross-sectional research using correlational analyses, the influence of NA as a source of CMV may be reduced by using the present job insecurity measure, which is designed to resist the potential biasing effects of NA by not directly measuring affective states (Podsakoff et al., 2003).

While the majority of dispositional research has focused on NA, this study found PA to be a considerable force influencing extrinsic job satisfaction at $T_{2,}$ which, in turn, led to a reduction in marginalization insecurity and increased intrinsic job satisfaction at T_3. Partial support was also found for the causal influence of extrinsic job satisfaction on job loss insecurity. In a comparison of the two best-fitting structural models, a more robust causal model (Parsimonious Model IV) resulted when the hypothesized structural path from extrinsic job satisfaction at T_2 to job loss insecurity at T_3 (Cross-Lagged Model II) was removed and autoregressive paths were retained. This result indicates that, while the effect of extrinsic job satisfaction on job loss insecurity is a viable relationship, it was diluted by the direct autoregressive path from job loss insecurity at T_1 to T_3. Although the inclusion of this path does not represent the most robust solution, the path may find stronger empirical support if tested in another context. Future research should test this possibility.

These findings indicate that a predisposition to experience positive emotions shapes an individual's perceptions of salary and career prospects, which, in turn, provides a protective buffer against marginalization insecurity and enhances intrinsic job satisfaction. Moreover, the buffering effect of PA through extrinsic job satisfaction may potentially extend to job loss insecurity. This predominant influence of PA over NA is consistent with research supporting a human bias towards optimism operating at a neurological level (Sharot, 2011; Taylor & Brown, 1994). Previous research has linked PA to extrinsic job satisfaction directly through more favourable perceptions of salary and career advancement (Shaw, Duffy, Jenkins, & Gupta, 1999; Vandenbos, 2003) and indirectly through stronger supervisory ratings of technical job performance and organizational citizenship behaviours (Hosie et al., 2006; Lyubomirsky et al., 2005). In light of these findings, and given the weak correlation between PA and NA reported in this study and others (Diener & Emmons, 1985; Watson, 1988a), greater attention should be given to the substantive role of PA in future research.

What is the Causal Relationship between Job Insecurity and Job Satisfaction?

By employing a longitudinal design and controlling for dispositional affect, it was possible to test with considerable accuracy the strength and direction of causal relations between job insecurity and job satisfaction. Surprisingly, none of the three job insecurity dimensions were causal predictors of intrinsic or extrinsic job satisfaction. This result is contrary to Warr's vitamin model and the dominant view that job insecurity will cause a decrease in job satisfaction (De Witte, 2006; Greenhalgh & Rosenblatt, 1984; Hartley et al., 1991; Sverke & Hellgren, 2002). Instead, the predominant relationship was one of reverse causation, in which extrinsic job satisfaction at T_2 had a lasting impact on marginalization insecurity and intrinsic job satisfaction one year later. As mentioned earlier, a direct causal path from extrinsic job satisfaction to job loss insecurity is also highly plausible.

Based on research linking job satisfaction to supervisory ratings of job performance (Judge, Thoresen et al., 2001) and organizational citizenship behaviour (LePine et al., 2002), intrinsic job satisfaction was predicted to have a direct positive influence on extrinsic job satisfaction. However, evidence was found for a reverse causal pattern, in which extrinsic job satisfaction at T_2 predicted intrinsic job satisfaction at T_3. Specifically, the model indicates that employees who experience greater satisfaction with salary and career prospects are also more satisfied with the intrinsic facets of a job, such as the level of responsibility they are given, the use of their abilities, and the amount of variety they experience.

That job changes insecurity was neither an antecedent nor a consequence of intrinsic or extrinsic job satisfaction is contrary to cross-sectional research showing a negative association between job changes insecurity and job satisfaction (Ashford et al., 1989; Hellgren et al., 1999; Nelson et al., 1995) and a two-wave longitudinal study where job changes insecurity predicted subsequent job satisfaction even after controlling for PA and NA (Hellgren, Sverke & Isakkson, 1999). These divergent results can be explained in terms of the unique features of the present study, including a three-wave panel design, the measurement of dimension-specific job satisfaction, the robust job insecurity measure employed, and the use of SEM. Nonetheless, the current findings will need to be replicated in other organizational settings.

In their review of the job insecurity literature, Sverke, Hellgren and Näswall (2002, p. 258) called for more longitudinal research into "the process in which job insecurity develops and affects individuals," noting the need to identify the antecedents of job insecurity. In their words, "reducing and preventing the negative consequences of job insecurity requires an understanding of how it develops." The longitudinal design used in the present study enabled the researcher to determine how the three job insecurity dimensions might interact to influence each other over time.

Rather than each dimension acting independently of each other, the most robust structural model revealed a sequential pattern of relationships, in which job changes insecurity at T_1 predicted job loss and marginalization insecurity at T_2. In combination with the direct autoregressive paths, job changes insecurity accounted for a considerable amount of variance in job loss insecurity (39%) and marginalization insecurity (33%). This relationship did, however, diminish by T_3.

The longitudinal path from job changes to job loss insecurity is closely aligned with events surrounding the three waves of data collection. As noted in Chapter IV, insecurity over future job changes is likely to have been elevated by the closure of two radio stations and an organization-wide announcement of corporate restructuring in two central divisions of the company — Content and Television — just prior to the first phase of data collection. Mid-way through the second phase, 53 employees were made redundant in the Television and Content divisions. In addition to the elevated levels of job loss insecurity that would have resulted from these layoffs, both marginalization and job loss insecurity were still affected by job changes insecurity experienced one year earlier.

Since no major restructuring or layoffs took place in the 12-month period between the T_2 and T_3 surveys, it is not surprising that the impact of job changes insecurity on marginalization and job loss insecurity diminished by T_3 given that the survey respondents had retained their employment. Nonetheless, the sustained influence of job changes insecurity over a one-year period demonstrates the salience of this construct as well as the lasting effects that organizational restructuring can have through job changes.

Theoretical Contributions

The causal model supported in this study has important implications for the role of dispositional affect in theoretical models of job insecurity and job satisfaction and helps to explain the development of job insecurity over time and its relationship with job satisfaction. In this section, I discuss the theoretical implications drawn from the model.

The Role of Dispositional Affect

As discussed in Chapter VI, researchers have recently argued for more research on the substantive (causal) processes through which NA may influence work attitudes, rather than treating the dispositions simply as nuisance variables contributing to common method variance (Spector, Zapf et al., 2000; Staw & Cohen-Charash, 2005). This proposition was not supported in the present study, as NA was unrelated to job insecurity either directly or indirectly through mediation paths. Instead, the relatively neglected disposition of PA was found to be a predominant influence on extrinsic job satisfaction at T_2, which in turn affected marginalization insecurity and intrinsic job satisfaction at T_3.

There are three theoretical mechanisms that may explain how PA is able to mediate — through extrinsic job satisfaction — marginalization insecurity and intrinsic job satisfaction.

First, individuals high or low in PA may differ in their subjective evaluation of the same objective level of extrinsic rewards. That is, a person's evaluation of the same extrinsic rewards will change as a result of their more optimistic outlook. Accordingly, PA has been shown to positively influence perceptions of pay equity (Vandenbos, 2003) and pay satisfaction (Shaw et al., 1999), while signal sensitivity theory posits that high-PA workers would react more positively to smaller rewards relative to low PA individuals (Larsen & Ketelaar, 1989). Through this favourable evaluation of rewards, high PA individuals would, in turn, experience greater intrinsic job satisfaction and be less vulnerable to marginalization insecurity.

Second, high PA individuals may actively influence their objective income level and career prospects through stronger actual job performance and more favourable performance ratings from supervisors relative to their low PA counterparts. The proposition that high PA leads to greater job performance is the central tenet of the happy-productive worker hypothesis (Hosie et al., 2006) and is supported by a breadth of research linking PA to task and contextual job performance (Harter et al., 2002; Hosie et al., 2006; Judge, Thoresen et al., 2001). PA may influence job performance through elevated self-efficacy (Baron, 1990; Forgas et al., 1990); heightened optimism about future circumstances (Wright & Bower, 1992); enhanced problem solving and creativity (Aspinwall, 1998; Ganster, 2005; Isen, 2000); and a proclivity to set challenging goals and persevere in the face of obstacles (George & Brief, 1996; Locke & Latham, 1990). In this way, stronger job performance would increase the probability of career advancement, financial security, and "in-group" status, leading to greater intrinsic job satisfaction and building immunity against marginalization insecurity.

Finally, while individuals high in PA tend to react to unfavourable situations with more emotional intensity than their low PA counterparts, they are also more energetic in proactively changing their situation to reduce the dissonance of a positive disposition and a dissatisfying job (Judge, 1993). In this case, those higher in PA would be inclined to respond more proactively to unfavourable extrinsic rewards by, for instance, asking for a pay raise, persisting with career development initiatives, focusing on and "crafting" intrinsically rewarding aspects of their work, and building relationships with colleagues. This response would, in turn, lead to greater intrinsic job satisfaction and self-protection against marginalization insecurity. By contrast, those low in PA are more likely to respond with listlessness and apathy, allowing their dissatisfaction with salary and career prospects to effect their intrinsic motivation and perhaps becoming disengaged from co-workers leading to marginalization insecurity.

Through these three mechanisms, PA would shape a worker's actual and perceived extrinsic rewards, which, in turn, provides a protective buffer against marginalization insecurity and enhanced intrinsic job satisfaction with the passage of time. These structural findings indicate that neither dispositional nor situational theories alone can account for the psychological processes linking job insecurity to job satisfaction. Instead, PA appears to play a more complex role by shaping how individuals perceive and actively influence their salary and career prospects, and, by extension, their intrinsic job satisfaction and marginalization insecurity. The role of PA as a causal antecedent strengthens and extends the recent call for researchers to advance beyond the situation versus person debate and the conventional treatment of dispositional affect as merely a methodological artefact or nuisance variable to be controlled by researchers (Judge, 1993; Staw & Cohen-Charash, 2005).

Prior to this study, the influence of PA had been largely ignored in the job insecurity literature despite strong evidence of its far-reaching effects on several desirable outcomes both within and outside of the work domain (Lyubomirsky et al., 2005). This thesis makes a strong case for researchers to incorporate PA as a substantive variable in future studies to achieve more powerful and theoretically meaningful job insecurity frameworks and avoid what Spector and colleagues (2000) refer to as "throwing the baby out with the bath water."

As noted in the introduction to this thesis, the emerging fields of positive organizational behaviour (POB) and positive organizational scholarship (POS) seek to counterbalance the prevailing negative bias in the organizational sciences through the study and application of positive employee traits, states, and behaviours. The emergence of PA as a central factor in the present causal model builds on a growing body of research linking job insecurity to other positive character traits, such as dispositional optimism (Bosman et al., 2005); self esteem (Kinnunen et al., 2003; Klandermans et al., 1991; Orpen, 1994); and internal locus of control (Ashford et al., 1989; Näswall et al., 2005) to provide a theoretical bridge into the promising fields of POB and POS. Specifically, the findings extend the established benefits of PA for optimal psychological functioning and performance at work (Cameron et al., 2003; Lyubomirsky et al., 2005; Pressman & Cohen, 2005) by demonstrating how PA can enhance the buffering effect of extrinsic job satisfaction on marginalization insecurity while fostering intrinsic job satisfaction.

A Causal Model of Job Insecurity and Job Satisfaction

Most theoretical models depict job insecurity as a cause in the stressor-strain chain, whereas job satisfaction is almost always considered an outcome. Based on need fulfilment theories of motivation, this thesis provides strong longitudinal evidence for an alternative and more concise model of reverse causation, in which pay and career satisfaction provide a protective buffer against marginalization insecurity while enhancing intrinsic job satisfaction. Some evidence was also found for a second, albeit less parsimonious, model linking extrinsic job satisfaction to job loss insecurity.

Theoretical models of job insecurity and job satisfaction should, therefore, advance beyond simple one-way causal relationships between global constructs to incorporate this more dynamic pattern of reverse causation operating at the dimension-specific level.

The absence of a direct causal relationship between job insecurity and job satisfaction was unexpected and can be explained in terms of Alderfer's (1969) ERG theory. In this context, job loss and job changes insecurity represent a threat to *existence* needs, while marginalization insecurity would threaten *relatedness* needs. Accordingly, these needs must be met before a person can pursue higher order growth needs, such as an intrinsically satisfying job. Thus, while employees may experience negative emotional reactions to job insecurity as a threat to basic needs, none of the three job insecurity dimensions would be expected to influence intrinsic job satisfaction. That is, having an intrinsically rewarding job, in this case, becomes subordinate to having a job at all (job loss insecurity), having sufficient resources to perform on the job (job changes insecurity), and establishing a functional social identity within the work group (marginalization insecurity).

The relationship between extrinsic job satisfaction and marginalization insecurity is consistent with the *frustration-regression* principle of Alderfer's ERG theory, which predicts that a prolonged dissatisfaction with *existence* needs — such as salary and career prospects — will lead to a greater desire for such needs leaving less energy to pursue higher level *relatedness* needs. Consequently, a person who is less financially secure and with limited career prospects would experience a lack of connectedness and sense of distance from others. Over time, this experience would feed the perception that one is being marginalized, while at the same time making actual marginalization more likely.

On the other hand, the *satisfaction progression* principle holds that the satisfaction of these existence needs would enable a person to pursue the higher order need for healthy interpersonal relationships with co-workers, thus creating a protective buffer against marginalization insecurity.

Leader member exchange (LMX) theory would predict that managers are more likely to reward and promote the career advancement of members of the "in-group" with whom they enjoy a high quality relationship leaving members of the "out-group" with a relationship characterized by less communication, privileges, and support. The positive influence of PA on extrinsic job satisfaction at T_2 suggests that this reward inequity may be a function of the character traits of individuals high in PA. Based on a combination of strong job performance and relatively high levels of optimism, social engagement, and self efficacy, it seems reasonable that high PA individuals would belong to the managerial in group and receive the lion's share of promotion opportunities and other extrinsic rewards.

Contrary to ERG theory, extrinsic job satisfaction did not influence job changes insecurity in this study, corroborating the views of some researchers that the prospect of unfavourable changes to a job is less of a financial threat to workers than job loss (De Witte, 1999; Greenhalgh & Rosenblatt, 1984; Reisel & Banai, 2002a). Job changes insecurity did, however, emerge as a particularly influential construct by functioning as a causal antecedent driving job loss and marginalization insecurity. While this result helps to explain preliminary research that reports weaker correlations with attitudinal and affective outcomes for job changes relative to job loss insecurity (Hellgren et al., 1999; Reisel & Banai, 2002a), it is job changes insecurity that ultimately gives rise to insecurity over job loss and marginalization. Future research should examine this mediation effect of job changes insecurity using longitudinal data for a range of attitudinal and affective outcomes.

As discussed in this Chapter III, the assumed causal precedence of job insecurity over job satisfaction in previous research is based on limited longitudinal evidence using mostly two-wave data sets, measuring overall job satisfaction, not accounting for dispositional affect, and relying on less robust statistical procedures. While some cross-lagged longitudinal studies have found preliminary evidence for the temporal precedence of job insecurity for measures of general mental distress (Garst et al., 2000; Hellgren & Sverke, 2003; Hellgren et al., 1999), the present results indicate a more complex sequence of causal relationships are occurring for job satisfaction. Theories of occupational stress and the psychological contract, which have been used to explain the causal predominance of job insecurity on psychological well-being, do not appear to hold true for job satisfaction. Instead, the structural model presented in this thesis seems better aligned with need fulfilment theories of motivation.

Extrinsic and Intrinsic Job Satisfaction

The structural path from extrinsic to intrinsic job satisfaction can be explained in terms of objective job characteristics and perceptual processes. To the extent that a person's satisfaction with salary and career progression is based on actual career advancement to positions of greater complexity, this would be reflected in higher levels of satisfaction with the intrinsic facets of a job measured in this study (i.e., level of responsibility given, use of one's abilities, variety in the job). The influence of PA on extrinsic job satisfaction provides additional support for this mechanism in light of the well-established link between PA and job performance.

The relationship between pay satisfaction and intrinsic job satisfaction may also be due to the symbolic nature of salary and promotions (Krefting, 1980). As Jahoda (1982) argues in her latent deprivation theory, our self-concept is closely tied to our occupation. Since the relative worth of a job is typically measured in terms of income and occupational status, it stands to reason that individuals who are more satisfied with their salary and career progression would come to attach greater value to the intrinsic aspects of their work. Moreover, pay level and career progression may serve as a proxy measure in the eyes of employees of how well they are performing in the absence of a well-developed performance appraisal system. This vote of confidence or signal of appreciation is likely to result in greater intrinsic job satisfaction and would seem to have particular value in a downsizing environment where there is considerable pressure to contain costs by keeping salaries low.

Longitudinal Relations between Job Insecurity Dimensions

Although previous research has shown that organizational restructuring and downsizing events are associated with a subsequent increase in job insecurity (Brockner, 1988; Brockner et al., 1992; Ferrie et al., 1998), little is known of the psychological processes underlying this relationship. As Kets de Vries and Balazs (1997) observe, current research "has not gone into sufficient depth to deconstruct the psychological dynamics that are set in motion by the process of downsizing" (p. 18). This is an important contribution of the present structural model, which explains how insecurity over future job changes triggered by organizational restructuring and downsizing activities can have a lasting influence on job loss and marginalization insecurity. These effects do not, however, continue indefinitely but rather diminish after a period of a year when no further restructuring occurs and employees have retained their positions. This dynamic interaction between the three job insecurity dimensions should be reflected in existing theoretical models describing the etiology of downsizing and restructuring.

That the influence of job changes insecurity was sustained over a one-year period demonstrates the salience of this construct as well as the lasting effects of organizational restructuring. It could be that over time these undesirable changes to the job create what Seligman (1975) refers to as *learned helplessness,* where continuous exposure to uncontrollable aversive situations has been shown to result in cognitive and motivational deficits as well as decreased self-esteem and depressed affect. These outcomes may be sustained even after the environment changes and success is possible. In this case, job changes insecurity reflects an environment of undesirable and uncontrollable job changes that threaten an employee's capacity to perform on the job. It is, therefore, reasonable to expect that employees experiencing prolonged job changes insecurity would come to believe that, in spite of their best efforts, they are powerless to alter the circumstances that threaten their future employment.

In Chapter I, Homan's (1950) theory of human groups was used to explain how the disruption to work group cohesion resulting from restructuring and downsizing could engender perceptions that one is being excluded from the broader work group. Specifically, Homan's theory would predict that the disbanding of work groups and the formation of new groups — a typical consequence of downsizing and restructuring — would result in formal and informal group interactions that are likely to be less frequent and possibly more restricted to surviving members of the former in-group who can be trusted and relied upon. The consequence would be more negative sentiments toward out-group members and greater in-group solidarity. Moreover, based on the mutual dependence of interaction and sentiment theorized by Homans, the social gap between in-groups and out-groups is expected to strengthen over time. Through this social disruption of a work group, restructuring would lead to marginalization insecurity among out-group members.

The causal path from job changes insecurity on marginalization insecurity found in the present study builds on this theory by identifying insecurity over job changes as a primary mechanism through which corporate restructuring would result in marginalization insecurity. The results are also aligned with previous research indicating that changes emanating from restructuring can trigger a change and potentially a loss of social identity, leading to job dissatisfaction, lower perceived work group performance and diminished identification with the work team and the organization as a whole (Jetton et al., 2002).

Beyond the fragmentation of the work group, job changes insecurity may be elicited by other well-documented changes to the job following restructuring, such as an increase in workload, greater role ambiguity, elevated performance pressure and the curtailment of resources and rewards (Kets de Vries & Balazs, 1997; Marks & De Meuse, 2005). The uncertainty over whether these changes will continue into the future is likely to engender negative sentiment among group members by fostering a more competitive and political climate, with employees struggling to protect their employment by “looking out for number one” (Marks & De Meuse, 2005). This negative sentiment would reinforce the formation of in-groups and out-groups theorized by Homans and may help to explain the dysfunctional consequences of restructuring documented in the literature, including political infighting, increased interpersonal conflict, lack of teamwork, restricted communication flows, and less information sharing (Cameron, Whetten, & Kim, 1987; Gowing et al., 1998).

Practical Implications

Given the record numbers of organizations engaging in some form of downsizing or restructuring and the well-documented associations between job insecurity and individual and organizational outcomes, a theoretical framework grounded in robust empirical research is essential to guide managerial practice. The structural model identified here, combined with current theoretical perspectives, suggest a number of strategies for managers to protect workers against job insecurity while enhancing job satisfaction.

Building Resilience through Positive Affect

There has been a recent call for more research on interplay between situational and dispositional factors in shaping a person's vulnerability and resilience to job insecurity (Näswall et al., 2005; Roskies et al., 1993). The structural model supported in this study indicates that people higher in dispositional PA interpret extrinsic rewards (such as pay and career prospects) more favourably and may acquire more of these rewards through enhanced job performance. This influence of PA on extrinsic job satisfaction, in turn, inoculates high PA employees against marginalization insecurity and at the same time fosters intrinsic job satisfaction. A practical implication of this finding is that individuals predisposed to positive emotions are more likely to adapt and perform in contemporary work environments characterized by economic and career instability, where "employability" constitutes a worker's most reliable asset. On the other hand, low PA employees who appraise their jobs as less extrinsically rewarding would be more vulnerable to the deleterious effects of marginalization insecurity and intrinsic job dissatisfaction.

These results have important practical implications for strategic human resource management in an increasingly unstable, complex, and competitive work environment. In terms of recruitment and selection, considerable variability among employees in job performance (Schmidt & Hunter, 1998) suggests it is critical to select applicants who are the "right fit" for their jobs and work environment. Incorporating a psychometric assessment of PA, or the related Big Five personality dimension of extraversion, as one component of a comprehensive personnel selection process may contribute to the appointment of more resilient, high-performing employees, particularly in the context of a downsizing and restructuring environment. Also, introducing realistic job previews into an organization's recruitment process would help to facilitate self-selection into positions and organizational climates that are more suitable to a person's affective disposition (Premack & Wanous, 1985). Realistic job previews may also increase the extrinsic job satisfaction of new hires by aligning salary and career expectations with organizational reality.

While the present findings and previous literature linking PA to job performance and job satisfaction highlight the potential benefits of using measures of PA in personnel selection, a few caveats are noteworthy. First, as with all selection methods, employers are ethically and legally obligated to present evidence that such tools have demonstrated predictive validity with respect to job performance and other relevant criteria such as performance in training and turnover. In this regard, more research is required across a range of occupational levels and categories before measures of dispositional PA could be considered a legitimate and legally defensible personnel selection method.

Far more research has been conducted on the predictive validity of extraversion — a ‘Big Five’ personality trait highly correlated with PA. A recent review of previous meta-analytic studies demonstrated the capacity of extraversion to predict job performance over and above general mental ability for managerial and customer service positions (Ones, Dilchert, Viswesvaran, & Judge, 2007). Although the mediation effect of PA found in the present study may not exist for extraversion, the convergence between the constructs (Myer & Shack, 1989; Tellegen, 1985; Watson & Clark, 1984) and empirical evidence linking extraversion to salary level, promotions, and career satisfaction (Howard & Bray, 1994; Judge, Higgins, Thoresen, & Barrick, 1999; Melamed, 1995; Seibert & Kraimer, 2001) make this a likely possibility. Empirical evidence supporting this hypothesis would build an even stronger case for the assessment of extraversion in personnel selection.

Second, while positive affective tendencies can influence an employee’s likeability, probability of being hired, and performance evaluations (Cardy & Dobbins, 1986; Cook, Vance, & Spector, 2000), PA is by no means universally predictive of success in all positions. For instance, given the association between PA and extraversion, PA may be inversely associated with performance in positions that involve minimal contact with co-workers or clients. There is also evidence that individuals lower in PA may perform better on tasks that rely heavily on critical thinking and error checking

(Lucas & Diener, 2003; Melton, 1995). Thus, organizations interested in using PA for selection purposes would need to ensure the construct is clearly linked to the performance requirements for the target position and the organization's unique culture. Toward this end, employers may wish to conduct their own predictive validity studies by correlating PA ratings with supervisory ratings of performance over time.

Finally, as with any self-report, non-cognitive selection method (e.g., interview, biodata form, situational judgement test) responses to personality inventories are subject to social desirability biases. Although there is little evidence that response distortion among job applicants ruins the psychometric properties of personality measures, including criterion-related validity of the Big Five personality measures (Ones et al., 2007), the falsifying potential of measures of PA should be investigated in actual selection settings.

The present results also have implications for organizational development initiatives aimed at reducing marginalization insecurity and building intrinsic job satisfaction. Given the causal precedence of PA in the structural model, some may be quick to recommend a disproportionate emphasis on person-centred human resource management interventions, such as the provision of counselling and educational services geared towards those low in PA. However, it has been argued that the difficulty involved in altering job attitudes that are partly driven by stable dispositions places even greater emphasis on employers to design jobs and establish organizational policies and practices that promote a satisfying work experience (Gerhart, 2005; Staw & Cohen-Charash, 2005). In light of the present model, indicating that PA influences marginalization insecurity and intrinsic job satisfaction indirectly through salary and career satisfaction, a combination of situation and person-centred interventions would seem to offer the most viable strategy for enhancing individual health and organizational vitality.

Enhancing the Buffering Effect of Extrinsic Job Satisfaction

The causal path from extrinsic to intrinsic job satisfaction indicates that organizations can expect a considerable return on their investments by improving employee satisfaction with salary and career prospects. Employees experiencing higher levels of job satisfaction tend to report enhanced mental health in terms of greater self-esteem and less burnout, anxiety, and depression (Faragher et al., 2005). For the organization, strong associations have been identified between job satisfaction and improved performance at the level of both the job (Judge, Thoresen et al., 2001) and the organization (Schneider et al., 2003). Moreover, lower financial costs are expected to result from a reduction in the behavioural correlates of job satisfaction such as turnover (Crampton & Wagner, 1994; Dougherty, Bluedorn, & Keon, 1985; Hulin, Roznowski, & Hachiya, 1985) and counterproductive work behaviours (Chen & Spector, 1992; Keenan & Newton, 1984). Conversely, dissatisfaction with extrinsic rewards, if left unaddressed, may exact a higher cost in terms of individual health and organizational performance than managers might intuitively expect.

The buffering effect of extrinsic job satisfaction on marginalization insecurity also has implications for employee mental health and organizational effectiveness, particularly given the vast literature establishing relatedness as a fundamental human need fostering psychological well-being and personal resilience (Baumeister & Leary, 1995; Jahoda, 1982; Maslow, 1970; Ryan & Deci, 2001; Warr, 2007). Although marginalization insecurity did not directly influence job satisfaction in this study, the psychological impact of this construct is demonstrated by its statistically significant associations with depression-enthusiasm (r = -.479), anxiety-comfort (r = -.315), organizational commitment (r = -.504), intention to resign (r = .451) and interpersonal justice (r = -.442) reported in Appendix B.

Rather than speculating about the impact of pay and career satisfaction on job insecurity and other important employee attitudes, organizations should routinely measure these constructs using standardized measures like the ones used in the present study. Additionally, by measuring PA and extrinsic job satisfaction along with demographic information, organizations can determine an aggregate profile of individuals particularly vulnerable to marginalization insecurity and intrinsic job dissatisfaction. Such a profile would enable organizations to tailor occupational health and change management interventions to those who would benefit most from these programs.

As an alternative to immediate layoffs, some authors have recommended that managers "show their concern by exhausting all possible alternatives before deciding to downsize" (Mishra et al., 1998, p. 86). This strategy typically involves cut-backs in extrinsic rewards, such as pay cuts, hiring freezes, salary freezes, elimination of bonuses, shortened work weeks, unpaid vacations, limiting of career progression, and reductions in training budgets. The present results highlight the costs associated with these tactics in terms of heightened marginalization insecurity and intrinsic job dissatisfaction. Efforts to redesign jobs to be more intrinsically rewarding are also unlikely to yield the anticipated benefits until deficits in extrinsic rewards (such as salary and career prospects) are addressed. In this sense, the long-term human and organizational costs associated with curtailing extrinsic rewards may well exceed the short-term cost savings.

In light of these costs, it may be more beneficial for the individual and the organization if these cut-backs were avoided, particularly for less financially secure employees at lower occupational levels, in favour of a prompt implementation of layoffs while upholding the dignity of workers who leave and the trust and morale of those who stay. Duty of care requirements would suggest the provision of negotiated redundancy packages, career counselling for those employees who leave the organization, retraining programs, and a suitable grievance procedure free of recrimination (Cascio, 1993).

The prominent influence of salary and career satisfaction uncovered in this study, has implications for the design of human resource policies and practices related to training and development, career management, and pay equity. Since an employee's capacity to acquire knowledge and skills is inextricably linked to career advancement and salary level, the provision of well-designed training and development programs is one means through which organizations can influence marginalization insecurity and improve intrinsic job satisfaction. Additionally, training programs for line managers and human resource practitioners could be designed to foster an awareness and understanding of how the development of fair and equitable pay structures and active participation in the career advancement of staff can be used as a means of reducing marginalization insecurity and making jobs more intrinsically rewarding.

Organizations with limited resources to invest in training will need to place greater emphasis on the needs assessment, implementation, and evaluation stages of program development to maximize the return on their investment (Goldstein & Ford, 2002). In order to meet the demands for more flexible and cost-effective training options, a growing number of organizations are offering web-based, interactive training sessions that have been shown to be as effective, and in some cases more effective, than classroom instruction (Sitzmann, Kraiger, Stewart, & Wisher, 2006).

The extent to which managers are proactively involved in building and maintaining an effective training and development system could also be incorporated into the formal performance review process for managerial and supervisory positions. However, for these desired managerial behaviours to effectively transfer to the workplace, any environmental constraints associated with organizational restructuring and downsizing would first need to be addressed, such as inadequate resources, a lack of supervisory and organizational support, and excessive workload. By improving these features of the learning climate, training is more likely to yield positive outcomes in the work setting (Colquitt, LePine, & Noe, 2000; Tracey, Tannenbaum, & Kavanagh, 1995).

Career management represents another promising opportunity for organizations to protect workers against marginalization insecurity and build intrinsic job satisfaction. As mentioned in the introductory chapter, a turbulent economic environment and an unstable labour market have meant that careers are becoming less predictable and traditional career boundaries more permeable (Hall, 1996; Sullivan, 1999). As these *boundaryless* careers become more prevalent, individuals are required to be more flexible in the skills they develop, engage in on-the-job action learning, develop multiple networks of associated and peer learning relationships, and take responsibility for managing their own careers (Arthur, Khapova, & Wilderon, 2005; Arthur & Rousseau, 1996). The structural path from PA to salary and career satisfaction suggests that individuals low in PA may require more assistance in these areas relative to their high PA counterparts, who possess a more proactive, optimistic and energetic disposition.

Although the primary and final responsibility for career development rests with employees, several environmental pressures are driving employers to support and complement their individual efforts. These pressures include rising educational levels and career aspirations; slow economic growth and reduced opportunities for advancement; the recognition of the need for a flexible workforce; the fear of demotivating or losing key staff interested in a career with the company; and concerns about succession (Hirsh & Jackson, 1996; Nicholson, 1996).

An increasing number of progressive organizations have responded to the challenges by offering a wider range of career management options to their employees than hitherto (Arnold, 1997). Some of these interventions — such as developmental work assignments, personal development plans, coaching and mentoring — are embedded into the employee's day-to-day work. Others take place outside of work, such as succession planning, development centres, career development workshops, and outplacement. Virtual career centers represent a less labour intensive option in that considerable amounts of assessment technology and career information are available on a career Web site to provide people with personal tutoring, advice, and feedback without ever having to contact another individual. Once again, however, for organizations to receive a return on their investment, employees would need to have the resources and time to invest in these activities and the human resource policies and practices that support them.

Pay satisfaction has repeatedly been shown to be an important consequence of pay equity (Folger & Konovsky, 1989; Summers & Hendrix, 1991). Employees who perceive that performance is instrumental to the attainment of valued outcomes (such as a pay raise) also tend to be more satisfied with their pay than those who do not perceive a connection between their performance and extrinsic rewards (Heneman, Greenberger, & Strasser, 1988). Given the influence that perceptions of pay and career satisfaction have on marginalization insecurity and intrinsic job satisfaction, organizations should take care to ensure that human resource policies and practices related to compensation and promotion are based on "merit" (e.g., job complexity, job performance) and meet the standards of fairness and equity. Moreover, managers who oversee employees in jobs where pay level is modest may do well to be resourceful in placing simultaneous emphasis on the multiple factors contributing to overall pay satisfaction, such as pay level, the quality and timing of information that employees receive about pay, and the quality of employee benefits (Judge & Welbourne, 1994).

Managing Job Changes to Prevent Marginalization and Job Loss Insecurity

The structural paths from job changes to marginalization and job loss insecurity indicate that managers can influence these insecurities by addressing job changes insecurity at an early stage. It has been argued that employee reactions to restructuring and downsizing vary considerably based on how these changes are implemented (Cascio, 1993; Mishra & Spreitzer, 1998). Research in the field of organizational change and development has identified several elements of "responsible restructuring" that have been found to engender greater feelings of personal control and trust in management; less negative affective reactions; and a more proactive approach to organizational change (Cameron, Freeman, & Mishra, 1991; Cascio, 1993, 2002; Kets de Vries & Balazs, 1997). These practices are well-aligned with a broader human resource management strategy variously termed *high involvement* or *high performance* management practices, which are aimed at integrating the developmental needs of the individual with the strategic needs of the organization (Huselid, 1995; Lawler, Mohrman, & Ledford, 1998).

First, several management scholars have argued that downsizing efforts often fail due to an excessively short-sighted strategy of across-the-board reductions in personnel with little if any change in the way jobs are designed (Cameron et al., 1991; Cascio, 2002; Schweiger & DeNisi, 1991). As Cascio (1993, p. 103) states, "the same amount of work as before downsizing is simply loaded onto the backs of fewer workers." In order to bring about lasting improvements in employee performance and productivity, these authors advocate a more constructive approach, in which reductions in headcount are combined with planned changes in how jobs are designed. By involving employees in the changes affecting their jobs, managers foster a sense of personal control over the work environment (Mishra & Spreitzer, 1998), making it easier for employees to accept and adjust to the changes that occur. The stress literature has identified personal control as a particularly important construct in moderating the adverse effects of job demands on mental and physical health (Karasek & Theorell, 1990; Spector, 1986). In the context of the present model, the enhanced personal control an employee stands to gain by participating in job changes would help to prevent the onset of learned helplessness and subsequent job loss insecurity. Increased employee involvement is also expected to reduce marginalization insecurity by ensuring that job changes are implemented in a way that maintains group cohesion, a sense of belonging and positive sentiment among group members.

Second, the provision of training in the new work employees are asked to perform would contribute to lower levels of job changes insecurity by enhancing feelings of personal control and competence (Cascio & Wynn, 2004). Expanding traditional training to include ongoing planned developments (such as career assignments and individual coaching and mentoring) would also strengthen employee satisfaction with career prospects and increase their chances of actual advancement. This, according to the structural model, would lead to greater intrinsic job satisfaction and a degree of protection against marginalization insecurity. Beyond the predicted improvements in employee well-being, the financial return on the organization's investment in training and development is supported by research indicating that organizations whose training budgets increase following a downsizing are more likely to realize improved productivity and profits (American Management Association, 1996; Appelbaum, Lavigne-Schmidt, Peytchev, & Shapiro, 1999; cited in Cascio, 2002).

Finally, uncertainty surrounding job changes could be further minimized by clearly communicating to remaining employees the proposed changes and a corporate strategy for future growth as soon as possible. Several studies have linked organizational communication to decreased job insecurity (Adams & Roebuck, 1997; Callan, 1993; Schweiger & DeNisi, 1991). As Schweiger and Denisi (1991) have stated, any failure to communicate leaves employees feeling uncertain about their future, and it is often this uncertainty, rather than the changes themselves, that is stressful for employees.

Despite a general consensus among researchers that communication is one of the most significant predictors of successful downsizing and restructuring, executives often reduce communication during these periods (Burke & Nelson, 1998; Cameron et al., 1991). In this study, although senior management of the host organization gave employees advanced notice of the impending restructuring, they did not indicate the scope of the changes, whether the changes would involve layoffs, or a clear growth strategy for attracting new business. Although it may not be possible for management to accurately predict future layoffs, efforts to engage staff in open and honest discussion is likely to reduce job changes insecurity by dispelling rumours and uncertainty surrounding changes to the job, building trust in management, and giving employees hope for the future (Cascio, 2002).

Future Research

Cross-Validating the Structural Model

This study was the first to examine longitudinally the influence of PA and NA on the relationship between job insecurity and intrinsic and extrinsic job satisfaction. The use of a three-wave longitudinal research design and rigorous statistical methods permitted fairly unambiguous conclusions to be drawn about the strength and direction of causality. Moreover, the relatively large heterogeneous sample, including a cross-section of employment categories and levels bolsters the generalizability of the results. Despite the strength of the research design, future research is required to cross-validate the model longitudinally on a separate sample. These studies should aim to acquire at least three waves of longitudinal data in order to test competing models of direct, reverse, and reciprocal causation.

Testing Alternative Theoretical Models

Since the perceptual and performance mechanisms linking PA to extrinsic job satisfaction have distinct theoretical and practical implications, the job insecurity literature would benefit from their further examination. By collecting supervisory ratings of performance, researchers would be able to determine the extent to which PA influences extrinsic job satisfaction through actual job performance relative to perceptual processes. Also of theoretical and practical interest is whether PA has a differential impact on technical job performance (activities that relate directly to production of products or services) relative to contextual performance (discretionary contributions to the organization, such as organizational citizenship behaviours, that have uncertain or indirect rewards) (Borman & Motowidlo, 1993; Organ & Paine, 1999).

Enhancing the Explanatory Power of the Structural Model

Evidence for the explanatory power of the structural model can be seen by the considerable proportion of variance in T_2 and T_3 variables that were accounted for by their predictors. For instance, 39% of the variance in job loss insecurity and 33% of the variance in marginalization insecurity was accounted for by job changes insecurity and direct autoregressive paths at T_1. Extrinsic job satisfaction and autoregressive paths from T_1 and T_2 explained 44% of the variance in marginalization insecurity and 55% of the variance in intrinsic job satisfaction at T_3. Finally, 48% of the variance in extrinsic job satisfaction at T_2 was accounted for by PA and extrinsic job satisfaction at T_1.

There was, however, unexplained variance in job insecurity and job satisfaction dimensions at T_2 and T_3 indicating that there are other constructs that may enhance the predictive power of the model. There are certainly opportunities to expand the model to encompass other theoretically pertinent constructs identified in the literature. As discussed in Chapter VI, job loss and job changes insecurity are featured in Warr's vitamin model as components of career outlook and environmental clarity while marginalization insecurity constitutes a threat to opportunities for interpersonal contact. Other facets of environmental clarity include the availability of feedback on consequences of one's actions and the clarity of role requirements and normative expectations about behaviour. As predicted in Warr's model, environments undergoing a high rate of change and uncertainty are expected to lack clarity in each of these features, which will in turn impair mental health. Researchers are, therefore, encouraged to examine how role clarity and performance feedback interact with the three job insecurity dimensions in order to further clarify the theoretical processes linking environmental clarity and career outlook to employee well-being.

Also of theoretical interest are the various predictors of psychological well-being identified in Warr's (2007) model (such as personal control or autonomy, supervisory support and work demands) which have been shown to moderate the effects of job insecurity on psychological well-being (Landsbergis, 1988; Lim, 1997; Probst, 2005). Given that the learned helplessness associated with job changes insecurity is purported to result in a loss of personal control, it would be interesting to examine whether levels of autonomy moderate the effects of job changes insecurity on job loss insecurity. Supervisory support may also interact with job changes insecurity to protect workers from marginalization insecurity by fostering a more inclusive climate and sense of belonging within the work group.

Although the present study did not find a direct relationship between marginalization insecurity and job satisfaction, researchers should investigate whether the former influences the latter through the broader construct of interpersonal justice (the quality of interpersonal treatment employees receive in their everyday work). Interpersonal justice has been identified as particularly influential during periods of restructuring (Brockner & Greenberg, 1990; Tyler & Bies, 1990) and has shown positive correlations with job satisfaction as well as job performance and organizational citizenship behaviours (Masterson, Lewis, Goldman, & Taylor, 2000).

Investigating Other Affective and Attitudinal Outcomes

Given the absence of structural paths from job insecurity to job satisfaction dimensions, the predominant employee reaction to job insecurity may be of an emotional rather than an attitudinal nature, suggesting a stronger influence on affective well-being. Previous meta-analyses support the association between job insecurity (a combination of job loss and job changes insecurity) and context free affective well-being, reporting moderate corrected correlations of -.28 (Cheng & Chan, 2007) and -.24 (Sverke et al., 2002). Although longitudinal studies provide preliminary evidence of a direct rather than reverse causal relationship (Garst et al., 2000; Hellgren & Sverke, 2003), these studies did not control for dispositional affect and were unable to provide a definitive test of reciprocal causation. Further longitudinal research is therefore required to determine how the three job insecurity dimensions measured in this study might be causally related to affective well-being after controlling for PA and NA.

To date, the majority of studies examining the relationship between job insecurity and affective well-being have tended to use context-free measures of general affective well-being that are clinical in nature, such as the General Health Questionnaire (Goldberg, 1988). However, as Spector and colleagues (2000) argue, we need to move beyond the assumption that "job stressors in general lead to job strains in general" (p. 216). By measuring Warr's (1990) job-specific dimensions of anxiety-comfort and depression-enthusiasm, researchers would tap the full range of positive and negative emotions related to the job and provide a more precise test of causal mechanisms operating between job insecurity and job related affective well-being. As this thesis has demonstrated with regard to job satisfaction, the pattern and strength of associations with job insecurity may differ when affective well-being is examined at the dimension-specific level.

Researchers may also look to test the temporal precedence of the three job insecurity dimensions in relation to other attitudinal constructs — such as trust in management, organizational commitment, and intention to resign — for which little, if any, longitudinal research has been conducted. The correlations between these outcomes and the job insecurity scales reported in Appendix B provide an empirical basis from which to examine these structural relationships longitudinally.

Exploring Other Personality Constructs

Given that 62% of the variance in extrinsic job satisfaction at T_2 was unaccounted for by PA and extrinsic job satisfaction at T_1, there may be other personality (or situational) constructs that influence extrinsic job satisfaction. One likely predictor is core self-evaluations, which is conceptualized and measured as a higher order construct composed of the four facets of emotional stability, generalized self-efficacy, self-esteem, and locus of control. Research has linked the four facet traits to job satisfaction and job performance (Judge & Bono, 2001; Judge, Bono, & Locke, 2005). While core self-evaluations are likely to overlap with PA to some extent, they are not pure affective traits and therefore would have a distinct influence on job satisfaction. Elucidating the independent influence of the four facet traits on extrinsic job satisfaction would enhance the explanatory power of this model and point to more targeted interventions.

One of the theoretical mechanisms through which PA is purported to influence extrinsic job satisfaction is by viewing career prospects and salary through a more optimistic “lens”. However, since optimism is only one of several affective states encapsulated in PA, its independent influence has yet to be determined. Research is needed to disentangle the amount of variance in extrinsic job satisfaction accounted for by a person’s level of optimism. This research has important implications for organizational development initiatives since it has been argued that optimism is a more malleable state that can be learned (Seligman, 1991), whereas dispositional PA is heritable (George, 1992; Tellegen et al., 1988) and generally stable over time (Dormann & Zapf, 2001; Gerhart, 1987; Staw & Ross, 1985). Another interesting question for future research is whether optimism is more prevalent or meaningful in certain cultures.

Although PA was found to be unrelated to the three job insecurity constructs, cross-sectional research suggests that other personality traits — such as locus of control (Ashford et al., 1989; Näswall et al., 2005), self-esteem (Kinnunen et al., 2003; Klandermans et al., 1991; Orpen, 1994) and dispositional optimism (Bosman et al., 2005) — may influence job insecurity. Individuals with an internal locus of control may feel they have more control over job changes, thus protecting them from job changes insecurity. An internal locus of control has also been shown to mitigate the effects of learned helplessness (Cohen, Rothbart, & Phillips, 1976) and therefore may function as a mediator preventing job changes insecurity from developing into job loss insecurity over time. Perhaps individuals with higher self-esteem would be less attentive to job changes or view them as less threatening and more challenging — making them less vulnerable to job changes insecurity than their low self-esteem counterparts. Similarly, optimists may be more likely to appraise job changes more positively and mobilize their resources to adapt to these changes. Future research should apply a longitudinal design to provide a definitive test of these hypotheses.

Identifying the Cognitive Processes Underlying PA

Finally, further investigation is required into the thought processes that distinguish the reactions of high and low PA individuals to their work environment. These studies would help to explain why individuals high in PA respond to the same extrinsic rewards differently than their low PA counterparts. Seligman (1991, 2002), for instance, has theorized that individuals high in PA have a distinct explanatory style that tends to view negative events as temporary, specific, and attributed to external circumstances, while those high in NA are inclined to explain these events as permanent, pervasive, and personal.

Drawing from social and cognitive psychology, Warr (2007) proposed a more elaborate framework of judgements consisting of: a) comparisons with other people; b) comparisons with other situations based on relative expectations or counterfactual possibilities; c) time-based comparisons in relation to the direction and speed of change relative to past situations or future possibilities; and assessments of environmental input based on d) personal salience, e) the level of one's self-efficacy and; f) the novelty or familiarity of one's environment. Since each of these judgements represents ways in which people tend to actively determine their job satisfaction, delineating the types of judgments that are most and least prevalent for those high and low in PA would be a significant contribution to the literature. As Warr (2007) has noted, within-person longitudinal designs using experience-sampling procedures are particularly well suited to this research.

Strengths and Limitations

The present study has answered a perpetual call for more longitudinal research into the effects of job insecurity on psychological well-being. Overall, the three-wave longitudinal research design, robust conceptualization and measurement of the relevant constructs, and use of rigorous statistical methods enabled strong conclusions to be drawn concerning the causal relationship between job insecurity and job satisfaction. Most prior studies of job insecurity and psychological well-being have been cross-sectional and have not controlled for dispositional affect. Moreover, the use of structural equations modelling allowed measurement error to be accommodated when estimating the causal relations.

The discrepancy between the longitudinal findings and the cross-sectional associations reported in the present meta-analysis are noteworthy. Although the meta-analytic findings of this study found stronger correlations with job insecurity for intrinsic relative to extrinsic job satisfaction, the association with intrinsic job satisfaction was not upheld when tested longitudinally. Instead, extrinsic job satisfaction demonstrated causal predominance in shaping perceptions of marginalization insecurity as well as intrinsic job satisfaction. These results demonstrate the capacity of longitudinal research to disentangle transitory and situational relationships from those that are more enduring and causally predominant. In this way, longitudinal research presents an avenue to achieving more parsimonious, practical, and theoretically meaningful frameworks for academics and practitioners to work with.

At least three limitations of the study warrant discussion. First, as in all longitudinal studies, the present study was affected by the problems of self-selection and attrition. Comparisons between the longitudinal sample and those respondents who dropped out after T_1 showed that the longitudinal sample had significantly higher levels of intrinsic job satisfaction and lower levels of insecurity over job loss and job changes. These differences in the sample compositions suggest that the findings may have been influenced by self-selection biases. For instance, had the longitudinal sample been composed of employees with higher levels of job loss insecurity, the tenuous path from extrinsic job satisfaction to this construct may have been upheld when the autoregressive paths were identified. With respect to demographic variables, it should be noted that when Hellgren and Sverke (2003) controlled for gender, age, education, and organizational tenure in their two-wave longitudinal study, only education was predictive of job insecurity. Nonetheless, generalization of the current results to other occupational settings awaits further empirical examination.

Second, the best fitting structural model (Figure 7.4) showed relatively modest standardized path coefficients from PA to extrinsic job satisfaction ($\gamma_{5.1} = .180$) and from extrinsic job satisfaction to marginalization insecurity ($\beta_{8.5} = -.183$). It is important to note however that these non-horizontal effects refer to predicting *changes* in outcomes. By definition, such effects will be small since constructs under investigation were found to be relatively stable across the one-year time lags of the study. Therefore, as others have argued (Semmer, Zapf, & Grief, 1996), these small effects are to be expected in longitudinal research of this nature.

A third issue to consider is the appropriateness of the time lag employed. A universal limitation of studies of this sort is the fact that it is not known whether the time intervals correspond to the underlying “true” amount of time required for the postulated causes to have their effects. Few systematic attempts have been made to identify appropriate time lags when conducting longitudinal research (Williams & Podsakoff, 1989). One exception is a study by Dorman and Zapf (2002), who examined the question of time lags in a four-wave study and found that a time lag of at least two years (compared to four-year time lags) was sufficient for examining the relationship between social stressors at work and mental health outcomes. Zapf, Dorman, and Frese (1996) further recommend that the same time lag be used if a study includes more than two measurements. Accordingly, a case can be made that the two one-year time intervals used in the present study was sufficient for the causes to exert their effects but not so long that the effects are no longer present. However, no researcher can at present be certain that this is the case.

Conclusion

In conclusion, the central aim of this research was to examine the causal relationship between job insecurity and job satisfaction and to determine the extent to which dispositional affect influenced this relationship. Although the vast majority of research in the stress literature has focused on NA, this disposition had no effect on any of the job insecurity dimensions when examined longitudinally. Instead, the most robust and parsimonious structural model uncovered the pivotal role of PA in protecting workers against marginalization insecurity and enhancing intrinsic job satisfaction indirectly through greater satisfaction with salary and career prospects. Conversely, individuals low in PA appear to be most vulnerable to intrinsic job dissatisfaction and marginalization insecurity arising from less favourable perceptions of these extrinsic rewards. Partial support was also found for a structural path from extrinsic job satisfaction to job loss insecurity, which future research should investigate.

These findings make a unique contribution to a growing body of research demonstrating the far-reaching impact of PA and job satisfaction on individual health and organizational performance. Based on these results, I offered several practical strategies for managers and human resource practitioners to build employee resilience against marginalization insecurity while enhancing job satisfaction.

The structural model also uncovered a sequential pattern of relationships between the job insecurity dimensions, in which job changes insecurity at T_1 was causally predominant, driving job loss and marginalization insecurity at T_2. This finding implies that early interventions aimed at reducing job changes insecurity may also prevent the onset of marginalization and job loss insecurity. Such interventions fall under the rubric of “responsible restructuring” and involve open and honest communication with staff, training in new roles and responsibilities, and active involvement of employees in job redesign.

Overall, the use of a three-wave longitudinal panel design, rigorous statistical methods, and a relatively large heterogeneous longitudinal sample, enabled strong causal inferences to be drawn. While future research is required to replicate the findings in other organizational settings, researchers and practitioners can use the causal model with confidence to understand the dynamic relationship between job insecurity and job satisfaction over time and the pivotal role of PA in shaping this relationship.

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Appendix A

Validation Statistics for the Original Job Insecurity Measure (Chapter I)

Table A.1.

Exploratory Factor Analysis: Pattern Matrix Following Oblique Rotation

Job Insecurity Items	Factor 1 (GC)	Factor 2 (EU)	Factor 3 (MD)	Factor 4 -	Factor 5 -
1. This organization is maintaining and investing in new equipment and materials.	.362			.482	
2. Senior management is really trying to build this organization and make it successful.	.559				
3. Management appears to be preparing in advance and planning for the future.	.712				
4. This organization appears to have clear goals and a definite strategy for achieving them.	.784				
5. *I am uncertain about my future in this organization.		.500			
6. I'm sure of how long my job will last.		.472			
7. I'm not afraid of losing my job.		.449			
8. *No matter how hard I work, there is no guarantee that I am going to keep my job.		.583			
9. There will always be a job for me in this organization.		.633			
10. When productivity in this organization is low I still feel secure in my job.		.382			
11. Management at this company seem to be spending a sufficient amount of time interacting with staff.			.339		
12. *I feel as though management is avoiding me.			.472		
13. I feel as though my privileges in this organization are being maintained.			.633		
14. Senior management openly share information with employees.			.405	.399	
15. Workers who leave this organization are being replaced.				.335	
16. Training and development in this company is ongoing.				.458	
17. I plan to stay with this company until I decide to retire.					.675
18. I regard my position as a career rather than a job.					.608
19. My job experience and skills are better than others in the same position.					
20. I do not rely on rumours as a primary source of information in this company.					

Note: Analysis based on Sample 1 data, n = 522. Results are based on maximum likelihood procedure. Only coefficients with a loading of ≥ 30 are shown. EU = employment uncertainty; MD = Managerial Distance; GC = Growth Climate. Items with an asterisk are reverse-scored.

Table A.2.

Confirmatory Factor Analysis of Calibration Sample

Model	χ^2	df	S-Bχ^2	RCFI	SRMR	RMSEA
Null Model	378.240	55	--	--	--	--
1 Factor	117.759	44	96.330	.811	.090	.096 (.070-.121)
3 Factor	61.613	41	49.094	.971	.058	.039 (.000-.075)

Note. n=130. S-B χ^2= Satorra-Bentler Scaled Statistic; CFI= Comparative Fit Index; RCFI=Robust Comparative Fit Index; SRMR=Standardized root mean square residual; RMSEA= Root Mean Error of Approximation. Power = .483, minimum sample size required = 247.

Table A.3.

Confirmatory Factor Analysis of Validation Sample

Model	χ^2	df	S-Bχ^2	RCFI	SRMR	RMSEA
Null	344.517	55	--	--	--	--
1 Factor	131.331	44	103.839	.737	.103	.103(.077-.128)
3 Factor	57.360	41	46.508	.976	.073	.032 (.000-.071)

Note. n=130. S-B χ^2= Satorra-Bentler Scaled Statistic; CFI= Comparative Fit Index; RCFI=Robust Comparative Fit Index; SRMR=Standardized root mean square residual; RMSEA= Root Mean Error of Approximation. Power = .483, minimum sample size required = 247.

Table A. 4.

Standardized Coefficients and T-Ratios for Samples 1 & 2

Factor	Items	Standardized Coefficients (Sample 1)	*z* (Sample 1)	Standardized Coefficients (Sample 2)	*z* (Sample 2)
1	15	.708	8.574	..642	7.512
1	17	.814	10.265	.805	9.791
1	18	.824	10.423	..844	10.367
2	2	.310	3.116	.530	5.510
2	4	.389	3.956	.203	1.996
2	5	.528	5.526	.602	6.363
2	8	.654	7.010	.538	5.605
2	16	.713	7.702	.665	7.099
3	6	.745	6.850	.409	3.918
3	9	.321	3.155	.496	4.640
3	10	.453	4.538	.812	6.387

Note. z = The z-score or T-Ratio (unstandardized coefficients/standard error). The critical values for two-tailed tests are z = 1.96, p = .05; z = 2.58, p = .01, z = 3.29, p = .001.

Table A.5.

Invariance Analysis of the Three-Factor Job Insecurity Measurement Model

Model	χ^2	df	$\Delta\chi^2$	Δdf	RCFI	SRMR	RMSEA
Baseline Model	118.973	82	--	--	.973	.066	.025 (.000 - .044)
Loadings Invariant	136.789	93	17.816	11	.963	.080	.028 (.000 - .045)
Loadings + Covariances Invariant	144.422	96	7.633	3	.954	.087	.031 (.000 - .047)

Note. CFI = Comparative Fit Index, RMSEA = Root Mean Square Error of Approximation, CI = Confidence Interval.

Table A.6.

Means, Standard Deviations, Alpha Reliabilities, and Pearson Inter-Correlations among Job Insecurity Dimensions (N = 522)

Variables	Mean	SD	1	2	3	4	5	6	7
1. Employment Uncertainty	2.31	.761	(.824)						
2. Managerial Distance	3.00	.807	.319**	(.732)					
3. Growth Climate	2.86	.997	.365**	.375**	(.805)				
4. Organizational Commitment	4.33	1.26	-.210**	-.311**	-.325**	1.00			
5. Negative Job Carry- Over	2.88	.970	.182**	.218**	.114*	-.160**	1.00		
6. Intrinsic Job Satisfaction	4.67	1.23	-.275**	-.372**	-.280**	-.531**	-.222**	1.00	
7. Intention to Resign	3.72	1.78	.120**	.248**	.231**	-.667**	.194**	-.468**	1.00

Note. Alpha reliabilities appear in the diagonal. SD = Standard Deviation. **. Correlation is significant at the .001 level (two-tailed). *. Correlation is significant at the 0.05 level (two-tailed).

Table A.7.

Original Job Insecurity Measure (JIM)

This set of questions deals with your level of insecurity in your present job. Please indicate the extent to which you agree or disagree with the following statements by circling the appropriate number.

Employment Uncertainty

1. I am uncertain about my future with this organization. (reverse scored)
2. I'm not afraid of losing my job.
3. There will always be a job for me in this organization.
4. No matter how hard I work, there is no guarantee that I am going to keep my job (reverse scored).
5. When productivity in this organization is low I still feel secure in my job.

Managerial Distance

6. I feel as though management is avoiding me. (reverse scored)
7. Management at this company seem to be spending a sufficient amount of time interacting with staff.
8. I feel as though my privileges in this organization are being maintained.

Growth Climate

9. Senior management is really trying to build this company and make it successful.
10. Management appears to be preparing in advance and planning for the future.
11. This organization appears to have clear goals and a definite strategy for achieving them.

Response scale: 1 = strongly agree, 2 = agree, 3 = neither, 4 = disagree, 5 = strongly disagree.

Appendix B

Supplementary Analyses (Chapter II)

Criterion-Related Validity of the Four-Dimensional Job Insecurity Measure

In order to test the predictive validity of the four job insecurity constructs and place them in a larger nomological network, a variety of outcomes with theoretical and empirical links to job insecurity were examined using correlational analyses. In particular, variables captured in Warr's (1987) taxonomy of psychological well-being (job-related anxiety-comfort and depression-enthusiasm, intrinsic and extrinsic job satisfaction, and negative job-carry over) as well as organizational attitudes (organizational commitment, trust in management and intention to resign) were included in the analysis. Previous meta-analyses have reported significant associations between job insecurity and subjective well-being, job satisfaction, organizational trust and organizational commitment (Cheng & Chan, 2007; Sverke et al., 2002).

Convergent and discriminant validity was also examined in terms of how the four job insecurity scales relate to similar and dissimilar constructs. Three additional scales measuring interpersonal justice, supervisory support and communication climate were included in the analysis. As discussed in Chapter I, it is reasonable to expect that marginalization insecurity would be related to interpersonal justice (the extent to which an employee is treated with respect and dignity by one's manager) and supervisory support since the primary source of marginalization is one's manager or supervisor. However, the strength of the correlations should indicate that the scales are distinct since marginalization encompasses more than a lack of supervisory support, and is only one of many interpersonal behaviours that could be perceived as unjust. With regard to organizational survival insecurity, two variables that should show a strong association are communication climate (quality of the information provided to staff) and trust in management. That is, employees are likely to feel more secure about the organization's performance and growth prospects in a climate where they receive, and can openly discuss, relevant information and have a high level of trust in the information provided by management.

Method

Sample

Predictive validity analyses were conducted on the main sample (N = 1,004) described in Part II of Chapter II.

Measures

Psychometric instruments used to establish the predictive validity of the job insecurity, along with biographical information, are described below. All of the measures have been used in previous research and can be found in the source documents provided. Alpha coefficients reported for each scale are based on the Time 1 data set (n = 1,004) after listwise deletion of missing data.

Final job insecurity measure. Eighteen items were selected for the final job insecurity measure (JIM) following exploratory and confirmatory factor analyses of data gleaned from the 22-item pilot job insecurity measure. Insecurity over *job loss* ($\alpha = .901$) and *job changes* ($\alpha = .904$) were both measured with six-item scales while *marginalization* ($\alpha = .882$) and *organizational survival* ($\alpha = .868$) insecurity were tapped using three items each. Scoring for the four subscales was based on a simple, unweighted average of the scale items.

Job-related affective well-being. Two scales developed by Warr (1990) and later refined by Sevastos (1996) were used to measure job related affective well-being-

'anxiety-comfort' (α = .818), and 'depression-enthusiasm' (α = .879). These six-item, six-point scales measure the extent to which people are either anxious or contented, depressed or enthusiastic with their job. High scores on these scales are held to represent positive aspects of work (relaxation and enthusiasm), while lower scores on these dimensions would indicate increasing levels of anxiety and depression with the working environment. Respondents were asked to think of the past few weeks and indicate the extent to which they felt affective states related to Enthusiasm (i.e., enthusiastic, motivated, optimistic), Relaxation (i.e., calm, restful, and relaxed), Depression (depressed, miserable, gloomy) and Anxiety (tense, worried, anxious). Scores range from 1 ("Never") to 6 ("All of the time"). Of the six original items validated by Warr (1990) the item "uneasy" for the anxiety scale was replaced with "anxious". This substitution is based on research by Sevastos, Smith and Cordery (1992) who evaluated the psychometric properties of Warr's original scale and reported psychometric improvements resulting from the item change.

Intrinsic and extrinsic job satisfaction. The job satisfaction scale developed by Warr, Cook & Wall (1979) consists of 15 items. Measurement is on a seven-point scale ranging from 1 ("Very inaccurate") to 7 ("Very accurate"). The measure has two subscales - intrinsic and extrinsic job satisfaction - consisting of eight and seven items respectively. Intrinsic job satisfaction refers to job characteristics that involve personal achievements and task success, as opposed to the extrinsic job satisfaction scale that focuses on contextual aspects of work such as pay or working conditions (Warr et al., 1979). In order to avoid confounding the association between job insecurity and extrinsic job satisfaction, the 'satisfaction with job security' item was removed from the original eight-item extrinsic job satisfaction scale. Sample items for intrinsic job satisfaction are: "your opportunities to use your abilities"; "the amount of variety in your job" and "the freedom to use your own method of working" (α = .864). Examples of scale items for extrinsic job satisfaction are: "your rate of pay"; "your physical work conditions"; and "your immediate boss" (α = .783).

Organizational commitment. A 5-item scale was used to measure organizational commitment (from the 9-item scale by J. Cook & Wall, 1980). Respondents were asked to indicate the degree of agreement or disagreement with items such as "I am quite proud to be able to tell people whom it is I work for"; "Sometimes I feel like leaving this organization for good"; I'm not willing to put myself out just to help this organization" (α = .822). Responses range from 1 ("No, I strongly disagree") to 7 ("Yes, I strongly agree").

Trust in management. The authors of this 12-item scale (J. Cook & Wall, 1980) define trust as "the extent to which one is willing to ascribe good intentions to and have confidence in the words and actions of other people" (p. 39). Although the scale consists of four subscales, only the measure assessing trust in management, consisting of five items was used in this study. Sample items include: "management at [organization's name] is sincere in its attempts to meet the workers' point of view"; "Management can be trusted to make sensible decisions for [organization's name]'s future" (α = .868). Responses are on a seven-point scale and range from 1, ("No, I strongly disagree"), to 7, ("Yes, I strongly agree").

Intention to resign. A two-item scale derived from the Michigan Organizational Assessment Questionnaire (Seashore, Lawler, Mirvis, & Cammann, 1982) was used to assess the extent to which a respondent intended to resign from the organization. The items include “I will probably look for a new job within the next year” and “I often think about quitting” (α = .918). Responses, on a seven-point scale, range from 1 (“No, I strongly disagree”) to 7 (“Yes, I strongly agree”).

Interpersonal justice. Colquitt’s (2001) four-item measure of interpersonal justice was used to assess the extent to which participants were treated with dignity, respect and politeness by their supervisor and if their supervisor refrained from improper remarks or comments. Sample items include “To what extent has your immediate supervisor/manager…treated you in a polite manner?”; “…refrained from improper remarks or comments?” Responses were made on a five-point scale ranging from 1 (“To a small extent”) to 5 (“To a large extent”). The Cronbach alpha coefficient for this scale in the present study is .920.

Supervisory support. This 5-item scale was used to determine the level of supervisory support employees receive from their immediate supervisor. Employees were asked to indicate their level of agreement with positively worded statement on a five-point scale (1=strongly disagree, 5=strongly agree). Sample items include: “I can count on my supervisor/manager to help me when I need it” and “my supervisor/manager backs me up and lets me learn from my mistakes” (α = .917). Koys and DeCotiis (1991) attest to the acceptable measurement properties of this instrument.

Communication climate. This scale consists of six items and is an adaptation of the Communication Climate Questionnaire (Dennis, 1974). The original instrument contains 45 items representing five dimensions of communication climate. The items selected for this survey come from the "quality of information" dimension. Participants were asked to indicate their level of agreement with statements such as “People at this organization are kept up-to-date on developments that relate to future plans,” and “People at this organization are encouraged to be really open and candid with one another” (α = .888). There are five scale anchors for the measure ranging from 1 ("Strongly disagree") to 5 ("Strongly agree").

Results

Table B.1 shows that all correlations between job insecurity subscales and outcome measures were statistically significant ($p<.001$) and in the expected direction. With respect to both psychological well-being and organizational attitudes, the lowest correlations were generally found for job loss insecurity, which demonstrated moderate to strong associations with depression-enthusiasm (r = -.384), intrinsic job satisfaction (r = -.413), extrinsic job satisfaction (r = -.411), organizational commitment (r = -.398), trust in management (r =-.447), and intention to resign (r = .391). Only organizational survival insecurity had a lower association with anxiety-comfort (r = -.229) relative to job loss insecurity (r = -.314). By contrast, the strongest associations were reported for job changes insecurity for all of the outcomes including depression-enthusiasm (r = -.590), anxiety-comfort (r = -.414), intrinsic job satisfaction (r = -.592), extrinsic job satisfaction (r = -.628), organizational commitment (r = -.596), and intention to resign (r = .539). Similar correlations were found for marginalization and organizational survival insecurity with the strongest relationships found for intrinsic job satisfaction (MI r = -.575; OSI r = -.506) and extrinsic job satisfaction (MI r = -.546; OSI r = -.531) followed by organizational commitment (MI r = -.504; OSI r = -.575), depression-enthusiasm (MI r = -.479; OSI r = -.437) and anxiety-comfort (MI r = -.315; OSI r = -.229).

In terms of convergent and discriminant validity, marginalization insecurity was moderately correlated with interpersonal justice (*r* = -.442) and supervisory support (*r* = -.483), while organizational survival insecurity showed strong correlations with both communication climate (*r* = -.609) and trust in management (*r* = -.665). These correlations were not excessively high providing further empirical support for the discriminant and convergent validity of the organizational survival and marginalization scales.

Another key feature of the data concerns the relationships between psychological well-being and organizational outcomes. As one would expect, the three organizational attitude variables are strongly intercorrelated. For example, organizational commitment is related to trust in management (*r* = .792) and intention to resign (*r* = -.738). In terms of psychological well-being, depression-enthusiasm is strongly correlated with all three organizational outcomes- organizational commitment (*r* = .662), trust in management (*r* = .599), and intention to resign (*r* = -.598). A similar pattern of relationships was found for anxiety-comfort (*r* = -.575 for organizational commitment; *r* = -.665 for trust in management; and *r* = .405 for intention to resign).

Table B.1.

Means, Standard Deviations, Alpha Reliabilities, and Pearson Inter-Correlations among Study Variables (N =1,004)

Variables	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Job loss insecurity	3.23	1.52	*.901*													
2. Job changes insecurity	2.93	1.40	.568	*.904*												
3. Marginalization insecurity	2.40	2.40	.438	.564	*.882*											
4. Organizational survival insecurity	2.62	1.23	.330	.510	.391	*.868*										
5. Job depression-enthusiasm	4.55	.91	-.384	-.590	-.479	-.437	*.879*									
6. Job anxiety-comfort	3.81	.90	-.314	-.414	-.315	-.229	.579	*.818*								
7. Intrinsic job satisfaction	5.02	1.03	-.413	-.592	-.575	-.506	.654	.353	*.864*							
8. Extrinsic job satisfaction	5.01	.97	-.411	-.628	-.546	-.531	.622	.450	.774	*.783*						
9. Organizational commitment	5.43	1.19	-.398	-.596	-.504	-.575	.662	.332	.618	.614	*.822*					
10. Trust in management	5.04	1.25	-.447	-.627	-.572	-.665	.599	.352	.614	.665	.792	*.868*				
11. Intention to resign	2.78	1.73	.391	.539	.451	.405	-.598	-.344	-.587	-.576	-.738	-.601	*.918*			
12. Interpersonal justice	4.25	.87	-.283	-.393	-.442	-.266	.398	.278	.519	.599	.412	.484	-.367	*.920*		
13. Supervisory support	3.94	.86	-.325	-.495	-.483	-.389	.476	.301	.635	.687	.491	.534	-.428	.639	*.917*	
14. Communication climate	3.32	.78	-.376	-.531	-.533	-.609	.534	.316	.609	.620	.637	.720	-.477	.413	.502	*.888*

Note: Alpha reliabilities appear in the diagonal. SD = Standard Deviation. All correlations are significant at the .001 level (two-tailed).

Empirical Tests Across Employee Groups

Having established the factor structure of the instrument, items attached to each of the four job insecurity factors were then averaged to form composite factor scores using the SPSS program. Empirical tests were performed on these composite factors by way of one-way between group analyses of variance (ANOVA) and t-tests to identify any differences between groups of employees based on demographic variables (division, job category, age, gender, and tenure). The results of the ANOVA would demonstrate the ability of the measure to capture differences in perceptions of job insecurity across various employee groups.

Differences Across Divisions and Job Categories

Tables B.2 to B.6 present the results of one-way analyses of variance examining differences across divisions and job categories for the four job insecurity subscales. For divisional comparisons the only statistically significant differences were found for job loss insecurity ($F (4, 1004) = 9.966$, $p < .001$). As displayed in Table B.2, post-hoc comparisons show that employees from the Content division had higher levels of job loss insecurity relative to the Radio, Television, Content and Corporate divisions. These results are consistent with the recent history of restructuring and downsizing occurring at the time of data collection where recent layoffs had occurred within the Content division following the closure of one of its locations.

Table B.2.

Division Group Differences for Job Loss Insecurity (N=1004)

Mean	Division	Radio *n*=529	Television *n*=288	Content *n*=113	Corporate *n*=54	Other *n*=20
3.11	Radio			*		
3.21	Television			*		
4.02	Content	*	*		*	
2.71	Corporate			*		

Note: Asterisk denotes statistically significant difference.

For differences across job categories, there were statistically significant differences for all four of the subscales, including job loss (F (6, 990) = 9.156, p< .001), marginalization (F (6, 990) = 4.571, p< .001), job changes (F (6, 990) = 9.496, p< .001), and organizational survival (F (6, 990) = 9.380, p< .001). As presented in Table B.3, Creative staff had the highest level of job loss insecurity compared to senior management, managers and supervisors, and professional staff. These differences may be explained in terms of objective changes in the working environment (most Creative staff belong to the restructured Content division) as well as the inverse relationship between occupational level and job insecurity documented in the literature (De Witte, 1999; Schaufeli, 1992).

Table B.3.

Job Category Group Differences for Job Loss Insecurity (N=990)

Mean	Job Category	Creative *n*=230	Senior Management *n*=98	Manager/ Supervisor *n*=216	Professional *n*=171	Clerical *n*=177	Technical *n*=98
3.78	Creative		*	*	*		
2.76	Senior Management	*					
3.36	Manager/Supervisor	*					
3.00	Professional	*					
2.90	Clerical						
3.28	Technical						

Note: Asterisk denotes statistically significant difference.

Creative and Technical staff reported the highest levels of marginalization insecurity, which was significantly greater than senior managers and middle managers/supervisors. Higher levels of job changes insecurity were reported by Creative staff relative to Senior Management and Clerical staff. Given the position of senior managers in the organizational hierarchy, their roles are less likely to change in the event of restructuring while the work of clerical staff tends to be less complex and as such would also be expected to remain relatively stable. In line with the results for job loss insecurity, Creative staff reported significantly greater organizational survival insecurity for all job categories with the exception of Technical staff who reported higher levels of organizational survival insecurity compared to senior managers, and middle managers/supervisors.

Table B.4.

Job Category Group Differences for Marginalization Insecurity (N=990)

Mean	Job Category	Creative *n*=230	Senior Management *n*=98	Manager/ Supervisor *n*=216	Professional *n*=171	Clerical *n*=177	Technical *n*=98
2.64	Creative		*	*			
2.01	Senior Management						*
2.17	Manager/Supervisor						*
2.41	Professional						
2.30	Clerical						
2.84	Technical		*	*			

Note: Asterisk denotes statistically significant difference.

Table B.5.

Job Category Group Differences for Job Changes Insecurity (N=990)

Mean	Job Category	Creative *n*=230	Senior Management *n*=98	Manager/ Supervisor *n*=216	Professional *n*=171	Clerical *n*=177	Technical *n*=98
3.19	Creative		*			*	
2.62	Senior Management	*					
2.86	Manager/Supervisor						
2.86	Professional						
2.75	Clerical	*					
3.17	Technical						

Note: Asterisk denotes statistically significant difference.

Table B.6.

Job Category Group Differences for Organizational Survival Insecurity (N=990)

Mean	Job Category	Creative *n*=230	Senior Management *n*=98	Manager/ Supervisor *n*=216	Professional *n*=171	Clerical *n*=177	Technical *n*=98
2.98	Creative		*	*	*	*	
2.16	Senior Management	*					*
2.41	Manager/Supervisor	*				*	*
2.57	Professional	*					
2.50	Clerical	*					
2.92	Technical		*	*			

Note: Asterisk denotes statistically significant difference.

Differences by Age, Gender, Tenure, and Union Status

Table B.7 displays the results of the one-way ANOVA examining differences between the five age groups for organizational survival insecurity, which was the only sub-scale that had significant differences ($F(4,995)=3.886$, $p<.01$). Post hoc comparisons indicated that the eldest age group (47+) had lower levels of organizational survival insecurity than all of the age groups except the 26 to 30 category. It seems logical that individuals nearing retirement age would place less emphasis on the organization's plans for future growth and development as indicators of job security relative to those in the 18 to 25 and 31 to 46 age range when the pressures of career advancement along with family and financial responsibilities are more germane. The view that older employees are more vulnerable to job loss and thus more likely to suffer from job insecurity is also supported by empirical research (Hallier & Lyon, 1996; Kuhnert & Vance, 1992; Roskies & Louis-Guerin, 1990). Moreover, research into involuntary job loss shows that middle-aged unemployed workers, between 20 to 45 years of age, encounter the greatest amount of psychological deterioration and financial stress (Warr & Jackson, 1984).

Table B.7.

Age Group Differences for Organizational Survival Insecurity (N=995)

Mean	Age Group	18-25 *n*=101	26-30 *n*=161	31-38 *n*=263	39-46 *n*=231	47+ *n*=239
2.76	18-25					*
2.68	26-30					
2.70	31-38					*
2.69	39-46					*
2.35	47+	*		*	*	

Note: Asterisk denotes statistically significant difference.

Tables B.8 through B.11 display the results of one-way analyses of variance examining differences between the four tenure categories for the four job insecurity subscales. For job loss insecurity, overall results were statistically significant ($F(3, 1003) = 3.369$, $p < .05$). Post-hoc comparisons indicated greater levels of job loss insecurity for those who had been employed for four to seven years relative to those who had only recently commenced employment (< 1 year). This result is consistent with previous research indicating higher levels of job insecurity for longer tenure employees (Johnson et al., 1992; Kuhnert & Vance, 1992; Probst, 1998). Similar results were found for marginalization insecurity ($F(3, 1003) = 9.364$, $p < .001$) where post-hoc comparisons indicated that those with less than one year of tenure reported significantly less job insecurity than those who had been employed with the organization for four years or more. Also statistically significant were the results for job changes insecurity ($F(3, 1003) = 15.437$, $p < .001$), where those with less than one year of tenure were less insecure than all of the other job categories. Finally, statistically significant overall results were found for the organizational survival scale ($F(3, 1003) = 4.762$, $p < .01$) with post-hoc comparisons revealing greater insecurity for the 4 to 7 year tenure group compared to those with less than one year of tenure and more than eight years.

Table B.8.

Tenure Group Differences for Job Loss Insecurity (N=1003)

Mean	Tenure Group	< 1 yr *n*=234	1-3 yrs *n*=146	4-7 yrs *n*=267	8+ yrs *n*=357
2.99	< 1 yr			*	
3.20	1-3 yrs				
3.42	4 -7 yrs	*			
3.25	8+ yrs				

Note: Asterisk denotes statistically significant difference.

Table B.9.

Tenure Group Differences for Marginalization Insecurity (N=1003)

Mean	Tenure Group	< 1 yr *n*=234	1-3 yrs *n*=146	4-7 yrs *n*=267	8+ yrs *n*=357
1.97	< 1 yr			*	*
2.38	1-3 yrs				
2.62	4 -7 yrs	*			
2.52	8+ yrs	*			

Note: Asterisk denotes statistically significant difference.

Table B.10.

Tenure Group Differences for Job Changes Insecurity (N=1003)

Mean	Tenure Group	< 1 yr *n*=234	1-3 yrs *n*=146	4-7 yrs *n*=267	8+ yrs *n*=357
2.43	< 1 yr		*	*	*
2.86	1-3 yrs	*			
3.21	4 -7 yrs	*			
3.07	8+ yrs	*			

Note: Asterisk denotes statistically significant difference.

Table B.11.

Tenure Group Differences for Organizational Survival Insecurity (N=1003)

Mean	Tenure Group	< 1 yr *n*=234	1-3 yrs *n*=146	4-7 yrs *n*=267	8+ yrs *n*=357
2.44	< 1 yr			*	
2.71	1-3 yrs				
2.83	4 -7 yrs	*			*
2.56	8+ yrs			*	

Note: Asterisk denotes statistically significant difference.

In order to examine differences by gender, t-tests were conducted. Results displayed in Table B.12 indicate statistically significant differences between males and females for all four subscales, with males indicating higher levels of job insecurity. Research suggests that the threat of job loss or loss of important job features might be a more severe job stressor for males than for females, and in this way should have a greater negative effect on men's well-being (Kinnunen et al., 1999; Näswall, Sverke, & Hellgren, 2001). These findings are consistent with *role theory* which posits that domestic roles (e.g. mother and spouse) are more salient for women, while work roles and traditional status as the main 'breadwinner' are more prominent for men (Barnett, Raudenbush, Brennan, Pleck, & Marshall, 1995; Simon, 1992).

Table B.12.

Gender Group Differences for Organizational Survival Insecurity (N=1003)

Mean	Mean (SD)	t-test	Sig.
JLI			
Male	3.36 (1.52)	t = 2.569 (1002)	$p = .05$
Female	3.11 (1.52)		
MI			
Male	2.52 (1.53)	t = 2.444 (1002)	$p = .05$
Female	2.29 (1.45)		
JCI			
Male	3.07 (1.38)	t = 3.057 (1002)	$p = .001$
Female	2.80 (1.41)		
OSI			
Male	2.74 (1.27)	t = 2.832 (1002)	$p = .001$
Female	2.52 (1.19)		

Note: N = 468 Male & 536 Female

Summary and Discussion

Criterion-Related Validity

Statistically significant correlations between the four job insecurity subscales and a range of outcome variables indicate that not only is the measurement model theoretically sound, but it has demonstrated utility in relation to important outcomes for the individual and the organization. These intentionally diverse outcomes include components of psychological well-being (anxiety-comfort, depression-enthusiasm, intrinsic and extrinsic job satisfaction) and organizational outcomes (organizational commitment, trust in management and intention to resign) that have appeared in theoretical models of job insecurity (Probst, 2002; Sverke & Hellgren, 2002) and recent meta-analyses (Cheng & Chan, 2007; Sverke et al., 2002). The associations between the job insecurity subscales and these constructs were at a level that supports the convergent and discriminant validity of the JIM.

Correlational analyses also indicated that organizational survival and marginalization insecurity were strongly correlated but separate from similar variables. These variables were supervisory support and interpersonal justice for marginalization insecurity, and communication climate and trust in management for organizational survival insecurity. Given the strength of these associations, these variables should be further examined as antecedents or consequences of organizational survival and marginalization insecurity.

Of particular interest were the relative strength of the associations between the four job insecurity scales and the various outcomes. While job loss insecurity showed low to moderate correlations consistent with previous research, stronger correlations were found for job changes, marginalization, and organizational survival insecurity in relation to all but one individual outcome. The fact that job loss and job changes insecurity have received greater attention in the stress literature while the marginalization and organizational survival scales have only recently been established, suggests a promising new direction for future job insecurity research. It is indeed plausible that the well-documented relationship between job insecurity and individual and organizational outcomes in the literature may be operating through marginalization or organizational survival insecurity. However, strong inferences regarding the causal ordering and relative impact of the job insecurity dimensions on outcomes would require a longitudinal research design.

The strong association between marginalization insecurity and outcomes related to psychological well-being and organizational attitudes is in line with a growing body of research by social scientists into social ostracism or the "silent treatment" (Williams, 1997, 2001) as well as Industrial-Organizational psychologists who have measured social exclusion in the workplace as a component of various forms of interpersonal deviance (Bennett & Robinson, 2000; Fox & Stallworth, 2005) and most recently as an independent construct (Ferris et al., 2008). Establishing marginalization insecurity as a dimension of job insecurity presents promising avenues for integrating these disparate research streams and enriching existing theoretical frameworks.

Although attempts were made to refine the growth climate scale by adding items related to corporate growth and productivity, all three of the original growth climate items were retained in the final organizational survival scale. However, organizational survival insecurity showed stronger relationships with intrinsic job satisfaction (r = -

.506), organizational commitment (*r* =-.575) and intention to resign (*r* = .405) than those reported for growth climate (*r* = .280 for intrinsic job satisfaction, *r* = .325 for organizational commitment, and *r* = 0.231 for intention to resign). The strong relationships reported here between the organizational survival insecurity and communication climate and trust in management also underscores the pivotal role of management in shaping insecurity over organizational survival through open and honest communication with staff during periods of uncertainty. Several commentators have advocated frequent and effective communication as a strategy for combating the adverse effects of downsizing and restructuring on employee morale and corporate performance (Cascio, 2002; Casey et al., 1997; Schweiger & DeNisi, 1991). In particular, Cascio and Wynn (2004) recommend using a variety of mediums to communicate "a business plan that shows how the company will be more successful in the long run by implementing its downsizing strategy. The plan should describe how the company will be able to attract new customers, penetrate new markets, and generate new streams of revenue." (p. 434)

Comparisons Across Employee Groups

Evidence for the construct validity of the new JIM was also provided by assessing whether the instrument was able to discriminate across different employee groups on the basis of demographic variables. Systematic differences across employee groups were found on the basis of division, job category, age, gender, and tenure. These differences were generally consistent with empirical research and in the case of division comparisons reflect objective changes in the working environment. While the four job insecurity dimensions tended to show a consistent overall pattern of results for some groups such as gender, there were clear differences for other groups such as age where only the organizational survival insecurity showed statistically significant differences. These results highlight the importance of examining each dimension of job insecurity in order to identify the most salient dimensions for particular groups and construct more targeted remedial strategies.

Appendix C

Organizational Survey (Chapter IV)

Information About the Questionnaire (Page 1/22)

Dear Participant,

This questionnaire is an Employee Wellness Survey for *Corus Entertainment*.

The questionnaire provides an opportunity for you to describe the work that you do, and how you feel about it. This information will be invaluable in evaluating the occupational health and well-being of staff and identifying strengths and opportunities for improvement.

The survey, which takes roughly **30 minutes** to complete, follows the Phase 1 survey which was administered in November, 2006. This Phase 2 survey is designed to measure the impact of any naturally occurring changes over the past 7 months. The final survey will take place in January, 2008 and is designed to determine whether subsequent wellness initiatives have had their desired impact. **It is, therefore, essential that all three surveys be completed.**

You will find several kinds of questions about yourself and your job. There are no trick questions. If some questions appear repetitive, this is to ensure that we have accurately obtained your viewpoint.

In addition to the questions describing your job and your feelings towards *Corus Entertainment* - in the section "Background Questions" - we have asked for some personal details. This allows us to explore whether factors such as age, gender, or length of service are associated with variables such as your work-home life balance. These questions and others like them will help in the development of appropriate human resources policies and practices at *Corus Entertainment*.

Confidentiality

We can assure you that your individual responses **will not** be reported, and that the data entry and analysis for this project is being conducted by O'Neill Organizational Research and Consulting independently of your organization. No one from *Corus Entertainment* will have access to completed questionnaires. The reporting of all results will be at the group level and will not identify individual responses (i.e., organizational level, occupational group, site, gender etc.). **Your organization has agreed that completed questionnaires belong to the Research Consultant and that they will remain totally confidential.**

Any Questions?

If you have any queries or concerns which have not been covered in this letter, please contact Mr. Patrick O'Neill at 1-866-818-5836 or by e-mail at patrick13@rogers.com.

There are several sections to the questionnaire. **Please carefully read the instructions at the start of each section before answering**. Once you have completed the survey, you will be given the opportunity to complete a ballot for your chance to **win lots of exciting prizes including a spa getaway for two!! For complete contest rules visit Corus Central.**

Thank you very much for taking part in the survey.

Patrick Brennan O'Neill
Principal Researcher

Please answer all questions from the perspective of the position that you currently occupy – even if this position is "acting".

What Do You Think About Your Job? (Page 2/22)

This part of the questionnaire asks you to describe your job, as **objectively** as you can. Please do not use this part of the questionnaire to show how much you like or dislike your job. Questions about that will come later. Instead, try to make your descriptions as accurate and objective as you possibly can.

1. To what extent does your job involve doing a "whole" and identifiable piece of work? That is, is the job a complete piece of work that has an obvious beginning and end? Or is it only a small part of the overall piece of work, which is finished by other people or by automatic machines?

- **1** - My job is only a *tiny* part of the overall piece of work: the results of my activity cannot be seen in the final product or service.
- **2**
- **3**
- **4** - My job is a *moderate* sized "chunk" of the overall piece of work: my own contribution can be seen in the final outcome or service.
- **5**
- **6**
- **7** - My job involves doing the *whole* piece of work, from start to finish;the results of my activities are easily seen in the final product.

2. How much variety is there in your job? That is, to what extent does the job require you to do many different things at work, using a variety of your skills and talents?

- **1** - *Very little variety*; the job requires me to do the same routine things over and over again.
- **2**
- **3**
- **4** - *Moderate variety.*
- **5**
- **6**
- **7** - *Very much variety*; the job requires me to do many different things using a number of different skills and talents.

3. How much autonomy is there in your job? That is, to what extent does your job permit you to decide on your own how to go about doing the work?

- **1** - *Very little*; the job gives me almost no personal "say" about how and when the work is done.
- **2**
- **3**
- **4** - *Moderately*; many things are not standardized and not under my control but I can make some decisions.
- **5**
- **6**
- **7** - *Very much*; the job gives me almost complete responsibility for deciding how and when the work is done.

What Do You Think About Your Job? (Page 3/22)

4. In general, how significant or important is your job? That is, are the results of your work likely to significantly affect the lives and well-being of other people?

- **1** - *Not very significant*; the outcomes of my work are not likely to have important effects on other people.
- **2**
- **3**
- **4** - *Moderately significant*
- **5**
- **6**
- **7** - *Highly significant*; the outcomes of my work can affect other people in very important ways.

5. To what extent does doing the job itself provide you with information about your work performance? That is, does the actual work itself provide clues about how well you are doing – aside from any "feedback" co-workers or supervisors may provide?

- **1** - *Very little*; the job itself is set up so I could work for ever without finding out how well I'm doing.
- **2**
- **3**
- **4** - *Moderately*; sometimes doing the job provides "feedback" to me; sometimes it does not.
- **5**
- **6**
- **7** - *Very much*; the job is set up so that I get almost constant "feedback" as I work about how well I am doing.

What Do You Think About Your Job? (Page 4/22)

Listed below are a number of statements which could be used to describe a job. Please indicate whether each statement is an *accurate* or an *inaccurate* description of your job. Once again, please try to be as objective as you can in deciding how accurately each statement describes your job – regardless of whether you like or dislike your job. For each statement, please select the appropriate choice.

How accurate is the statement describing your job?

	Very Inaccurate	Mostly Inaccurate	Slightly Inaccurate	Uncertain	Slightly Accurate	Mostly Accurate	Very Accurate
1. The job requires me to use a number of complex or high level skills.	○	○	○	○	○	○	○
2. Just doing the work required by the job provides many chances for me to figure out how well I am doing.	○	○	○	○	○	○	○
3. This job is one where a lot of other people can be affected by how well the work gets done.	○	○	○	○	○	○	○
4. The job provides me the chance to completely finish the pieces of work I begin.	○	○	○	○	○	○	○
5. The job gives me considerable opportunity for independence and freedom in how I do the work.	○	○	○	○	○	○	○
6. The job gives me a chance to use my personal initiative and judgement in carrying out the work.	○	○	○	○	○	○	○
7. The job is arranged so that I can do an entire piece of work from beginning to end.	○	○	○	○	○	○	○
8. The job is complex and varied.	○	○	○	○	○	○	○
9. The job itself is very significant and important in the broader scheme of things.	○	○	○	○	○	○	○
10. After I finish a job, I know whether I performed well.	○	○	○	○	○	○	○

The Level of Your Workload (Page 5/22)

The following four questions deal with the amount of workload in your job.

While working, on an average day at work, to what extent do you find yourself:

	To No Extent	Little Extent	Some Extent	Great Extent	Very Great Extent
1. Seeking relief from demanding work?	○	○	○	○	○
2. Under constant pressure to do work on time?	○	○	○	○	○
3. Being pushed by deadlines?	○	○	○	○	○
4. Having to work faster than you would like?	○	○	○	○	○

What do you Think About Supervision? (Page 6/22)

The following set of statements deals with the supervisory practices of your immediate supervisor/manager and the level of support you receive from him/her. Your immediate supervisor or manager is the person you report to.

Please select the appropriate choice to indicate how much you agree or disagree with each statement.

	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree
1. I can count on my supervisor/manager to help me when I need it.	○	○	○	○	○
2. My supervisor/manager is interested in me getting ahead in the organization.	○	○	○	○	○
3. My supervisor/manager is behind me 100%.	○	○	○	○	○
4. My supervisor/manager is easy to talk to about job-related problems.	○	○	○	○	○
5. My supervisor/manager backs me up and lets me learn from my mistakes.	○	○	○	○	○

Your Attitudes About Job Insecurity (Page 7/22)

The following items assess the level of your job insecurity.

To what extent do you agree with the following statements?

	Very Inaccurate	Mostly Inaccurate	Slightly Inaccurate	Uncertain	Slightly Accurate	Mostly Accurate	Very Accurate
1. The possibility of losing my job occupies my thoughts constantly.	○	○	○	○	○	○	○
2. No matter how hard I work, there is no guarantee that I am going to keep my job.	○	○	○	○	○	○	○
3. I am certain of losing my job.	○	○	○	○	○	○	○
4. I'm not sure of how long my job will last.	○	○	○	○	○	○	○
5. I am uncertain about my future with this organization.	○	○	○	○	○	○	○
6. The probability of being laid-off is high.	○	○	○	○	○	○	○

	Very Inaccurate	Mostly Inaccurate	Slightly Inaccurate	Uncertain	Slightly Accurate	Mostly Accurate	Very Accurate
7. This organization is maintaining and investing in new equipment and materials.	○	○	○	○	○	○	○
8. Senior management is really trying to build this organization and make it successful.	○	○	○	○	○	○	○
9. Management appears to be preparing in advance and planning for the future.	○	○	○	○	○	○	○
10. Productivity appears to be slowing in this company.	○	○	○	○	○	○	○
11. This organization seems to have clear goals and a definite strategy for achieving them.	○	○	○	○	○	○	○
12. I expect more restrictions will be placed on how I do my job.	○	○	○	○	○	○	○

	Very Inaccurate	Mostly Inaccurate	Slightly Inaccurate	Uncertain	Slightly Accurate	Mostly Accurate	Very Accurate
13. There will be less opportunities for promotion and advancement in the future.	◯	◯	◯	◯	◯	◯	◯
14. Overall, my physical working conditions are likely to deteriorate.	◯	◯	◯	◯	◯	◯	◯
15. I am expecting unfavourable changes to my job.	◯	◯	◯	◯	◯	◯	◯
16. I expect to have fewer resources to meet the performance requirements of my job.	◯	◯	◯	◯	◯	◯	◯
17. All in all, I believe the quality of my relationships with fellow workers will change for the worse.	◯	◯	◯	◯	◯	◯	◯
18. The rewards of my job are likely to diminish.	◯	◯	◯	◯	◯	◯	◯

	Very Inaccurate	Mostly Inaccurate	Slightly Inaccurate	Uncertain	Slightly Accurate	Mostly Accurate	Very Accurate
19. I will probably lose many features of my job that I value the most.	◯	◯	◯	◯	◯	◯	◯
20. I wish my job could go back to the way it used to be.	◯	◯	◯	◯	◯	◯	◯
21. Management appear uncomfortable interacting with me.	◯	◯	◯	◯	◯	◯	◯
22. Management at this company notices me.	◯	◯	◯	◯	◯	◯	◯
23. I feel like I am being given the 'silent treatment' in the organization.	◯	◯	◯	◯	◯	◯	◯
24. I am often excluded from discussions or meetings that affect me.	◯	◯	◯	◯	◯	◯	◯
25. I feel as though management is avoiding me.	◯	◯	◯	◯	◯	◯	◯

Training and Development at [redacted] (Page 8/22)

	Less than 1 hr/month	About 1-3 hrs/month	About 4-6 hrs/month	About 7-9 hrs/month	10 hrs/month or more
1. How many hours per *month* do you spend in training (on or off the job) in order to keep up-to-date in the skills needed to do your job?	◯	◯	◯	◯	◯

	No training received	A few hours	About a day	About a week	About a month	More than a month
2. When you began the job that you are doing at present, how long a period of formal orientation and training did you receive that was directly related to your job?	◯	◯	◯	◯	◯	◯

How do you Normally Feel? (Page 9/22)

This scale consists of a number of words that describe different feelings and emotions. Please select the choice which best shows **how you feel in general**.

How do you normally feel on an average day?

	Very Slightly or Not at All	A Little	Moderately	Quite a Lot	Extremely
1. Interested	○	○	○	○	○
2. Distressed	○	○	○	○	○
3. Excited	○	○	○	○	○
4. Upset	○	○	○	○	○
5. Strong	○	○	○	○	○
6. Guilty	○	○	○	○	○
7. Scared	○	○	○	○	○
8. Hostile	○	○	○	○	○
9. Enthusiastic	○	○	○	○	○
10. Proud	○	○	○	○	○
11. Irritable	○	○	○	○	○
12. Alert	○	○	○	○	○
13. Ashamed	○	○	○	○	○
14. Inspired	○	○	○	○	○
15. Nervous	○	○	○	○	○
16. Determined	○	○	○	○	○
17. Attentive	○	○	○	○	○
18. Jittery	○	○	○	○	○
19. Active	○	○	○	○	○
20. Afraid	○	○	○	○	○

How Satisfied Are You With Your Job? (Page 10/22)

The following set of statements deal with various aspects of your job. Please indicate how satisfied or dissatisfied you feel with each of these features of your present job.

How Satisfied or Dissatisfied are you with:

	Extremely Dissatisfied	Very Dissatisfied	Moderately Dissatisfied	I'm not sure	Moderately Satisfied	Very Satisfied	Extremely Satisfied
1. The amount of responsibility you are given?	○	○	○	○	○	○	○
2. Your opportunity to use your abilities?	○	○	○	○	○	○	○
3. The way your work area is managed?	○	○	○	○	○	○	○
4. The attention paid to suggestions you make?	○	○	○	○	○	○	○
5. Your hours of work?	○	○	○	○	○	○	○
6. The amount of variety in your job?	○	○	○	○	○	○	○
7. Your job security?	○	○	○	○	○	○	○
8. Employee relations between management and workers in your work area?	○	○	○	○	○	○	○
9. Your fellow workers?	○	○	○	○	○	○	○
10. The freedom to choose your own method of working?	○	○	○	○	○	○	○
11. The recognition you get for good work?	○	○	○	○	○	○	○
12. The physical work conditions?	○	○	○	○	○	○	○
13. Your immediate boss?	○	○	○	○	○	○	○
14. Your rate of pay?	○	○	○	○	○	○	○
15. Your chance of promotion?	○	○	○	○	○	○	○
16. Your career path?	○	○	○	○	○	○	○
17. Management's emphasis on career development?	○	○	○	○	○	○	○
18. Your access to formal training?	○	○	○	○	○	○	○
19. Your access to informal (on-the-job) training?	○	○	○	○	○	○	○
20. Management's emphasis on training?	○	○	○	○	○	○	○

How Did Your Work Affect You Lately? (Page 11/22)

This section is concerned with how you have been feeling both at work and generally **over the past few weeks**. Please answer the following questions by selecting the answers that describe how things have been going in your work for the past few weeks.

Thinking of the past few weeks, how much of the time has your work made you feel each of the following?

	Never	Occasionally	Some of the Time	Much of the Time	Most of the Time	All of the Time
1. Gloomy	○	○	○	○	○	○
2. Calm	○	○	○	○	○	○
3. Enthusiastic	○	○	○	○	○	○
4. Worried	○	○	○	○	○	○
5. Tense	○	○	○	○	○	○
6. Depressed	○	○	○	○	○	○
7. Optimistic	○	○	○	○	○	○
8. Relaxed	○	○	○	○	○	○
9. Miserable	○	○	○	○	○	○
10. Motivated	○	○	○	○	○	○
11. Anxious	○	○	○	○	○	○
12. Restful	○	○	○	○	○	○
13. At ease	○	○	○	○	○	○

How Does Your Work Affect Your Home Life? (Page 12/22)

The following questions are designed to assess the extent to which your work life "spills over" into your private life. Please select each choice that best describes your view.

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
1. After I leave work, I keep worrying about job problems.	○	○	○	○	○
2. I find it difficult to unwind at the end of a workday.	○	○	○	○	○
3. I feel used up at the end of a workday.	○	○	○	○	○
4. My job makes me feel quite exhausted at the end of the day.	○	○	○	○	○

What do you Think About Communication? (Page 13/22)

This set of questions deals with communication at [redacted] **Please select the choice which best expresses your view of each statement.**

People at [redacted]

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
1. Say what they mean and mean what they say.	○	○	○	○	○
2. Are encouraged to be really open and candid with each other.	○	○	○	○	○
3. Freely exchange information and opinions.	○	○	○	○	○
4. Are kept informed about how well work goals and objectives are being met.	○	○	○	○	○
5. Are provided with the kinds of information they really want and need to do the job.	○	○	○	○	○
6. Are kept up-to-date on developments that relate to future plans.	○	○	○	○	○

What Do You Think About Commitment And Trust In [redacted]? (Page 14/22...

In this section we look at what it means to you being a member of your organization. Some people feel themselves to be just an employee, there to do a job, while others feel more personally involved in the organization they work for and place a great amount of confidence and trust in **senior management**.

Please indicate on this scale how much you agree or disagree with each statement.

	No, I Strongly Disagree	No, I Disagree Quite a Lot	No, I Disagree Just a Little	I'm not sure	Yes, I Agree Just a Little	Yes, I Agree Quite a Lot	Yes, I Strongly Agree
1. I am quite proud to be able to tell people whom it is I work for.	○	○	○	○	○	○	○
2. Management at [redacted] is sincere in its attempts to meet the workers' point of view.	○	○	○	○	○	○	○
3. Sometimes I feel like leaving [redacted] for good.	○	○	○	○	○	○	○
4. Management would be quite prepared to gain advantage by deceiving the workers.	○	○	○	○	○	○	○
5. I feel myself to be part of [redacted]	○	○	○	○	○	○	○
6. [redacted] has a poor future unless it can attract better managers.	○	○	○	○	○	○	○
7. I'm not willing to put myself out just to help [redacted]	○	○	○	○	○	○	○
8. I would not recommend a close friend to join [redacted]	○	○	○	○	○	○	○
9. Management can be trusted to make sensible decisions for [redacted]s future.	○	○	○	○	○	○	○
10. I often think about quitting.	○	○	○	○	○	○	○

11. Management at work seems to do an efficient job.	◯	◯	◯	◯	◯	◯	◯
12. I will probably look for a new job within the next year.	◯	◯	◯	◯	◯	◯	◯
13. I expect to be working somewhere else a year from now.	◯	◯	◯	◯	◯	◯	◯

What Do You Think About Rewards & Recognition? (Page 15/22)

The following questions ask you to rate how fairly you think you are rewarded at work. By fairness we mean the extent to which a person's contributions to the organization are related to the rewards received. Money, recognition, and physical facilities are examples of rewards.

Please select the appropriate choice.

	Not at all Fairly	With Little Fairness	With Some Fairness	Quite Fairly	Very Fairly
1. To what extent are you fairly rewarded, considering the responsibilities you have?	◯	◯	◯	◯	◯
2. To what extent are you fairly rewarded in view of the amount of experience you have had?	◯	◯	◯	◯	◯
3. To what extent are you fairly rewarded for the amount of effort you put in?	◯	◯	◯	◯	◯
4. To what extent are you fairly rewarded for the work you have done well?	◯	◯	◯	◯	◯

How Are You Treated By Your Supervisor/Manager? (Page 16/22)

These items refer to the treatment you receive from your immediate supervisor/manager.

To what extent has your immediate supervisor/manager:

	To a very small extent	To a small extent	To a medium extent	To a large extent	To a very large extent
1. Treated you in a polite manner?	◯	◯	◯	◯	◯
2. Treated you with dignity?	◯	◯	◯	◯	◯
3. Treated you with respect?	◯	◯	◯	◯	◯
4. Refrained from improper remarks or comments?	◯	◯	◯	◯	◯

Your Role (Page 19/22)

The following statements concern aspects of the role and responsibility of your job. How true are the following statements?

	Not at all	Just a Little	Moderate Amount	Quite a lot	A Great Deal
1. I have clear planned goals and objectives for my job.	○	○	○	○	○
2. I know that I have divided my time properly.	○	○	○	○	○
3. I know what my responsibilities are.	○	○	○	○	○
4. Explanation is clear of what has to be done.	○	○	○	○	○
5. I know exactly what is expected of me.	○	○	○	○	○

Background Questions (Page 20/22)

The following questions are very important for properly coding and analyzing the data. **As indicated earlier, all responses will be kept strictly confidential.**

If more than one category describes your job, please tick the category that is most often true.

Please complete the following details.

1. Gender?

○ Male ○ Female

2. What is the highest educational level you attained in grade school?

○ Elementary School

○ High School

3. Beyond grade school, what is the highest qualification you have gained?

○ No additional qualifications beyond school

○ Certificate (Business College)

○ Apprenticeship/Trade qualifications

○ Diploma

○ University degree (BA, BSc. etc.)

○ Masters, PhD

○ Other (please specify)

4. What year did you start at [redacted]? (e.g. 1994)

5. Which of the following is your employment status?

- Full time employee
- Part-time employee
- Temporary or Casual

6. Do you supervise others?

- Yes
- No

7. Are you a member of a union?

- Yes
- No

8. What type of shift do you work?

- Night shift
- Day shift
- Both

9. What is your job category at [redacted]?

- Creative
- Executive
- Senior Manager
- Manager
- Supervisor
- Professional
- Support
- Technical
- Other (If your job category is not listed above please write it here)

10. In which division do you *most often* work, supervise or manage?

- Radio
- Television
- Content

- ◯ Corporate
- ◯ Other (If your division is not listed above please write it here)

11. In which location/business unit do you most often work, supervise or manage? Please note, this question does not apply to Corporate staff.

- ◯ Corporate Division - [redacted]
- ◯ Corporate Division - [redacted]
- ◯ Corporate Division - [redacted]
- ◯ Television and Content Division - [redacted]
- ◯ Television and Content Division - [redacted]
- ◯ Television and Content Division - [redacted]
- ◯ Television and Content Division - [redacted]
- ◯ Television and Content Division - [redacted]
- ◯ Television and Content Division - Television (all others)
- ◯ Radio Division - Radio Corporate [redacted]
- ◯ Radio Division - [redacted]
- ◯ Radio Division - [redacted]
- ◯ Radio Division - [redacted]
- ◯ Radio Division - [redacted]
- ◯ Radio Division - [redacted]
- ◯ Radio Division - [redacted]
- ◯ Radio Division - [redacted]
- ◯ Radio Division - [redacted]
- ◯ Radio Division - [redacted]
- ◯ Radio Division - [redacted]
- ◯ Radio Division - [redacted]
- ◯ Radio Division - [redacted]
- ◯ Radio Division - [redacted]
- ◯ Radio Division - [redacted]
- ◯ Radio Division - [redacted]
- ◯ Radio Division - [redacted]
- ◯ Radio Division - [redacted]
- ◯ Radio Division - [redacted]
- ◯ Radio Division - [redacted]
- ◯ Radio Division - [redacted]
- ◯ If your location/division is not listed above please write it here

12. In which department do you most often work, supervise or manage?

Your Comments Please (Page 21/22)

Have we asked the questions you want to answer? Are there any other comments you wish to make about your job or your working environment?

Please outline in the space below any specific area where you think [redacted] needs to make improvements (WHAT needs to improve and HOW it could be improved).

Thank You For Your Participation (Page 22/22)

Thank you for taking the time to complete this survey. Your responses have been entered into the database.

You can now click here to enter your name in a draw for your chance to win participation prizes!!

Those participants who have submitted ballots for all three surveys will be entered into a draw for lots of exciting prizes including a spa getaway for two!!

Appendix D

EQS Output for the Parsimonious Structural Model (Chapter VII)

```
EQS, A STRUCTURAL EQUATION PROGRAM          MULTIVARIATE SOFTWARE, INC.
COPYRIGHT BY P.M. BENTLER                   VERSION 6.1 (C) 1985 - 2005 (B83).


  PROGRAM CONTROL INFORMATION

    /TITLE
     PARSIMONIOUS CAUSAL MODEL OF JOB INSECURITY
    /SPECIFICATIONS
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    VARIABLES=129; CASES=258; DELETE=40,144,166,217,256,56,75,114,203,214;
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    /LABELS
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    V6=INSEC1.1; V7=INSEC1.2; V8=INSEC1.3; V9=INSEC1.4; V10=INSEC1.5;
    V11=INSEC1.6; V12=SURV1.1; V13=SURV1.2; V14=SURV1.3; V15=CHANG1.1;
    V16=CHANG1.2; V17=CHANG1.3; V18=CHANG1.4; V19=CHANG1.5; V20=CHANG1.6;
    V21=MARG1.1; V22=MARG1.2; V23=MARG1.3; V24=PA1.1; V25=PA1.2;
    V26=NA1.1; V27=PA1.3; V28=NA1.2; V29=PA1.4; V30=NA1.3;
    V31=NA1.4; V32=SATIN1.1; V33=SATIN1.2; V34=SATIN1.3; V35=SATEX1.1;
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    V41=DEP1.2; V42=DEP1.3; V43=ANGST1.3; V44=SS2.1; V45=SS2.2;
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CASE NUMBERS DELETED FROM RAW DATA ARE:
    40      56      75     114     144     166     203     214     217     256


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  THERE ARE 129 VARIABLES AND   258 CASES
  IT IS A RAW DATA ESS FILE
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SAMPLE STATISTICS BASED ON COMPLETE CASES

UNIVARIATE STATISTICS

VARIABLE	INSEC1.1	INSEC1.2	INSEC1.3	INSEC1.4	INSEC1.5
MEAN	2.6290	3.9194	1.8710	3.0121	3.3185
SKEWNESS (G1)	.7823	-.0024	1.3395	.4593	.2600
KURTOSIS (G2)	-.6964	-1.3416	.8466	-1.0681	-1.2739
STANDARD DEV.	1.6688	2.0405	1.2369	1.8496	1.9319

VARIABLE	INSEC1.6	CHANG1.1	CHANG1.2	CHANG1.3	CHANG1.4
MEAN	2.5484	2.6492	2.7379	2.8992	2.8347
SKEWNESS (G1)	.7516	.6851	.5642	.5607	.6307
KURTOSIS (G2)	-.6507	-.4505	-.6214	-.6944	-.5656
STANDARD DEV.	1.6683	1.5435	1.5402	1.6451	1.6741

VARIABLE	CHANG1.5	CHANG1.6	MARG1.1	MARG1.2	MARG1.3
MEAN	2.4718	2.5363	1.9758	2.5242	1.9758
SKEWNESS (G1)	.7546	.8572	1.5941	.9002	1.7804
KURTOSIS (G2)	-.3860	-.4886	2.1548	-.2771	2.5446
STANDARD DEV.	1.4310	1.7468	1.3733	1.6736	1.4893

VARIABLE	PA1.1	PA1.2	NA1.1	PA1.3	NA1.2
MEAN	3.8629	3.0565	1.3024	3.2581	1.6169
SKEWNESS (G1)	-.2632	-.2521	1.8862	-.3162	1.2879
KURTOSIS (G2)	-.3820	-.5256	3.0584	-.4968	.8074
STANDARD DEV.	.7828	1.0165	.5773	1.0863	.8551

VARIABLE	PA1.4	NA1.3	NA1.4	SATIN1.1	SATIN1.2
MEAN	3.9234	1.3750	1.2258	5.5444	5.3669
SKEWNESS (G1)	-.7978	2.1008	2.4363	-1.5836	-1.1878
KURTOSIS (G2)	.9086	3.6437	5.8289	3.5529	1.3413
STANDARD DEV.	.8852	.7586	.5222	1.0211	1.2266

VARIABLE	SATIN1.3	SATEX1.1	SATEX1.2	SATEX1.3	INSEC2.1
MEAN	5.5726	4.2258	4.2097	4.6976	2.8105
SKEWNESS (G1)	-1.2310	-.4193	-.3923	-.6155	.5854
KURTOSIS (G2)	2.5655	-1.0186	-.7794	-.2530	-1.0617

STANDARD DEV.	1.0194	1.7371	1.6459	1.5035	1.7588
VARIABLE	INSEC2.2	INSEC2.3	INSEC2.4	INSEC2.5	INSEC2.6
MEAN	4.2016	1.9234	3.3105	3.4798	2.7823
SKEWNESS (G1)	-.1779	1.4228	.2448	.2261	.6575
KURTOSIS (G2)	-1.3506	1.4162	-1.2649	-1.2227	-.6049
STANDARD DEV.	2.0852	1.2558	1.9164	1.8896	1.7100
VARIABLE	CHANG2.1	CHANG2.2	CHANG2.3	CHANG2.4	CHANG2.5
MEAN	2.8629	2.9032	3.3266	3.1694	2.7016
SKEWNESS (G1)	.5764	.5123	.2663	.3966	.6498
KURTOSIS (G2)	-.5248	-.6475	-1.1480	-.9318	-.5009
STANDARD DEV.	1.6139	1.5788	1.7822	1.7871	1.5083
VARIABLE	CHANG2.6	MARG2.1	MARG2.2	MARG2.3	SATIN2.1
MEAN	2.6371	2.2258	2.6331	2.0323	5.4677
SKEWNESS (G1)	.7774	1.0826	.7628	1.3723	-1.2836
KURTOSIS (G2)	-.6456	-.0417	-.4957	1.1293	1.9082
STANDARD DEV.	1.7649	1.5603	1.6636	1.3966	1.0411
VARIABLE	SATIN2.2	SATIN2.3	SATEX2.1	SATEX2.2	SATEX2.3
MEAN	5.3226	5.5363	4.1290	4.1008	4.6976
SKEWNESS (G1)	-1.1609	-1.3661	-.2660	-.3426	-.7999
KURTOSIS (G2)	.7647	2.9381	-1.1152	-.7230	.0392
STANDARD DEV.	1.3043	1.0754	1.7928	1.6574	1.5249
VARIABLE	INSEC3.1	INSEC3.2	INSEC3.3	INSEC3.4	INSEC3.5
MEAN	3.2339	4.3266	2.1452	3.3871	3.3266
SKEWNESS (G1)	.3719	-.2868	1.2880	.2840	.3394
KURTOSIS (G2)	-1.1563	-1.1654	1.0311	-1.1156	-1.0976
STANDARD DEV.	1.8136	1.9985	1.4548	1.9161	1.8795
VARIABLE	INSEC3.6	CHANG3.1	CHANG3.2	CHANG3.3	CHANG3.4
MEAN	2.9113	2.8629	3.0968	3.4718	3.3952
SKEWNESS (G1)	.6035	.6104	.4294	.2380	.1664
KURTOSIS (G2)	-.6782	-.2191	-.7256	-1.0114	-1.0519
STANDARD DEV.	1.7449	1.5075	1.6564	1.7814	1.7183
VARIABLE	CHANG3.5	CHANG3.6	MARG3.1	MARG3.2	MARG3.3

```
MEAN              2.8790     2.7702     2.1694     2.6129     2.0726

SKEWNESS (G1)      .6682      .7569     1.1399      .7788     1.3580

KURTOSIS (G2)     -.3485     -.6008      .2240     -.5511     1.0104

STANDARD DEV.     1.6351     1.8130     1.5123     1.6578     1.5013

VARIABLE        SATIN3.1   SATIN3.2   SATIN3.3   SATEX3.1   SATEX3.2

MEAN              5.4879     5.4032     5.5605     4.4516     4.2540

SKEWNESS (G1)    -1.6072    -1.3914    -1.1542     -.5805     -.3924

KURTOSIS (G2)     3.3238     1.5282     1.4512     -.8247     -.5395

STANDARD DEV.     1.0872     1.2784     1.1330     1.7090     1.5231

VARIABLE        SATEX3.3

MEAN              4.7137

SKEWNESS (G1)     -.6179

KURTOSIS (G2)     -.0918

STANDARD DEV.     1.4768

                        MULTIVARIATE KURTOSIS
                        ---------------------

MARDIA'S COEFFICIENT (G2,P) =    401.1996
NORMALIZED ESTIMATE =             31.0278 – TOO HIGH! SATORRA-BENTLER CORRECTION


                  ELLIPTICAL THEORY KURTOSIS ESTIMATES
                  ------------------------------------

MARDIA-BASED KAPPA =       .0774 MEAN SCALED UNIVARIATE KURTOSIS =      .0403

MARDIA-BASED KAPPA IS USED IN COMPUTATION. KAPPA=           .0774


CASE NUMBERS WITH LARGEST CONTRIBUTION TO NORMALIZED MULTIVARIATE KURTOSIS:
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CASE NUMBER        76          102          124          145          173

ESTIMATE       665.7851     608.0098     702.2418     609.9851     615.1380
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COVARIANCE MATRIX TO BE ANALYZED: 71 VARIABLES (SELECTED FROM 129 VARIABLES)
BASED ON 248 CASES.

	INSEC1.1 V 6	INSEC1.2 V 7	INSEC1.3 V 8	INSEC1.4 V 9	INSEC1.5 V 10
INSEC1.1 V 6	2.785				
INSEC1.2 V 7	1.925	4.164			
INSEC1.3 V 8	1.288	1.366	1.530		
INSEC1.4 V 9	1.685	2.224	1.406	3.421	
INSEC1.5 V 10	1.341	1.856	1.082	2.190	3.732
INSEC1.6 V 11	1.471	1.806	1.334	2.107	1.914
CHANG1.1 V 15	.667	.587	.655	.648	.975
CHANG1.2 V 16	.951	1.015	.946	1.291	1.359
CHANG1.3 V 17	.744	.935	.699	1.042	.882
CHANG1.4 V 18	.675	.760	.764	1.002	1.251
CHANG1.5 V 19	.690	.731	.697	.950	.938
CHANG1.6 V 20	.775	.817	.774	1.014	.772
MARG1.1 V 21	.671	.605	.661	.911	.935
MARG1.2 V 22	.608	.670	.643	.832	1.035
MARG1.3 V 23	.708	.541	.713	.903	.862
PA1.1 V 24	-.217	-.133	-.277	-.322	-.503
PA1.2 V 25	-.218	-.105	-.365	-.389	-.528
NA1.1 V 26	.380	.271	.169	.215	.243
PA1.3 V 27	-.378	-.311	-.460	-.558	-.718
NA1.2 V 28	.319	.220	.116	.061	.183
PA1.4 V 29	-.203	-.180	-.370	-.461	-.445
NA1.3 V 30	.233	.128	.105	.125	.224
NA1.4 V 31	.287	.213	.167	.127	.179
SATIN1.1 V 32	-.453	-.170	-.359	-.343	-.648
SATIN1.2 V 33	-.653	-.335	-.467	-.559	-.903
SATIN1.3 V 34	-.289	-.059	-.234	-.319	-.596
SATEX1.1 V 35	-.167	-.715	-.501	-.590	-.971
SATEX1.2 V 36	-.626	-.639	-.572	-.808	-1.265
SATEX1.3 V 37	-.432	-.389	-.480	-.664	-1.239
INSEC2.1 V 49	1.460	.928	1.044	1.087	1.081
INSEC2.2 V 50	1.350	2.344	.978	1.674	1.514
INSEC2.3 V 51	.971	.779	.747	.863	.887
INSEC2.4 V 52	1.120	1.689	1.028	1.859	1.395
INSEC2.5 V 53	1.094	1.298	.876	1.452	1.676
INSEC2.6 V 54	.931	.930	.939	1.148	1.009
CHANG2.1 V 58	.508	.333	.456	.625	.748
CHANG2.2 V 59	.753	.802	.732	.928	1.015
CHANG2.3 V 60	.628	.784	.569	.871	1.086
CHANG2.4 V 61	.678	.544	.690	.820	.966
CHANG2.5 V 62	.739	.518	.625	.708	.925
CHANG2.6 V 63	.743	.683	.581	.838	1.035
MARG2.1 V 64	.704	.783	.665	.783	.847
MARG2.2 V 65	.790	.663	.608	.907	1.040
MARG2.3 V 66	.688	.727	.628	.862	.953
SATIN2.1 V 75	-.465	-.314	-.365	-.471	-.648
SATIN2.2 V 76	-.665	-.403	-.456	-.575	-.885
SATIN2.3 V 77	-.327	-.098	-.263	-.193	-.443
SATEX2.1 V 78	-.041	-.305	-.194	-.382	-.774
SATEX2.2 V 79	-.525	-.466	-.566	-.702	-1.089
SATEX2.3 V 80	-.364	-.227	-.400	-.494	-.834
INSEC3.1 V 92	1.314	1.144	.808	.900	.767
INSEC3.2 V 93	1.097	2.075	.868	1.526	1.232
INSEC3.3 V 94	1.010	.773	.865	.950	.933
INSEC3.4 V 95	1.124	1.465	.908	1.760	1.362
INSEC3.5 V 96	1.215	1.148	.799	1.498	1.871
INSEC3.6 V 97	.797	.908	.754	1.066	1.045
CHANG3.1 V101	.637	.382	.419	.605	.955
CHANG3.2 V102	.765	.728	.563	.922	.977
CHANG3.3 V103	.479	.686	.292	.618	.630
CHANG3.4 V104	.601	.611	.521	.740	1.104
CHANG3.5 V105	.805	.751	.616	.686	.844
CHANG3.6 V106	.700	.743	.590	.833	.798
MARG3.1 V107	.642	.317	.520	.589	.752
MARG3.2 V108	.649	.353	.541	.580	.849
MARG3.3 V109	.646	.480	.507	.789	.819

SATIN3.1 V118	-.345	-.260	-.374	-.366	-.306
SATIN3.2 V119	-.437	-.247	-.365	-.381	-.530
SATIN3.3 V120	-.338	-.181	-.272	-.282	-.374
SATEX3.1 V121	-.111	-.413	-.298	-.293	-.553
SATEX3.2 V122	-.537	-.579	-.566	-.537	-.952
SATEX3.3 V123	-.491	-.363	-.377	-.430	-.779

	INSEC1.6 V 11	CHANG1.1 V 15	CHANG1.2 V 16	CHANG1.3 V 17	CHANG1.4 V 18
INSEC1.6 V 11	2.783				
CHANG1.1 V 15	.711	2.383			
CHANG1.2 V 16	1.128	1.551	2.372		
CHANG1.3 V 17	.817	1.467	1.702	2.706	
CHANG1.4 V 18	.933	1.488	1.770	1.599	2.803
CHANG1.5 V 19	.922	1.219	1.468	1.465	1.613
CHANG1.6 V 20	1.033	1.416	1.611	1.398	1.611
MARG1.1 V 21	1.005	.724	.925	.819	.814
MARG1.2 V 22	1.096	.901	.923	.891	1.172
MARG1.3 V 23	1.013	.712	.901	.803	.858
PA1.1 V 24	-.418	-.449	-.413	-.265	-.517
PA1.2 V 25	-.476	-.583	-.621	-.468	-.768
NA1.1 V 26	.206	.208	.286	.148	.143
PA1.3 V 27	-.579	-.743	-.815	-.674	-1.042
NA1.2 V 28	.211	.229	.203	.184	-.011
PA1.4 V 29	-.411	-.452	-.457	-.328	-.559
NA1.3 V 30	.202	.177	.232	.248	.091
NA1.4 V 31	.228	.193	.234	.144	.114
SATIN1.1 V 32	-.466	-.391	-.525	-.269	-.586
SATIN1.2 V 33	-.765	-.600	-.669	-.380	-.797
SATIN1.3 V 34	-.433	-.499	-.384	-.254	-.577
SATEX1.1 V 35	-.748	-.649	-.896	-.609	-1.315
SATEX1.2 V 36	-.974	-1.068	-1.082	-.918	-1.293
SATEX1.3 V 37	-.817	-.981	-1.011	-.844	-1.330
INSEC2.1 V 49	1.319	.747	.954	.608	.839
INSEC2.2 V 50	1.419	.452	.875	.656	.596
INSEC2.3 V 51	1.002	.580	.668	.527	.570
INSEC2.4 V 52	1.436	.624	.948	.732	.788
INSEC2.5 V 53	1.359	.979	1.098	.895	1.250
INSEC2.6 V 54	1.553	.688	.777	.618	.794
CHANG2.1 V 58	.565	1.247	.984	.743	1.139
CHANG2.2 V 59	.928	1.071	1.221	.990	1.150
CHANG2.3 V 60	.828	1.160	1.050	1.596	1.018
CHANG2.4 V 61	.826	1.420	1.405	1.070	1.668
CHANG2.5 V 62	.780	1.134	1.140	.901	1.173
CHANG2.6 V 63	.791	1.168	1.066	1.073	1.353
MARG2.1 V 64	.746	.901	.942	.642	.944
MARG2.2 V 65	.813	.919	.952	.744	1.032
MARG2.3 V 66	.820	.809	.859	.635	.864
SATIN2.1 V 75	-.513	-.410	-.452	-.317	-.590
SATIN2.2 V 76	-.546	-.591	-.603	-.344	-.744
SATIN2.3 V 77	-.291	-.414	-.337	-.096	-.417
SATEX2.1 V 78	-.496	-.639	-.683	-.461	-1.080
SATEX2.2 V 79	-.894	-.948	-.901	-.706	-1.194
SATEX2.3 V 80	-.736	-.880	-.711	-.686	-1.042
INSEC3.1 V 92	1.009	.439	.450	.489	.480
INSEC3.2 V 93	1.282	.232	.734	.535	.410
INSEC3.3 V 94	1.054	.529	.694	.626	.579
INSEC3.4 V 95	1.414	.448	.693	.497	.538
INSEC3.5 V 96	1.346	.678	.847	.693	.799
INSEC3.6 V 97	1.336	.479	.645	.598	.649
CHANG3.1 V101	.695	1.077	.911	.865	1.046
CHANG3.2 V102	.793	.852	1.094	1.075	1.024
CHANG3.3 V103	.607	.599	.715	1.323	.722
CHANG3.4 V104	.742	1.168	1.047	1.113	1.236
CHANG3.5 V105	.767	1.010	.879	1.093	.964
CHANG3.6 V106	.867	.794	.988	.993	1.221
MARG3.1 V107	.806	.760	.737	.543	.680
MARG3.2 V108	.841	.827	.781	.564	.802
MARG3.3 V109	.895	.609	.724	.481	.668
SATIN3.1 V118	-.435	-.435	-.386	-.275	-.542

SATIN3.2 V119	-.485	-.469	-.481	-.311	-.658
SATIN3.3 V120	-.341	-.446	-.419	-.210	-.547
SATEX3.1 V121	-.390	-.707	-.703	-.537	-.945
SATEX3.2 V122	-.913	-.842	-.876	-.739	-1.059
SATEX3.3 V123	-.709	-.736	-.711	-.681	-1.023

	CHANG1.5 V 19	CHANG1.6 V 20	MARG1.1 V 21	MARG1.2 V 22	MARG1.3 V 23
CHANG1.5 V 19	2.048				
CHANG1.6 V 20	1.629	3.051			
MARG1.1 V 21	.817	.803	1.886		
MARG1.2 V 22	1.088	.940	1.434	2.801	
MARG1.3 V 23	.955	.867	1.756	1.632	2.218
PA1.1 V 24	-.356	-.416	-.311	-.393	-.327
PA1.2 V 25	-.533	-.561	-.355	-.350	-.395
NA1.1 V 26	.156	.149	.238	.177	.266
PA1.3 V 27	-.750	-.718	-.524	-.504	-.625
NA1.2 V 28	.113	.137	.181	.117	.185
PA1.4 V 29	-.360	-.428	-.342	-.373	-.395
NA1.3 V 30	.118	.191	.143	.062	.102
NA1.4 V 31	.189	.190	.139	.092	.139
SATIN1.1 V 32	-.493	-.508	-.501	-.574	-.550
SATIN1.2 V 33	-.647	-.635	-.615	-.885	-.716
SATIN1.3 V 34	-.405	-.361	-.306	-.439	-.355
SATEX1.1 V 35	-.670	-.616	-.606	-.750	-.513
SATEX1.2 V 36	-.860	-1.020	-.861	-1.050	-.853
SATEX1.3 V 37	-.885	-.906	-.696	-.873	-.740
INSEC2.1 V 49	.762	.766	.570	.549	.570
INSEC2.2 V 50	.540	.539	.381	.388	.365
INSEC2.3 V 51	.571	.580	.379	.417	.443
INSEC2.4 V 52	.691	.622	.412	.509	.453
INSEC2.5 V 53	.931	.596	.619	.881	.623
INSEC2.6 V 54	.739	.801	.566	.694	.525
CHANG2.1 V 58	.834	.722	.377	.651	.466
CHANG2.2 V 59	.997	1.016	.500	.654	.532
CHANG2.3 V 60	1.096	.873	.575	.775	.644
CHANG2.4 V 61	1.296	1.269	.672	.878	.696
CHANG2.5 V 62	1.121	.991	.616	.983	.689
CHANG2.6 V 63	1.038	1.491	.611	.819	.659
MARG2.1 V 64	.800	.688	.920	.845	.844
MARG2.2 V 65	.850	.898	.809	1.205	.862
MARG2.3 V 66	.811	.675	.936	.890	.989
SATIN2.1 V 75	-.400	-.215	-.414	-.501	-.418
SATIN2.2 V 76	-.566	-.328	-.595	-.664	-.616
SATIN2.3 V 77	-.315	-.212	-.226	-.375	-.295
SATEX2.1 V 78	-.567	-.600	-.353	-.590	-.305
SATEX2.2 V 79	-.809	-.710	-.674	-.940	-.649
SATEX2.3 V 80	-.731	-.635	-.453	-.655	-.509
INSEC3.1 V 92	.444	.526	.313	.351	.240
INSEC3.2 V 93	.380	.359	.291	.371	.129
INSEC3.3 V 94	.522	.647	.465	.494	.473
INSEC3.4 V 95	.400	.593	.297	.310	.208
INSEC3.5 V 96	.574	.593	.332	.411	.291
INSEC3.6 V 97	.475	.736	.463	.618	.330
CHANG3.1 V101	.810	.762	.422	.546	.373
CHANG3.2 V102	.808	.920	.533	.568	.496
CHANG3.3 V103	.623	.479	.505	.679	.493
CHANG3.4 V104	.938	.771	.589	.662	.532
CHANG3.5 V105	.928	.911	.511	.760	.588
CHANG3.6 V106	1.076	1.448	.691	.829	.776
MARG3.1 V107	.738	.536	.729	.749	.883
MARG3.2 V108	.730	.520	.715	.908	.817
MARG3.3 V109	.775	.645	.832	.873	1.006
SATIN3.1 V118	-.357	-.421	-.425	-.548	-.498
SATIN3.2 V119	-.519	-.464	-.585	-.807	-.658
SATIN3.3 V120	-.383	-.371	-.403	-.388	-.460
SATEX3.1 V121	-.437	-.478	-.366	-.481	-.260
SATEX3.2 V122	-.784	-.833	-.666	-.802	-.577
SATEX3.3 V123	-.694	-.595	-.464	-.578	-.481

		PA1.1 V 24	PA1.2 V 25	NA1.1 V 26	PA1.3 V 27	NA1.2 V 28
PA1.1	V 24	.613				
PA1.2	V 25	.477	1.033			
NA1.1	V 26	.009	-.017	.333		
PA1.3	V 27	.501	.730	-.058	1.180	
NA1.2	V 28	-.020	.006	.266	.026	.731
PA1.4	V 29	.411	.490	.019	.655	.052
NA1.3	V 30	-.054	-.098	.174	-.077	.367
NA1.4	V 31	-.009	-.033	.195	-.050	.277
SATIN1.1	V 32	.322	.313	-.125	.393	-.131
SATIN1.2	V 33	.427	.445	-.144	.589	-.134
SATIN1.3	V 34	.374	.486	-.024	.503	.014
SATEX1.1	V 35	.339	.441	-.060	.650	-.031
SATEX1.2	V 36	.503	.620	-.141	.857	-.069
SATEX1.3	V 37	.505	.705	-.046	.953	.001
INSEC2.1	V 49	-.334	-.370	.215	-.481	.138
INSEC2.2	V 50	-.057	-.096	.133	-.182	.033
INSEC2.3	V 51	-.221	-.295	.084	-.397	.104
INSEC2.4	V 52	-.184	-.281	.157	-.465	.038
INSEC2.5	V 53	-.436	-.578	.113	-.711	.006
INSEC2.6	V 54	-.423	-.518	.107	-.462	.135
CHANG2.1	V 58	-.412	-.502	.110	-.552	.093
CHANG2.2	V 59	-.305	-.375	.110	-.546	.080
CHANG2.3	V 60	-.242	-.290	.140	-.453	.198
CHANG2.4	V 61	-.458	-.548	.155	-.692	.041
CHANG2.5	V 62	-.401	-.416	.107	-.530	.148
CHANG2.6	V 63	-.406	-.498	.029	-.623	-.022
MARG2.1	V 64	-.236	-.397	.255	-.500	.176
MARG2.2	V 65	-.297	-.412	.233	-.508	.199
MARG2.3	V 66	-.279	-.399	.172	-.510	.122
SATIN2.1	V 75	.263	.269	-.069	.393	-.059
SATIN2.2	V 76	.332	.399	-.106	.471	-.030
SATIN2.3	V 77	.337	.415	-.037	.452	-.012
SATEX2.1	V 78	.354	.418	.046	.590	.110
SATEX2.2	V 79	.439	.630	-.075	.735	-.026
SATEX2.3	V 80	.452	.653	.003	.803	-.011
INSEC3.1	V 92	-.203	-.191	.152	-.275	.195
INSEC3.2	V 93	-.081	-.197	.067	-.210	.105
INSEC3.3	V 94	-.280	-.389	.021	-.370	.036
INSEC3.4	V 95	-.206	-.241	.093	-.270	.056
INSEC3.5	V 96	-.340	-.346	.152	-.425	.279
INSEC3.6	V 97	-.340	-.436	.043	-.321	.099
CHANG3.1	V101	-.302	-.458	.127	-.523	.154
CHANG3.2	V102	-.262	-.342	.120	-.389	.199
CHANG3.3	V103	-.129	-.096	.120	-.195	.307
CHANG3.4	V104	-.318	-.447	.188	-.604	.334
CHANG3.5	V105	-.288	-.301	.106	-.378	.200
CHANG3.6	V106	-.360	-.444	.090	-.560	.045
MARG3.1	V107	-.353	-.435	.179	-.469	.284
MARG3.2	V108	-.373	-.387	.122	-.503	.280
MARG3.3	V109	-.310	-.296	.180	-.363	.218
SATIN3.1	V118	.221	.252	-.083	.250	-.140
SATIN3.2	V119	.286	.394	-.098	.418	-.088
SATIN3.3	V120	.344	.434	-.069	.446	.029
SATEX3.1	V121	.382	.444	-.016	.462	-.057
SATEX3.2	V122	.359	.508	-.053	.602	-.105
SATEX3.3	V123	.406	.514	-.010	.609	-.102

		PA1.4 V 29	NA1.3 V 30	NA1.4 V 31	SATIN1.1 V 32	SATIN1.2 V 33
PA1.4	V 29	.784				
NA1.3	V 30	-.044	.575			
NA1.4	V 31	-.019	.202	.273		
SATIN1.1	V 32	.265	-.092	-.091	1.043	
SATIN1.2	V 33	.405	-.114	-.116	.901	1.504
SATIN1.3	V 34	.384	-.058	-.021	.533	.720
SATEX1.1	V 35	.406	-.061	-.043	.520	.714
SATEX1.2	V 36	.599	-.083	-.056	.752	1.056

SATEX1.3 V 37	.564	-.060	-.021	.736	.994
INSEC2.1 V 49	-.375	.152	.164	-.342	-.440
INSEC2.2 V 50	-.086	.009	.084	-.058	-.001
INSEC2.3 V 51	-.285	.065	.082	-.217	-.344
INSEC2.4 V 52	-.280	.134	.088	-.141	-.143
INSEC2.5 V 53	-.510	.099	.061	-.396	-.602
INSEC2.6 V 54	-.405	.151	.126	-.278	-.466
CHANG2.1 V 58	-.359	.108	.080	-.269	-.532
CHANG2.2 V 59	-.384	.134	.143	-.320	-.503
CHANG2.3 V 60	-.331	.225	.201	-.336	-.436
CHANG2.4 V 61	-.449	.102	.103	-.453	-.629
CHANG2.5 V 62	-.383	.088	.149	-.428	-.578
CHANG2.6 V 63	-.433	.080	.018	-.336	-.571
MARG2.1 V 64	-.311	.138	.131	-.289	-.452
MARG2.2 V 65	-.336	.166	.116	-.334	-.456
MARG2.3 V 66	-.350	.105	.090	-.317	-.469
SATIN2.1 V 75	.307	-.059	-.049	.400	.512
SATIN2.2 V 76	.361	-.012	-.037	.528	.829
SATIN2.3 V 77	.385	.017	-.041	.229	.487
SATEX2.1 V 78	.459	.085	.023	.351	.616
SATEX2.2 V 79	.566	-.042	-.059	.487	.845
SATEX2.3 V 80	.584	-.064	-.016	.416	.707
INSEC3.1 V 92	-.265	.155	.182	-.189	-.280
INSEC3.2 V 93	-.226	.160	.141	-.158	-.274
INSEC3.3 V 94	-.361	.172	.089	-.290	-.511
INSEC3.4 V 95	-.270	.267	.090	-.143	-.256
INSEC3.5 V 96	-.339	.322	.189	-.361	-.537
INSEC3.6 V 97	-.412	.260	.105	-.207	-.405
CHANG3.1 V101	-.371	.254	.165	-.330	-.468
CHANG3.2 V102	-.325	.316	.152	-.385	-.521
CHANG3.3 V103	-.178	.353	.136	-.197	-.348
CHANG3.4 V104	-.374	.357	.206	-.281	-.514
CHANG3.5 V105	-.325	.321	.157	-.359	-.579
CHANG3.6 V106	-.370	.236	.109	-.417	-.608
MARG3.1 V107	-.392	.203	.184	-.315	-.532
MARG3.2 V108	-.394	.308	.173	-.396	-.643
MARG3.3 V109	-.233	.232	.166	-.408	-.602
SATIN3.1 V118	.280	-.070	-.086	.397	.500
SATIN3.2 V119	.416	-.059	-.079	.504	.738
SATIN3.3 V120	.359	-.029	-.038	.337	.425
SATEX3.1 V121	.407	-.089	-.074	.304	.437
SATEX3.2 V122	.469	-.185	-.122	.529	.704
SATEX3.3 V123	.472	-.188	-.073	.537	.668

	SATIN1.3 V 34	SATEX1.1 V 35	SATEX1.2 V 36	SATEX1.3 V 37	INSEC2.1 V 49
SATIN1.3 V 34	1.039				
SATEX1.1 V 35	.534	3.018			
SATEX1.2 V 36	.758	1.677	2.709		
SATEX1.3 V 37	.708	1.210	1.987	2.260	
INSEC2.1 V 49	-.308	-.419	-.426	-.434	3.093
INSEC2.2 V 50	-.084	-.301	-.241	-.226	2.026
INSEC2.3 V 51	-.296	-.266	-.401	-.436	1.585
INSEC2.4 V 52	-.296	-.435	-.361	-.388	1.885
INSEC2.5 V 53	-.644	-.825	-.967	-.830	1.893
INSEC2.6 V 54	-.365	-.501	-.638	-.592	1.845
CHANG2.1 V 58	-.512	-.698	-.971	-.859	.986
CHANG2.2 V 59	-.361	-.853	-.822	-.657	1.415
CHANG2.3 V 60	-.334	-.706	-.870	-.682	1.078
CHANG2.4 V 61	-.587	-.901	-.866	-.791	1.376
CHANG2.5 V 62	-.472	-.864	-.832	-.690	1.328
CHANG2.6 V 63	-.378	-.902	-.883	-.811	1.210
MARG2.1 V 64	-.320	-.569	-.716	-.591	.913
MARG2.2 V 65	-.376	-.439	-.579	-.512	.983
MARG2.3 V 66	-.367	-.542	-.578	-.492	.978
SATIN2.1 V 75	.448	.558	.606	.571	-.656
SATIN2.2 V 76	.673	.615	.677	.677	-.894
SATIN2.3 V 77	.586	.393	.478	.394	-.440
SATEX2.1 V 78	.561	2.121	1.422	.999	-.425
SATEX2.2 V 79	.687	1.325	1.724	1.326	-.673

SATEX2.3 V 80	.664	1.040	1.335	1.309	-.730
INSEC3.1 V 92	-.219	-.300	-.414	-.229	1.935
INSEC3.2 V 93	-.277	-.657	-.599	-.415	1.479
INSEC3.3 V 94	-.334	-.422	-.537	-.583	1.368
INSEC3.4 V 95	-.243	-.501	-.717	-.672	1.632
INSEC3.5 V 96	-.455	-.588	-.632	-.711	1.572
INSEC3.6 V 97	-.366	-.749	-.730	-.561	1.364
CHANG3.1 V101	-.492	-.864	-.890	-.831	.759
CHANG3.2 V102	-.424	-.787	-.644	-.546	.974
CHANG3.3 V103	-.279	-.556	-.480	-.420	.644
CHANG3.4 V104	-.563	-.855	-.889	-.868	.942
CHANG3.5 V105	-.441	-.758	-.744	-.644	1.070
CHANG3.6 V106	-.418	-1.061	-.822	-.730	.977
MARG3.1 V107	-.352	-.609	-.752	-.681	.947
MARG3.2 V108	-.470	-.843	-.959	-.830	.692
MARG3.3 V109	-.329	-.514	-.627	-.626	.832
SATIN3.1 V118	.444	.497	.594	.537	-.490
SATIN3.2 V119	.602	.791	.875	.754	-.571
SATIN3.3 V120	.593	.561	.599	.486	-.363
SATEX3.1 V121	.465	1.740	1.039	.797	-.388
SATEX3.2 V122	.647	1.189	1.481	1.174	-.790
SATEX3.3 V123	.602	.952	1.117	1.156	-.613

	INSEC2.2 V 50	INSEC2.3 V 51	INSEC2.4 V 52	INSEC2.5 V 53	INSEC2.6 V 54
INSEC2.2 V 50	4.348				
INSEC2.3 V 51	1.347	1.577			
INSEC2.4 V 52	2.739	1.255	3.672		
INSEC2.5 V 53	2.267	1.256	2.502	3.570	
INSEC2.6 V 54	1.943	1.352	1.890	2.081	2.924
CHANG2.1 V 58	.761	.718	.844	1.487	1.015
CHANG2.2 V 59	1.206	1.009	1.314	1.751	1.282
CHANG2.3 V 60	1.225	.835	1.178	1.745	1.055
CHANG2.4 V 61	1.083	.900	1.089	1.910	1.288
CHANG2.5 V 62	1.020	.872	1.069	1.573	1.117
CHANG2.6 V 63	1.021	.940	.830	1.507	1.176
MARG2.1 V 64	.898	.746	.946	1.345	.993
MARG2.2 V 65	.920	.713	1.033	1.460	.993
MARG2.3 V 66	.969	.731	.954	1.312	1.072
SATIN2.1 V 75	-.394	-.450	-.486	-.804	-.598
SATIN2.2 V 76	-.535	-.659	-.594	-1.127	-.763
SATIN2.3 V 77	-.133	-.343	-.264	-.623	-.437
SATEX2.1 V 78	-.322	-.334	-.445	-1.018	-.421
SATEX2.2 V 79	-.381	-.644	-.542	-1.393	-.865
SATEX2.3 V 80	-.303	-.679	-.537	-1.247	-.949
INSEC3.1 V 92	1.414	1.103	1.457	1.397	1.278
INSEC3.2 V 93	2.391	.989	1.955	1.794	1.375
INSEC3.3 V 94	1.096	.987	1.161	1.258	1.088
INSEC3.4 V 95	2.043	1.070	2.074	1.700	1.554
INSEC3.5 V 96	1.594	1.045	1.740	1.911	1.355
INSEC3.6 V 97	1.350	.993	1.469	1.460	1.608
CHANG3.1 V101	.429	.504	.662	1.115	.804
CHANG3.2 V102	.895	.635	.978	1.322	.811
CHANG3.3 V103	.884	.433	.808	1.097	.605
CHANG3.4 V104	.770	.613	1.019	1.433	.888
CHANG3.5 V105	.765	.630	.961	1.204	.974
CHANG3.6 V106	.747	.525	.873	1.135	.962
MARG3.1 V107	.476	.620	.668	1.048	.875
MARG3.2 V108	.378	.598	.679	1.122	.838
MARG3.3 V109	.653	.516	.666	.941	.785
SATIN3.1 V118	-.325	-.404	-.298	-.656	-.582
SATIN3.2 V119	-.292	-.439	-.235	-.729	-.645
SATIN3.3 V120	-.158	-.232	-.211	-.557	-.359
SATEX3.1 V121	-.051	-.176	-.177	-.456	-.262
SATEX3.2 V122	-.404	-.568	-.565	-1.126	-.783
SATEX3.3 V123	-.173	-.528	-.433	-.967	-.605

	CHANG2.1 V 58	CHANG2.2 V 59	CHANG2.3 V 60	CHANG2.4 V 61	CHANG2.5 V 62

CHANG2.1	V 58	2.605				
CHANG2.2	V 59	1.691	2.493			
CHANG2.3	V 60	1.454	1.752	3.176		
CHANG2.4	V 61	1.716	1.964	1.823	3.194	
CHANG2.5	V 62	1.562	1.825	1.665	1.974	2.275
CHANG2.6	V 63	1.444	1.904	1.576	1.960	1.843
MARG2.1	V 64	.930	1.119	.865	1.322	1.072
MARG2.2	V 65	.949	1.110	.902	1.394	1.214
MARG2.3	V 66	.851	1.104	.819	1.339	1.087
SATIN2.1	V 75	-.482	-.570	-.562	-.731	-.617
SATIN2.2	V 76	-.834	-.880	-.741	-1.124	-.972
SATIN2.3	V 77	-.631	-.579	-.346	-.698	-.641
SATEX2.1	V 78	-.998	-1.064	-.807	-1.123	-.880
SATEX2.2	V 79	-1.350	-1.464	-1.098	-1.446	-1.229
SATEX2.3	V 80	-1.167	-1.224	-1.103	-1.244	-1.103
INSEC3.1	V 92	.542	.922	.733	.612	.827
INSEC3.2	V 93	.636	1.060	1.067	.746	.786
INSEC3.3	V 94	.591	.921	.831	.757	.817
INSEC3.4	V 95	.717	.997	.909	.792	.780
INSEC3.5	V 96	.863	1.291	1.107	1.009	1.171
INSEC3.6	V 97	.648	1.044	1.021	.881	.925
CHANG3.1	V101	1.382	1.234	1.146	1.230	1.060
CHANG3.2	V102	1.013	1.410	1.333	1.267	1.244
CHANG3.3	V103	.883	1.090	1.772	.972	.931
CHANG3.4	V104	1.330	1.281	1.348	1.471	1.191
CHANG3.5	V105	1.190	1.421	1.311	1.353	1.385
CHANG3.6	V106	.952	1.387	.917	1.408	1.275
MARG3.1	V107	.724	.822	.726	.959	.937
MARG3.2	V108	.760	.930	.754	1.066	1.022
MARG3.3	V109	.678	.760	.600	.911	.823
SATIN3.1	V118	-.641	-.532	-.516	-.674	-.570
SATIN3.2	V119	-.653	-.681	-.614	-.728	-.778
SATIN3.3	V120	-.465	-.350	-.224	-.565	-.460
SATEX3.1	V121	-.942	-.823	-.630	-.866	-.869
SATEX3.2	V122	-.969	-1.117	-.950	-1.076	-1.025
SATEX3.3	V123	-.865	-.862	-.768	-.955	-.835

		CHANG2.6 V 63	MARG2.1 V 64	MARG2.2 V 65	MARG2.3 V 66	SATIN2.1 V 75
CHANG2.6	V 63	3.115				
MARG2.1	V 64	1.151	2.435			
MARG2.2	V 65	1.295	1.654	2.768		
MARG2.3	V 66	1.149	1.778	1.567	1.950	
SATIN2.1	V 75	-.579	-.640	-.625	-.667	1.084
SATIN2.2	V 76	-.923	-.976	-.909	-.954	1.002
SATIN2.3	V 77	-.509	-.530	-.499	-.519	.635
SATEX2.1	V 78	-.819	-.843	-.722	-.733	.648
SATEX2.2	V 79	-1.320	-1.258	-1.202	-1.024	.770
SATEX2.3	V 80	-1.232	-.940	-1.018	-.897	.814
INSEC3.1	V 92	.741	.668	.556	.539	-.454
INSEC3.2	V 93	.702	.586	.582	.512	-.372
INSEC3.3	V 94	.717	.651	.653	.708	-.360
INSEC3.4	V 95	.708	.815	.653	.777	-.360
INSEC3.5	V 96	.892	.829	.881	.819	-.562
INSEC3.6	V 97	.790	.619	.619	.695	-.424
CHANG3.1	V101	1.092	.772	.873	.806	-.482
CHANG3.2	V102	1.108	.727	.809	.798	-.414
CHANG3.3	V103	.795	.537	.700	.527	-.290
CHANG3.4	V104	1.104	1.004	.915	.902	-.671
CHANG3.5	V105	1.138	.910	.862	.984	-.534
CHANG3.6	V106	1.613	.833	.887	.882	-.552
MARG3.1	V107	.673	1.205	1.058	1.169	-.529
MARG3.2	V108	.940	1.076	1.145	1.008	-.689
MARG3.3	V109	.605	1.073	.926	1.156	-.597
SATIN3.1	V118	-.502	-.584	-.509	-.587	.649
SATIN3.2	V119	-.663	-.703	-.629	-.718	.645
SATIN3.3	V120	-.322	-.415	-.381	-.463	.429
SATEX3.1	V121	-.754	-.608	-.643	-.638	.585
SATEX3.2	V122	-.903	-.819	-.753	-.696	.658
SATEX3.3	V123	-.772	-.692	-.640	-.590	.636

	SATIN2.2 V 76	SATIN2.3 V 77	SATEX2.1 V 78	SATEX2.2 V 79	SATEX2.3 V 80
SATIN2.2 V 76	1.701				
SATIN2.3 V 77	.887	1.157			
SATEX2.1 V 78	.752	.692	3.214		
SATEX2.2 V 79	1.125	.897	1.930	2.747	
SATEX2.3 V 80	1.126	.819	1.440	1.994	2.325
INSEC3.1 V 92	-.598	-.434	-.241	-.603	-.573
INSEC3.2 V 93	-.584	-.403	-.459	-.608	-.565
INSEC3.3 V 94	-.577	-.394	-.399	-.626	-.697
INSEC3.4 V 95	-.534	-.245	-.366	-.675	-.644
INSEC3.5 V 96	-.790	-.508	-.702	-.993	-.974
INSEC3.6 V 97	-.558	-.438	-.604	-.776	-.792
CHANG3.1 V101	-.636	-.489	-.917	-1.059	-1.046
CHANG3.2 V102	-.631	-.376	-.640	-.803	-.817
CHANG3.3 V103	-.550	-.157	-.413	-.493	-.666
CHANG3.4 V104	-.889	-.622	-.901	-1.218	-1.167
CHANG3.5 V105	-.783	-.506	-.758	-.996	-1.016
CHANG3.6 V106	-.662	-.475	-.853	-1.005	-.892
MARG3.1 V107	-.755	-.435	-.670	-1.021	-.920
MARG3.2 V108	-.867	-.520	-.978	-1.277	-1.085
MARG3.3 V109	-.894	-.408	-.686	-.943	-.836
SATIN3.1 V118	.769	.502	.552	.809	.735
SATIN3.2 V119	1.072	.613	.847	1.186	1.029
SATIN3.3 V120	.685	.662	.587	.826	.737
SATEX3.1 V121	.639	.583	2.039	1.432	1.174
SATEX3.2 V122	.910	.572	1.307	1.744	1.425
SATEX3.3 V123	.854	.567	1.078	1.458	1.537

	INSEC3.1 V 92	INSEC3.2 V 93	INSEC3.3 V 94	INSEC3.4 V 95	INSEC3.5 V 96
INSEC3.1 V 92	3.289				
INSEC3.2 V 93	2.219	3.994			
INSEC3.3 V 94	1.812	1.584	2.116		
INSEC3.4 V 95	2.103	2.650	1.709	3.671	
INSEC3.5 V 96	2.045	2.047	1.649	2.537	3.533
INSEC3.6 V 97	2.037	2.155	1.863	2.326	2.102
CHANG3.1 V101	.716	.936	.761	.912	1.053
CHANG3.2 V102	1.135	1.353	1.176	1.485	1.701
CHANG3.3 V103	.760	1.177	.644	1.108	1.149
CHANG3.4 V104	1.008	1.174	.756	1.320	1.453
CHANG3.5 V105	1.166	1.121	1.147	1.334	1.509
CHANG3.6 V106	.969	1.088	.884	1.106	1.294
MARG3.1 V107	.835	.519	.882	.853	1.054
MARG3.2 V108	.840	.775	.874	.802	1.192
MARG3.3 V109	.667	.543	.771	.883	1.041
SATIN3.1 V118	-.479	-.419	-.375	-.501	-.541
SATIN3.2 V119	-.508	-.472	-.435	-.456	-.537
SATIN3.3 V120	-.484	-.334	-.442	-.364	-.431
SATEX3.1 V121	-.418	-.492	-.426	-.431	-.743
SATEX3.2 V122	-.995	-.950	-.924	-.884	-1.071
SATEX3.3 V123	-.755	-.740	-.800	-.719	-.991

	INSEC3.6 V 97	CHANG3.1 V101	CHANG3.2 V102	CHANG3.3 V103	CHANG3.4 V104
INSEC3.6 V 97	3.045				
CHANG3.1 V101	.931	2.273			
CHANG3.2 V102	1.567	1.434	2.744		
CHANG3.3 V103	1.107	1.259	1.833	3.173	
CHANG3.4 V104	1.088	1.544	1.654	1.627	2.953
CHANG3.5 V105	1.301	1.429	1.793	1.551	1.850
CHANG3.6 V106	1.206	1.244	1.682	1.263	1.630
MARG3.1 V107	.962	.874	1.012	.564	1.014
MARG3.2 V108	1.156	1.080	.953	.758	1.085
MARG3.3 V109	.816	.747	.892	.577	1.004
SATIN3.1 V118	-.527	-.540	-.671	-.579	-.748
SATIN3.2 V119	-.648	-.617	-.586	-.559	-.759

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   SATIN3.3 V120       -.537      -.469      -.407      -.095      -.546
   SATEX3.1 V121       -.599     -1.173      -.870      -.619     -1.276
   SATEX3.2 V122      -1.050     -1.042     -1.061      -.829     -1.417
   SATEX3.3 V123       -.961     -1.019     -1.041      -.787     -1.263


                     CHANG3.5   CHANG3.6   MARG3.1    MARG3.2    MARG3.3
                      V105       V106       V107       V108       V109
   CHANG3.5 V105       2.674
   CHANG3.6 V106       1.859      3.287
   MARG3.1  V107       1.110      1.063      2.287
   MARG3.2  V108       1.099      1.020      1.552      2.748
   MARG3.3  V109       1.025      1.175      1.874      1.490      2.254
   SATIN3.1 V118       -.661      -.640      -.621      -.713      -.772
   SATIN3.2 V119       -.684      -.725      -.785      -.884      -.888
   SATIN3.3 V120       -.454      -.571      -.569      -.632      -.583
   SATEX3.1 V121       -.957     -1.001      -.648      -.962      -.677
   SATEX3.2 V122      -1.297     -1.192     -1.007     -1.286      -.986
   SATEX3.3 V123      -1.148     -1.046     -1.012     -1.277      -.963


                     SATIN3.1   SATIN3.2   SATIN3.3   SATEX3.1   SATEX3.2
                      V118       V119       V120       V121       V122
   SATIN3.1 V118       1.182
   SATIN3.2 V119       1.045      1.634
   SATIN3.3 V120        .572       .870      1.284
   SATEX3.1 V121        .528       .793       .722      2.921
   SATEX3.2 V122        .827      1.136       .853      1.346      2.320
   SATEX3.3 V123        .788       .986       .902      1.203      1.790


                     SATEX3.3
                      V123
   SATEX3.3 V123       2.181


 BENTLER-WEEKS STRUCTURAL REPRESENTATION:

       NUMBER OF DEPENDENT VARIABLES = 81
           DEPENDENT V'S :     6    7    8    9   10   11   15   16   17   18
           DEPENDENT V'S :    19   20   21   22   23   24   25   26   27   28
           DEPENDENT V'S :    29   30   31   32   33   34   35   36   37   49
           DEPENDENT V'S :    50   51   52   53   54   58   59   60   61   62
           DEPENDENT V'S :    63   64   65   66   75   76   77   78   79   80
           DEPENDENT V'S :    92   93   94   95   96   97  101  102  103  104
           DEPENDENT V'S :   105  106  107  108  109  118  119  120  121  122
           DEPENDENT V'S :   123
           DEPENDENT F'S :     8    9   10   11   12   13   14   15   16   17

       NUMBER OF INDEPENDENT VARIABLES = 88
           INDEPENDENT F'S :     1    2    3    4    5    6    7
           INDEPENDENT E'S :     6    7    8    9   10   11   15   16   17   18
           INDEPENDENT E'S :    19   20   21   22   23   24   25   26   27   28
           INDEPENDENT E'S :    29   30   31   32   33   34   35   36   37   49
           INDEPENDENT E'S :    50   51   52   53   54   58   59   60   61   62
           INDEPENDENT E'S :    63   64   65   66   75   76   77   78   79   80
           INDEPENDENT E'S :    92   93   94   95   96   97  101  102  103  104
           INDEPENDENT E'S :   105  106  107  108  109  118  119  120  121  122
           INDEPENDENT E'S :   123
           INDEPENDENT D'S :     8    9   10   11   12   13   14   15   16   17

       NUMBER OF FREE PARAMETERS = 255
       NUMBER OF FIXED NONZERO PARAMETERS =  98

*** WARNING MESSAGES ABOVE, IF ANY, REFER TO INDEPENDENCE MODEL.
    CALCULATIONS FOR USER'S MODEL NOW BEGIN.


 3RD STAGE OF COMPUTATION REQUIRED  84410019 WORDS OF MEMORY.
 PROGRAM ALLOCATED 300000000 WORDS
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 DETERMINANT OF INPUT MATRIX IS    .82142D-05

*** NOTE *** RESIDUAL-BASED STATISTICS CANNOT BE
             CALCULATED BECAUSE OF PIVOTING PROBLEMS.
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MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

FOLLOWING TECHNICAL INFORMATION HAS BEEN STORED IN EQSOUT.ETS

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        TAIL PROBABILITIES NOT APPLICABLE TO THIS ANALYSIS ARE WRITTEN AS -1.
        OTHER STATISTICS WHICH ARE NOT APPLICABLE ARE WRITTEN AS -9.

   SUMMARY SECTION CONTAINS--

        LINE    1 BEGINNING: ANALYSIS ...

        LINE    2 CONTAINING THESE 11 ELEMENTS OF MODEL STATISTICS:

             ESTIMATION METHOD (LS,GLS,ML,ELS,EGLS,ERLS,AGLS,HKGLS,HKRLS)
             CONDITION CODE (0 FOR NORMAL CONDITION)
             CONVERGENCE (0 FOR MODEL CONVERGED)
             NUMBER OF ITERATIONS FOR CONVERGENCE
             DEGREES OF FREEDOM
             NUMBER OF CONSTRAINTS
             DENOMINATOR DEGREES OF FREEDOM FOR F-TESTS
             DEGREES OF FREEDOM FOR POTENTIAL STRUCTURED MEANS MODEL TEST
             D.F. FOR GLS TEST OF HOMOGENEITY OF MEANS
             D.F. FOR GLS TEST OF HOMOGENEITY OF COVARIANCE MATRICES
             D.F. FOR GLS COMBINED TEST OF HOMOGENEITY OF MEANS/COVAS.

        LINE    3 CONTAINING THESE 10 ELEMENTS OF MODEL STATISTICS:

             TAIL PROBABILITY FOR MODEL CHI-SQUARE
             TAIL PROBABILITY FOR RESIDUAL-BASED TEST STATISTIC
             TAIL PROBABILITY FOR YUAN-BENTLER RESIDUAL-BASED TEST STAT.
             TAIL PROBABILITY FOR YUAN-BENTLER AGLS F-STATISTIC
             TAIL PROBABILITY FOR YUAN-BENTLER RESIDUAL-BASED F-STATISTIC
             TAIL PROBABILITY FOR SATORRA-BENTLER SCALED CHI-SQUARE
             TAIL PROB. FOR YUAN-BENTLER SCALED CHI-SQUARE (CASE ROBUST)
             TAIL PROBABILITY FOR SCALED CHI-SQUARE (YUAN-BENTLER)
             TAIL PROBABILITY FOR GLS TEST OF HOMOGENEITY OF MEANS
             TAIL PROB. FOR GLS TEST OF HOMOGENEITY OF COV. MATRICES

        LINE    4 CONTAINING THESE  6 ELEMENTS OF MODEL STATISTICS:

             TAIL PROB. FOR GLS COMBINED TEST OF HOMOGENEITY
             TAIL PROBABILITY FOR POTENTIAL STRUCTURED MEANS MODEL
             TAIL PROB. FOR YUAN-BENTLER CORRECTED AGLS TEST STATISTIC
             TAIL PROB. FOR YUAN-BENTLER RESIDUAL-BASED ADF STATISTIC
             TAIL PROB. FOR YUAN-BENTLER CORRECTED RESID.-BASED ADF STAT.
             TAIL PROB. FOR YUAN-BENTLER RESIDUAL-BASED ADF F-STATISTIC

        LINE    5 CONTAINING THESE 10 ELEMENTS OF MODEL STATISTICS:

             INDEPENDENCE MODEL CHI-SQUARE
             MODEL CHI-SQUARE
             LISREL    GFI  FIT INDEX
             LISREL   AGFI  FIT INDEX
             BOLLEN   (IFI) FIT INDEX
             MCDONALD (MFI) FIT INDEX
             BENTLER-BONETT     NORMED FIT INDEX
             BENTLER-BONETT NON-NORMED FIT INDEX
             COMPARATIVE FIT INDEX (CFI)
             ROOT MEAN-SQUARE RESIDUAL (RMR)

        LINE    6 CONTAINING THESE 10 ELEMENTS OF MODEL STATISTICS:

             STANDARDIZED RMR
             ROOT MEAN-SQUARE ERROR OF APPROXIMATION (RMSEA)
             CONFIDENCE INTERVAL FOR RMSEA (LOWER BOUND)
             CONFIDENCE INTERVAL FOR RMSEA (UPPER BOUND)
             RESIDUAL-BASED TEST STATISTIC
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          YUAN-BENTLER RESIDUAL-BASED TEST STATISTIC
          YUAN-BENTLER AGLS F-STATISTIC
          YUAN-BENTLER RESIDUAL-BASED F-STATISTIC
          AGLS FIT INDEX
          AGLS ADJUSTED FIT INDEX

     LINE    7 CONTAINING THESE 10 ELEMENTS OF MODEL STATISTICS:

          AGLS CORRECTED COMPARATIVE FIT INDEX
          CRONBACH'S ALPHA
          COEFFICIENT ALPHA FOR AN OPTIMAL SHORT SCALE
          GREATEST LOWER BOUND RELIABILITY
          GLB RELIABILITY FOR AN OPTIMAL SHORT SCALE
          BENTLER'S DIMENSION-FREE LOWER BOUND RELIABILITY
          SHAPIRO'S LOWER BOUND RELIABILITY FOR A WEIGHTED COMPOSITE
          RELIABILITY COEFFICIENT RHO
          MAXIMAL INTERNAL CONSISTENCY RELIABILITY
          ROBUST INDEPENDENCE MODEL CHI-SQUARE

     LINE    8 CONTAINING THESE 10 ELEMENTS OF MODEL STATISTICS:

          SATORRA-BENTLER SCALED CHI-SQUARE
          ROBUST  BOLLEN  (IFI) FIT INDEX
          ROBUST MCDONALD (MFI) FIT INDEX
          ROBUST BENTLER-BONETT     NORMED FIT INDEX
          ROBUST BENTLER-BONETT NON-NORMED FIT INDEX
          ROBUST COMPARATIVE FIT INDEX
          ROBUST ROOT MEAN-SQUARE ERROR OF APPROXIMATION (RMSEA)
          CONFIDENCE INTERVAL FOR ROBUST RMSEA (LOWER BOUND)
          CONFIDENCE INTERVAL FOR ROBUST RMSEA (UPPER BOUND)
          YUAN-BENTLER SCALED CHI-SQUARE (CASE ROBUST WEIGHTING)

     LINE    9 CONTAINING THESE 10 ELEMENTS OF MODEL STATISTICS:

          SCALED CHI-SQUARE (YUAN-BENTLER)
          SCALED (YUAN-BENTLER) INDEPENDENCE MODEL CHI-SQUARE
          BENTLER-YUAN MODIFIED TEST FOR POTENTIAL STRUC. MEANS MODEL
          MINIMIZED MODEL FUNCTION VALUE
          YUAN-BENTLER CORRECTED AGLS TEST STATISTIC
          YUAN-BENTLER RESIDUAL-BASED ADF STATISTIC
          YUAN-BENTLER CORRECTED RESIDUAL-BASED ADF STATISTIC
          YUAN-BENTLER RESIDUAL-BASED ADF F-STATISTIC
          CHI-SQUARE FOR GLS TEST OF HOMOGENEITY OF MEANS
          CHI-SQUARE FOR GLS TEST OF HOMOGENEITY OF COV. MATRICES

     LINE   10 CONTAINING THESE  1 ELEMENTS OF MODEL STATISTICS:

          CHI-SQUARE FOR GLS COMBINED TEST OF HOMOGENEITY OF MEANS/COV

     THE LAST THREE STATISTICS ARE FOR MISSING DATA ANALYSIS

     TOTAL NUMBER OF LINES IN SUMMARY SECTION IS: 10

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   INFORMATION SECTION CONTAINS--

     6 NUMBERS ON LINE   11:

          SAMPLE SIZE
          NUMBER OF MEASURED VARIABLES
          NUMBER OF FACTORS
          NUMBER OF MISSINGNESS PATTERNS
          KURTOSES: (G2,P) AND NORMALIZED MULTIVARIATE

     PARAMETERS TO BE PRINTED ARE:

 F2,F1     F3,F1     F3,F2     F4,F1     F4,F2     F4,F3     F5,F1     F5,F2
 F5,F3     F5,F4     F6,F1     F6,F2     F6,F3     F6,F4     F6,F5     F7,F1
 F7,F2     F7,F3     F7,F4     F7,F5     F7,F6     E6,E6     E7,E7     E8,E8
 E9,E9    E10,E10   E11,E11   E15,E15   E16,E16   E17,E17   E18,E18   E19,E19
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 E20,E20   E21,E21   E22,E22   E23,E23   E24,E24   E25,E25   E26,E26   E27,E27
 E28,E28   E29,E29   E30,E30   E31,E31   E32,E32   E33,E33   E34,E34   E35,E35
 E36,E36   E37,E37   E49,E49   E50,E7    E50,E50   E51,E8    E51,E51   E52,E9
 E52,E52   E53,E10   E53,E53   E54,E11   E54,E54   E58,E58   E59,E16   E59,E59
 E60,E17   E60,E60   E61,E18   E61,E61   E62,E19   E62,E62   E63,E20   E63,E63
 E64,E64   E65,E22   E65,E65   E66,E23   E66,E66   E75,E75   E76,E33   E76,E76
 E77,E34   E77,E77   E78,E78   E79,E36   E79,E79   E80,E37   E80,E80   E92,E92
 E93,E7    E93,E50   E93,E93   E94,E8    E94,E51   E94,E94   E95,E9    E95,E52
 E95,E95   E96,E10   E96,E53   E96,E96   E97,E11   E97,E54   E97,E97  E101,E101
E102,E16  E102,E59  E102,E102 E103,E17  E103,E60  E103,E103 E104,E18  E104,E61
E104,E104 E105,E19  E105,E62  E105,E105 E106,E20  E106,E63  E106,E106 E107,E107
E108,E22  E108,E65  E108,E108 E109,E23  E109,E66  E109,E109 E118,E118 E119,E33
E119,E76  E119,E119 E120,E34  E120,E77  E120,E120 E121,E121 E122,E36  E122,E79
E122,E122 E123,E37  E123,E80  E123,E123   D8,D8     D9,D8     D9,D9    D10,D8
 D10,D9    D10,D10   D11,D8    D11,D9    D11,D10   D11,D11   D12,D8    D12,D9
 D12,D10   D12,D11   D12,D12   D13,D13   D14,D13   D14,D14   D15,D13   D15,D14
 D15,D15   D16,D13   D16,D14   D16,D15   D16,D16   D17,D13   D17,D14   D17,D15
 D17,D16   D17,D17    V6,F3     V7,F3     V8,F3     V9,F3    V10,F3    V11,F3
 V15,F4    V16,F4    V17,F4    V18,F4    V19,F4    V20,F4    V21,F5    V22,F5
 V23,F5    V24,F1    V25,F1    V26,F2    V27,F1    V28,F2    V29,F1    V30,F2
 V31,F2    V32,F6    V33,F6    V34,F6    V35,F7    V36,F7    V37,F7     F8,F2
  F8,F3     F8,F4     F9,F2     F9,F4    F10,F2    F10,F4    F10,F5    F11,F1
 F11,F6    F12,F1    F12,F7    F13,F3    F14,F4    F15,F5    F16,F6    F17,F7
 V50,F8    V51,F8    V52,F8    V53,F8    V54,F8    V59,F9    V60,F9    V61,F9
 V62,F9    V63,F9    V65,F10   V66,F10   V76,F11   V77,F11   V79,F12   V80,F12
 V93,F13   V94,F13   V95,F13   V96,F13   V97,F13  V102,F14  V103,F14  V104,F14
V105,F14  V106,F14  V108,F15  V109,F15  V119,F16  V120,F16  V122,F17  V123,F17
 F13,F8    F14,F9    F15,F10   F15,F12   F16,F11   F16,F12   F17,F12

       255 PARAMETER ESTIMATES ON LINES 12-43
       255 STANDARD ERRORS ON LINES 44-75
       255 ROBUST STANDARD ERRORS ON LINES 76-107
        81 R-SQUARES ON LINES 108-118
        81 MODEL-BASED ESTIMATES OF VAR. STD. DEVS. FOR DEP. VARS. ON LINES 119-129
        88 MODEL-BASED ESTIMATES OF VAR. STD. DEVS. FOR IND. VARS. ON LINES 130-140

         TOTAL NUMBER OF LINES IN INFORMATION SECTION IS:    130

         OUTPUT FORMAT FOR INFORMATION SECTION IS: (8E16.8)

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         TOTAL NUMBER OF LINES PER SET IS:    140
         (SUMMARY SECTION PLUS INFORMATION SECTION(S))

CODEBOOK FILE HAS BEEN WRITTEN ON FILE
   EQSOUT.CBK
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MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

PARAMETER ESTIMATES APPEAR IN ORDER,
NO SPECIAL PROBLEMS WERE ENCOUNTERED DURING OPTIMIZATION.

RESIDUAL COVARIANCE MATRIX (S-SIGMA) :

	INSEC1.1 V 6	INSEC1.2 V 7	INSEC1.3 V 8	INSEC1.4 V 9	INSEC1.5 V 10
INSEC1.1 V 6	.000				
INSEC1.2 V 7	.265	.038			
INSEC1.3 V 8	.103	.041	.020		
INSEC1.4 V 9	-.083	.247	-.005	.027	
INSEC1.5 V 10	-.207	.124	-.154	.347	.055
INSEC1.6 V 11	-.241	-.109	-.033	.068	.128
CHANG1.1 V 15	-.146	-.322	.006	-.319	.127
CHANG1.2 V 16	.011	-.036	.195	.171	.379
CHANG1.3 V 17	-.131	-.043	.001	.000	-.030
CHANG1.4 V 18	-.244	-.268	.030	-.092	.293
CHANG1.5 V 19	-.115	-.169	.055	-.008	.099
CHANG1.6 V 20	-.070	-.127	.100	.009	-.109
MARG1.1 V 21	-.085	-.241	.057	.011	.146
MARG1.2 V 22	-.085	-.105	.089	.006	.312
MARG1.3 V 23	-.116	-.381	.056	-.078	.003
PA1.1 V 24	.080	.199	-.040	.031	-.193
PA1.2 V 25	.182	.342	-.046	.086	-.112
NA1.1 V 26	.202	.072	.027	.003	.058
PA1.3 V 27	.114	.238	-.069	.027	-.206
NA1.2 V 28	.054	-.076	-.095	-.254	-.093
PA1.4 V 29	.149	.213	-.090	-.042	-.078
NA1.3 V 30	.039	-.089	-.049	-.105	.022
NA1.4 V 31	.105	.010	.022	-.089	-.010
SATIN1.1 V 32	-.018	.316	-.012	.175	-.194
SATIN1.2 V 33	-.083	.302	-.012	.119	-.309
SATIN1.3 V 34	.068	.340	.051	.106	-.224
SATEX1.1 V 35	.353	-.133	-.086	.030	-.428
SATEX1.2 V 36	.088	.160	-.002	.042	-.521
SATEX1.3 V 37	.200	.318	.024	.088	-.580
INSEC2.1 V 49	.419	-.236	.214	-.152	-.004
INSEC2.2 V 50	.261	.045	.108	.377	.378
INSEC2.3 V 51	.264	-.011	.154	.022	.150
INSEC2.4 V 52	.063	.508	.185	.081	.293
INSEC2.5 V 53	.030	.108	.027	.185	.076
INSEC2.6 V 54	-.048	-.165	.158	-.017	-.012
CHANG2.1 V 58	-.018	-.255	.036	-.001	.200
CHANG2.2 V 59	.139	.115	.242	.197	.374
CHANG2.3 V 60	.050	.137	.107	.182	.483
CHANG2.4 V 61	.039	-.171	.180	.059	.300
CHANG2.5 V 62	.159	-.130	.162	.018	.320
CHANG2.6 V 63	.151	.021	.108	.133	.417
MARG2.1 V 64	.121	.133	.200	.090	.240
MARG2.2 V 65	.280	.092	.201	.300	.509
MARG2.3 V 66	.128	.101	.181	.196	.370
SATIN2.1 V 75	-.172	.014	-.130	-.122	-.342
SATIN2.2 V 76	-.260	.050	-.132	-.092	-.462
SATIN2.3 V 77	-.090	.166	-.074	.088	-.197
SATEX2.1 V 78	.399	.187	.157	.142	-.315
SATEX2.2 V 79	.016	.139	-.134	-.058	-.525
SATEX2.3 V 80	.110	.303	-.021	.070	-.340
INSEC3.1 V 92	.429	.155	.101	-.153	-.156
INSEC3.2 V 93	.183	.133	.138	.438	.278
INSEC3.3 V 94	.291	-.031	.147	.094	.184
INSEC3.4 V 95	.161	.388	.140	.127	.358
INSEC3.5 V 96	.322	.150	.087	.435	.249
INSEC3.6 V 97	-.098	-.093	.039	.000	.111
CHANG3.1 V101	.216	-.089	.084	.104	.516

CHANG3.2 V102	.248	.151	.151	.307	.438
CHANG3.3 V103	.040	.194	-.059	.094	.172
CHANG3.4 V104	.086	.035	.110	.127	.567
CHANG3.5 V105	.276	.160	.194	.056	.293
CHANG3.6 V106	.198	.181	.189	.235	.274
MARG3.1 V107	.158	-.224	.133	.012	.246
MARG3.2 V108	.245	-.099	.218	.098	.427
MARG3.3 V109	.172	-.051	.129	.224	.324
SATIN3.1 V118	-.053	.066	-.141	-.019	-.001
SATIN3.2 V119	-.059	.176	-.063	.068	-.136
SATIN3.3 V120	-.119	.064	-.097	-.021	-.145
SATEX3.1 V121	.207	-.057	-.044	.086	-.222
SATEX3.2 V122	-.110	-.101	-.225	-.029	-.506
SATEX3.3 V123	-.095	.079	-.061	.042	-.366

	INSEC1.6 V 11	CHANG1.1 V 15	CHANG1.2 V 16	CHANG1.3 V 17	CHANG1.4 V 18
INSEC1.6 V 11	-.099				
CHANG1.1 V 15	-.226	.000			
CHANG1.2 V 16	.044	-.015	-.046		
CHANG1.3 V 17	-.192	.009	.016	-.086	
CHANG1.4 V 18	-.127	-.043	-.002	-.050	.061
CHANG1.5 V 19	-.005	-.121	-.082	.022	.097
CHANG1.6 V 20	.059	.009	-.017	-.116	.020
MARG1.1 V 21	.133	-.042	.039	-.005	-.053
MARG1.2 V 22	.296	.199	.111	.136	.378
MARG1.3 V 23	.063	-.122	-.065	-.095	-.085
PA1.1 V 24	-.076	-.032	.070	.184	-.045
PA1.2 V 25	-.016	-.022	.029	.136	-.133
NA1.1 V 26	.001	.056	.111	-.015	-.028
PA1.3 V 27	-.013	-.053	-.016	.069	-.261
NA1.2 V 28	-.094	.004	-.058	-.059	-.266
PA1.4 V 29	-.006	.042	.115	.205	.000
NA1.3 V 30	-.021	.012	.042	.071	-.096
NA1.4 V 31	.019	.039	.055	-.022	-.060
SATIN1.1 V 32	.036	.068	.007	.225	-.066
SATIN1.2 V 33	-.108	.002	.028	.268	-.117
SATIN1.3 V 34	-.021	-.122	.052	.152	-.151
SATEX1.1 V 35	-.148	.100	-.029	.198	-.467
SATEX1.2 V 36	-.150	-.039	.108	.189	-.129
SATEX1.3 V 37	-.088	-.070	.043	.136	-.299
INSEC2.1 V 49	.119	.035	.130	-.158	.033
INSEC2.2 V 50	.163	-.294	.012	-.146	-.247
INSEC2.3 V 51	.186	.097	.108	.006	.023
INSEC2.4 V 52	.218	-.100	.111	-.047	-.030
INSEC2.5 V 53	.132	.251	.255	.111	.426
INSEC2.6 V 54	.033	.018	.001	-.104	.036
CHANG2.1 V 58	-.041	.373	-.027	-.197	.151
CHANG2.2 V 59	.219	.050	-.075	-.109	-.006
CHANG2.3 V 60	.162	.199	-.062	-.117	-.069
CHANG2.4 V 61	.089	.358	.176	-.073	.227
CHANG2.5 V 62	.111	.170	.025	-.136	.083
CHANG2.6 V 63	.108	.183	-.073	.013	.239
MARG2.1 V 64	.075	.147	.069	-.170	.091
MARG2.2 V 65	.225	.258	.187	.033	.284
MARG2.3 V 66	.175	.083	.019	-.146	.043
SATIN2.1 V 75	-.174	-.080	-.070	.038	-.217
SATIN2.2 V 76	-.078	-.135	-.076	.147	-.228
SATIN2.3 V 77	-.019	-.149	-.029	.190	-.117
SATEX2.1 V 78	.011	-.009	.046	.218	-.367
SATEX2.2 V 79	-.270	-.174	-.005	.127	-.318
SATEX2.3 V 80	-.190	-.202	.074	.044	-.275
INSEC3.1 V 92	-.012	-.131	-.209	-.124	-.164
INSEC3.2 V 93	.227	-.356	.053	-.098	-.255
INSEC3.3 V 94	.225	.066	.159	.128	.055
INSEC3.4 V 95	.304	-.172	-.024	-.171	-.163
INSEC3.5 V 96	.317	.103	.182	.075	.149
INSEC3.6 V 97	.028	-.097	-.022	-.022	-.002
CHANG3.1 V101	.210	.377	.102	.111	.254
CHANG3.2 V102	.197	-.008	-.079	.149	.052

CHANG3.3 V103	.100	-.132	-.131	-.084	-.105
CHANG3.4 V104	.148	.311	.056	.191	.166
CHANG3.5 V105	.157	.131	-.138	.147	-.031
CHANG3.6 V106	.288	-.042	.022	.094	.276
MARG3.1 V107	.247	.159	.041	-.103	.000
MARG3.2 V108	.374	.326	.200	.024	.235
MARG3.3 V109	.348	.020	.043	-.152	.002
SATIN3.1 V118	-.098	-.081	.024	.107	-.142
SATIN3.2 V119	-.050	-.011	.049	.182	-.139
SATIN3.3 V120	-.088	-.181	-.112	.076	-.246
SATEX3.1 V121	-.024	-.251	-.175	-.046	-.429
SATEX3.2 V122	-.421	-.229	-.168	-.080	-.366
SATEX3.3 V123	-.252	-.169	-.054	-.070	-.381

	CHANG1.5 V 19	CHANG1.6 V 20	MARG1.1 V 21	MARG1.2 V 22	MARG1.3 V 23
CHANG1.5 V 19	-.009				
CHANG1.6 V 20	.236	.040			
MARG1.1 V 21	.059	.007	.000		
MARG1.2 V 22	.393	.211	-.029	.018	
MARG1.3 V 23	.129	.001	.018	.039	.023
PA1.1 V 24	.057	.017	.003	-.105	.015
PA1.2 V 25	.023	.023	.068	.038	.066
NA1.1 V 26	.006	-.008	.088	.040	.103
PA1.3 V 27	-.066	.000	-.004	-.027	-.058
NA1.2 V 28	-.110	-.097	-.042	-.088	-.058
PA1.4 V 29	.129	.085	.031	-.031	.011
NA1.3 V 30	-.045	.020	-.020	-.088	-.075
NA1.4 V 31	.036	.030	-.014	-.048	-.027
SATIN1.1 V 32	-.038	-.031	-.003	-.118	-.007
SATIN1.2 V 33	-.052	-.009	.038	-.287	-.005
SATIN1.3 V 34	-.032	.031	.103	-.064	.091
SATEX1.1 V 35	.072	.163	-.010	-.205	.136
SATEX1.2 V 36	.158	.049	-.044	-.301	.037
SATEX1.3 V 37	.017	.041	.028	-.210	.048
INSEC2.1 V 49	.057	.026	-.010	.017	-.062
INSEC2.2 V 50	-.198	-.236	-.226	-.169	-.297
INSEC2.3 V 51	.092	.077	-.016	.055	.014
INSEC2.4 V 52	-.025	-.129	-.177	-.032	-.189
INSEC2.5 V 53	.210	-.161	.025	.337	-.024
INSEC2.6 V 54	.075	.105	.019	.193	-.070
CHANG2.1 V 58	-.031	-.186	-.118	.197	-.073
CHANG2.2 V 59	-.014	-.046	-.079	.124	-.098
CHANG2.3 V 60	.146	-.125	.030	.277	.051
CHANG2.4 V 61	.245	.166	.070	.327	.041
CHANG2.5 V 62	.049	-.011	.070	.482	.094
CHANG2.6 V 63	.064	-.010	.053	.307	.051
MARG2.1 V 64	.053	-.096	.036	.034	-.120
MARG2.2 V 65	.196	.211	.034	.096	.017
MARG2.3 V 66	.092	-.079	.085	.110	.005
SATIN2.1 V 75	-.073	.127	-.082	-.198	-.057
SATIN2.2 V 76	-.114	.146	-.138	-.244	-.117
SATIN2.3 V 77	-.052	.064	.041	-.131	-.004
SATEX2.1 V 78	.056	.055	.141	-.137	.234
SATEX2.2 V 79	-.043	.094	-.067	-.383	.012
SATEX2.3 V 80	-.060	.070	.079	-.167	.070
INSEC3.1 V 92	-.120	-.066	-.168	-.090	-.283
INSEC3.2 V 93	-.203	-.253	-.206	-.085	-.412
INSEC3.3 V 94	.064	.166	.074	.136	.048
INSEC3.4 V 95	-.214	-.051	-.227	-.169	-.362
INSEC3.5 V 96	.005	-.004	-.153	-.034	-.237
INSEC3.6 V 97	-.095	.137	-.023	.172	-.200
CHANG3.1 V101	.117	.035	.025	.183	-.059
CHANG3.2 V102	-.042	.026	.046	.122	-.034
CHANG3.3 V103	-.101	-.281	.091	.299	.042
CHANG3.4 V104	.091	-.119	.103	.218	.004
CHANG3.5 V105	-.010	-.002	.013	.304	.046
CHANG3.6 V106	.250	.059	.218	.396	.260
MARG3.1 V107	.143	-.088	-.053	.032	.031
MARG3.2 V108	.233	-.001	.063	.141	.106

MARG3.3	V109	.193	.034	.066	.171	.097
SATIN3.1	V118	-.006	-.053	-.095	-.246	-.139
SATIN3.2	V119	-.065	.012	-.158	-.416	-.193
SATIN3.3	V120	-.120	-.095	-.156	-.161	-.190
SATEX3.1	V121	.015	-.004	-.007	-.152	.131
SATEX3.2	V122	-.178	-.197	-.184	-.360	-.052
SATEX3.3	V123	-.132	-.005	-.018	-.169	.006

		PA1.1 V 24	PA1.2 V 25	NA1.1 V 26	PA1.3 V 27	NA1.2 V 28
PA1.1	V 24	.000				
PA1.2	V 25	.039	.000			
NA1.1	V 26	.025	.004	.000		
PA1.3	V 27	-.038	.004	-.032	.000	
NA1.2	V 28	.003	.037	-.011	.066	.000
PA1.4	V 29	.024	-.030	.038	.016	.080
NA1.3	V 30	-.036	-.075	-.029	-.048	.066
NA1.4	V 31	.007	-.011	.005	-.024	-.005
SATIN1.1	V 32	.045	-.059	-.042	-.065	-.007
SATIN1.2	V 33	.064	-.043	-.035	-.011	.027
SATIN1.3	V 34	.147	.180	.044	.128	.115
SATEX1.1	V 35	-.052	-.085	-.020	.004	.029
SATEX1.2	V 36	-.033	-.102	-.085	-.031	.013
SATEX1.3	V 37	.030	.067	.003	.167	.074
INSEC2.1	V 49	-.082	-.030	.102	-.064	-.030
INSEC2.2	V 50	.207	.259	.015	.255	-.143
INSEC2.3	V 51	-.050	-.065	.007	-.114	-.010
INSEC2.4	V 52	.072	.064	.042	-.041	-.132
INSEC2.5	V 53	-.178	-.231	-.002	-.284	-.165
INSEC2.6	V 54	-.185	-.198	.000	-.069	-.023
CHANG2.1	V 58	-.143	-.141	.010	-.107	-.057
CHANG2.2	V 59	.009	.048	-.007	-.026	-.095
CHANG2.3	V 60	.053	.108	.029	.036	.034
CHANG2.4	V 61	-.132	-.108	.033	-.151	-.141
CHANG2.5	V 62	-.105	-.017	-.004	-.039	-.017
CHANG2.6	V 63	-.104	-.090	-.084	-.121	-.191
MARG2.1	V 64	.021	-.051	.117	-.074	-.030
MARG2.2	V 65	-.072	-.109	.112	-.135	.019
MARG2.3	V 66	-.032	-.065	.039	-.101	-.076
SATIN2.1	V 75	.050	-.018	-.021	.040	.013
SATIN2.2	V 76	.037	.002	-.040	-.017	.069
SATIN2.3	V 77	.165	.184	.001	.168	.045
SATEX2.1	V 78	-.016	-.080	.077	-.022	.157
SATEX2.2	V 79	-.015	.018	-.037	-.017	.031
SATEX2.3	V 80	.054	.117	.037	.144	.039
INSEC3.1	V 92	.001	.082	.053	.061	.048
INSEC3.2	V 93	.129	.086	-.036	.138	-.047
INSEC3.3	V 94	-.114	-.166	-.060	-.096	-.084
INSEC3.4	V 95	.015	.057	-.015	.096	-.105
INSEC3.5	V 96	-.135	-.070	.052	-.085	.131
INSEC3.6	V 97	-.135	-.159	-.057	.019	-.049
CHANG3.1	V101	-.087	-.168	.047	-.167	.035
CHANG3.2	V102	.002	.015	.022	.048	.053
CHANG3.3	V103	.096	.207	.037	.177	.183
CHANG3.4	V104	-.055	-.093	.090	-.168	.189
CHANG3.5	V105	-.017	.063	.005	.070	.051
CHANG3.6	V106	-.103	-.098	-.005	-.134	-.096
MARG3.1	V107	-.107	-.103	.085	-.061	.143
MARG3.2	V108	-.168	-.110	.042	-.163	.163
MARG3.3	V109	-.069	.029	.088	.036	.080
SATIN3.1	V118	.005	-.040	-.043	-.108	-.080
SATIN3.2	V119	.006	.017	-.046	-.046	-.010
SATIN3.3	V120	.182	.215	-.039	.177	.075
SATEX3.1	V121	.123	.095	.008	.032	-.023
SATEX3.2	V122	.010	.039	-.022	.025	-.058
SATEX3.3	V123	.083	.079	.019	.074	-.059

		PA1.4 V 29	NA1.3 V 30	NA1.4 V 31	SATIN1.1 V 32	SATIN1.2 V 33

PA1.4	V 29	.000				
NA1.3	V 30	-.024	.000			
NA1.4	V 31	.000	-.004	.000		
SATIN1.1	V 32	-.063	-.002	-.007	.000	
SATIN1.2	V 33	-.025	.004	-.005	.022	-.005
SATIN1.3	V 34	.115	.016	.049	-.017	-.001
SATEX1.1	V 35	-.057	-.017	-.002	-.075	-.066
SATEX1.2	V 36	-.036	-.023	.001	-.065	-.015
SATEX1.3	V 37	.001	-.007	.029	.013	.046
INSEC2.1	V 49	-.076	.030	.049	-.005	.002
INSEC2.2	V 50	.227	-.119	-.037	.295	.461
INSEC2.3	V 51	-.082	-.018	.004	.012	-.044
INSEC2.4	V 52	.024	.009	-.029	.201	.306
INSEC2.5	V 53	-.204	-.027	-.056	-.051	-.150
INSEC2.6	V 54	-.124	.035	.018	.040	-.051
CHANG2.1	V 58	-.040	-.001	-.023	.028	-.143
CHANG2.2	V 59	-.012	.006	.024	.027	-.048
CHANG2.3	V 60	.019	.105	.089	-.010	-.008
CHANG2.4	V 61	-.061	-.031	-.021	-.092	-.156
CHANG2.5	V 62	-.032	-.033	.036	-.101	-.149
CHANG2.6	V 63	-.074	-.043	-.098	-.002	-.132
MARG2.1	V 64	-.006	-.013	-.010	.064	.011
MARG2.2	V 65	-.069	.035	-.008	-.025	-.051
MARG2.3	V 66	-.056	-.039	-.046	.022	-.025
SATIN2.1	V 75	.055	-.006	.000	-.018	-.036
SATIN2.2	V 76	.012	.060	.031	-.049	-.013
SATIN2.3	V 77	.182	.059	-.001	-.107	.046
SATEX2.1	V 78	.021	.119	.055	-.129	-.012
SATEX2.2	V 79	.028	.000	-.020	-.102	.073
SATEX2.3	V 80	.112	-.028	.018	-.100	.030
INSEC3.1	V 92	-.024	.047	.081	.090	.085
INSEC3.2	V 93	.023	.049	.036	.130	.103
INSEC3.3	V 94	-.166	.085	.007	-.064	-.214
INSEC3.4	V 95	-.008	.150	-.019	.160	.141
INSEC3.5	V 96	-.096	.214	.087	-.080	-.169
INSEC3.6	V 97	-.168	.151	.003	.075	-.035
CHANG3.1	V101	-.116	.167	.083	-.092	-.156
CHANG3.2	V102	-.011	.209	.052	-.093	-.139
CHANG3.3	V103	.088	.262	.051	.051	-.023
CHANG3.4	V104	-.062	.251	.106	.010	-.133
CHANG3.5	V105	-.004	.212	.055	-.060	-.188
CHANG3.6	V106	-.065	.133	.012	-.133	-.236
MARG3.1	V107	-.100	.100	.088	.029	-.081
MARG3.2	V108	-.150	.222	.092	-.108	-.266
MARG3.3	V109	.052	.131	.071	-.071	-.160
SATIN3.1	V118	.024	-.026	-.045	.006	-.012
SATIN3.2	V119	.084	-.002	-.026	-.002	.001
SATIN3.3	V120	.166	.004	-.007	.044	.041
SATEX3.1	V121	.100	-.064	-.050	-.048	-.024
SATEX3.2	V122	.056	-.151	-.091	.057	.086
SATEX3.3	V123	.089	-.156	-.043	.100	.095

		SATIN1.3 V 34	SATEX1.1 V 35	SATEX1.2 V 36	SATEX1.3 V 37	INSEC2.1 V 49
SATIN1.3	V 34	.015				
SATEX1.1	V 35	.046	.000			
SATEX1.2	V 36	.087	.039	.010		
SATEX1.3	V 37	.114	-.240	-.004	-.054	
INSEC2.1	V 49	-.031	.025	.184	.105	.135
INSEC2.2	V 50	.206	.164	.397	.338	.006
INSEC2.3	V 51	-.108	.035	.013	-.070	.273
INSEC2.4	V 52	-.015	.016	.258	.160	-.075
INSEC2.5	V 53	-.361	-.372	-.345	-.279	-.081
INSEC2.6	V 54	-.104	-.084	-.065	-.085	.029
CHANG2.1	V 58	-.269	-.215	-.308	-.272	-.050
CHANG2.2	V 59	-.077	-.288	-.047	.029	.203
CHANG2.3	V 60	-.066	-.175	-.142	-.037	-.061
CHANG2.4	V 61	-.291	-.314	-.060	-.077	.117
CHANG2.5	V 62	-.203	-.331	-.101	-.042	.185
CHANG2.6	V 63	-.104	-.357	-.136	-.149	.043

MARG2.1 V 64	-.030	-.093	-.062	-.013	-.083
MARG2.2 V 65	-.122	-.022	-.006	-.005	.110
MARG2.3 V 66	-.088	-.084	.051	.064	.020
SATIN2.1 V 75	.105	.159	.058	.086	-.131
SATIN2.2 V 76	.199	.064	-.080	.007	-.168
SATIN2.3 V 77	.101	.072	.038	.004	-.018
SATEX2.1 V 78	.168	1.222	.189	-.093	.220
SATEX2.2 V 79	.203	.222	.048	-.015	.119
SATEX2.3 V 80	.240	.073	.007	-.076	-.035
INSEC3.1 V 92	.009	.057	.077	.206	.598
INSEC3.2 V 93	-.041	-.288	-.092	.034	.097
INSEC3.3 V 94	-.149	-.131	-.138	-.231	.281
INSEC3.4 V 95	.006	-.112	-.183	-.199	.177
INSEC3.5 V 96	-.224	-.228	-.137	-.272	.223
INSEC3.6 V 97	-.135	-.388	-.234	-.122	.011
CHANG3.1 V101	-.297	-.477	-.359	-.361	.090
CHANG3.2 V102	-.185	-.312	.009	.032	.152
CHANG3.3 V103	-.076	-.152	.075	.072	-.055
CHANG3.4 V104	-.325	-.381	-.239	-.292	.123
CHANG3.5 V105	-.196	-.272	-.076	-.053	.229
CHANG3.6 V106	-.186	-.599	-.188	-.168	.178
MARG3.1 V107	-.070	-.107	-.063	-.071	.270
MARG3.2 V108	-.234	-.424	-.384	-.321	.127
MARG3.3 V109	-.053	-.023	.048	-.029	.169
SATIN3.1 V118	.123	.030	-.048	-.031	-.082
SATIN3.2 V119	.187	.187	.045	.020	-.042
SATIN3.3 V120	.126	.211	.118	.060	-.056
SATEX3.1 V121	.177	1.069	.117	-.019	.025
SATEX3.2 V122	.260	.288	.081	.079	-.235
SATEX3.3 V123	.243	.116	-.030	-.041	-.099

	INSEC2.2 V 50	INSEC2.3 V 51	INSEC2.4 V 52	INSEC2.5 V 53	INSEC2.6 V 54
INSEC2.2 V 50	.098				
INSEC2.3 V 51	-.025	.068			
INSEC2.4 V 52	.687	-.077	.097		
INSEC2.5 V 53	.201	-.085	.498	.164	
INSEC2.6 V 54	.042	.118	.046	.224	.061
CHANG2.1 V 58	-.324	.014	-.208	.427	.039
CHANG2.2 V 59	-.062	.186	.084	.513	.143
CHANG2.3 V 60	.033	.061	.021	.581	-.016
CHANG2.4 V 61	-.235	.044	-.190	.623	.103
CHANG2.5 V 62	-.177	.095	-.092	.404	.042
CHANG2.6 V 63	-.201	.147	-.356	.313	.077
MARG2.1 V 64	-.145	.069	-.066	.326	.055
MARG2.2 V 65	.007	.120	.147	.568	.172
MARG2.3 V 66	-.034	.081	-.019	.333	.170
SATIN2.1 V 75	.156	-.093	.047	-.267	-.104
SATIN2.2 V 76	.225	-.166	.142	-.385	-.081
SATIN2.3 V 77	.309	-.056	.165	-.191	-.040
SATEX2.1 V 78	.353	.104	.210	-.358	.186
SATEX2.2 V 79	.449	-.106	.263	-.582	-.119
SATEX2.3 V 80	.424	-.208	.168	-.537	-.295
INSEC3.1 V 92	.014	.194	.099	.030	.019
INSEC3.2 V 93	.113	.050	.551	.381	.075
INSEC3.3 V 94	-.041	.109	.058	.147	.066
INSEC3.4 V 95	.519	.081	.198	.212	.185
INSEC3.5 V 96	.181	.129	.370	.208	.085
INSEC3.6 V 97	-.066	.074	.095	.077	-.030
CHANG3.1 V101	-.272	.049	-.017	.431	.175
CHANG3.2 V102	.035	.077	.143	.482	.037
CHANG3.3 V103	.153	-.042	.099	.382	-.053
CHANG3.4 V104	-.087	.057	.187	.596	.118
CHANG3.5 V105	-.115	.059	.107	.344	.182
CHANG3.6 V106	-.089	-.018	.062	.318	.210
MARG3.1 V107	-.233	.161	-.019	.356	.238
MARG3.2 V108	-.213	.214	.106	.544	.307
MARG3.3 V109	-.040	.066	-.007	.263	.162
SATIN3.1 V118	.102	-.126	.117	-.238	-.197
SATIN3.2 V119	.261	-.079	.302	-.188	-.147

SATIN3.3 V120	.163	-.024	.100	-.244	-.071
SATEX3.1 V121	.381	.105	.242	-.034	.127
SATEX3.2 V122	.177	-.191	-.002	-.559	-.261
SATEX3.3 V123	.365	-.179	.089	-.442	-.121

	CHANG2.1 V 58	CHANG2.2 V 59	CHANG2.3 V 60	CHANG2.4 V 61	CHANG2.5 V 62
CHANG2.1 V 58	.057				
CHANG2.2 V 59	.081	.044			
CHANG2.3 V 60	-.060	-.017	-.111		
CHANG2.4 V 61	.041	.007	-.017	.109	
CHANG2.5 V 62	.042	.049	-.005	.127	.070
CHANG2.6 V 63	-.108	.090	-.129	.074	.131
MARG2.1 V 64	-.039	-.014	-.200	.144	.003
MARG2.2 V 65	.100	.118	-.031	.363	.278
MARG2.3 V 66	-.081	.015	-.205	.206	.059
SATIN2.1 V 75	.028	.027	-.001	-.111	-.054
SATIN2.2 V 76	-.129	-.055	.034	-.267	-.194
SATIN2.3 V 77	-.220	-.100	.105	-.199	-.188
SATEX2.1 V 78	-.127	-.046	.151	-.064	.081
SATEX2.2 V 79	-.279	-.212	.079	-.145	-.048
SATEX2.3 V 80	-.229	-.127	-.072	-.104	-.068
INSEC3.1 V 92	-.170	.089	-.050	-.254	.042
INSEC3.2 V 93	-.100	.200	.258	-.148	-.026
INSEC3.3 V 94	.012	.245	.195	.054	.179
INSEC3.4 V 95	-.058	.091	.057	-.150	-.075
INSEC3.5 V 96	.144	.451	.318	.136	.378
INSEC3.6 V 97	-.073	.202	.229	.006	.130
CHANG3.1 V101	.506	.209	.183	.165	.094
CHANG3.2 V102	-.063	.022	.150	-.041	.056
CHANG3.3 V103	-.033	.020	-.052	-.140	-.079
CHANG3.4 V104	.257	.028	.169	.067	.008
CHANG3.5 V105	.088	.134	.101	.014	.067
CHANG3.6 V106	-.094	.164	-.232	.136	.122
MARG3.1 V107	.028	.009	-.039	.114	.170
MARG3.2 V108	.180	.251	.116	.360	.381
MARG3.3 V109	-.003	-.036	-.149	.083	.072
SATIN3.1 V118	-.193	-.008	-.024	-.129	-.076
SATIN3.2 V119	-.073	-.004	.023	-.024	-.138
SATIN3.3 V120	-.129	.043	.145	-.156	-.089
SATEX3.1 V121	-.403	-.193	-.038	-.212	-.275
SATEX3.2 V122	-.245	-.271	-.154	-.196	-.227
SATEX3.3 V123	-.195	-.078	-.031	-.140	-.095

	CHANG2.6 V 63	MARG2.1 V 64	MARG2.2 V 65	MARG2.3 V 66	SATIN2.1 V 75
CHANG2.6 V 63	.026				
MARG2.1 V 64	.059	.052			
MARG2.2 V 65	.339	.063	.087		
MARG2.3 V 66	.099	.032	.037	.018	
SATIN2.1 V 75	-.004	-.005	-.068	-.056	.018
SATIN2.2 V 76	-.128	-.097	-.140	-.109	-.003
SATIN2.3 V 77	-.046	-.019	-.051	-.028	.049
SATEX2.1 V 78	.163	.030	.043	.107	-.028
SATEX2.2 V 79	-.113	-.185	-.262	.008	-.059
SATEX2.3 V 80	-.174	.000	-.195	.007	.087
INSEC3.1 V 92	-.061	-.031	-.056	-.133	-.088
INSEC3.2 V 93	-.127	-.136	-.050	-.182	.006
INSEC3.3 V 94	.065	.084	.156	.162	-.063
INSEC3.4 V 95	-.166	.055	-.013	.046	.038
INSEC3.5 V 96	.083	.124	.264	.142	-.193
INSEC3.6 V 97	-.022	-.087	.000	.016	-.054
CHANG3.1 V101	.104	.130	.311	.189	-.156
CHANG3.2 V102	-.105	-.061	.119	.041	-.014
CHANG3.3 V103	-.236	-.134	.113	-.117	.050
CHANG3.4 V104	-.105	.218	.227	.147	-.273
CHANG3.5 V105	-.103	.104	.156	.208	-.125
CHANG3.6 V106	-.080	.068	.216	.145	-.163
MARG3.1 V107	-.111	.064	.059	.072	-.050

MARG3.2 V108	.286	.124	.090	.093	-.289
MARG3.3 V109	-.162	-.044	-.052	.001	-.128
SATIN3.1 V118	.002	-.078	-.065	-.100	.143
SATIN3.2 V119	-.010	-.048	-.055	-.088	-.011
SATIN3.3 V120	.057	-.035	-.048	-.099	.049
SATEX3.1 V121	-.147	-.070	-.172	-.120	.164
SATEX3.2 V122	-.088	-.096	-.119	-.001	.092
SATEX3.3 V123	-.017	-.022	-.053	.054	.112

	SATIN2.2 V 76	SATIN2.3 V 77	SATEX2.1 V 78	SATEX2.2 V 79	SATEX2.3 V 80
SATIN2.2 V 76	-.007				
SATIN2.3 V 77	.078	.082			
SATEX2.1 V 78	-.182	.148	.063		
SATEX2.2 V 79	-.021	.230	.119	.088	
SATEX2.3 V 80	.122	.234	-.147	.044	-.010
INSEC3.1 V 92	-.093	-.139	.222	-.033	-.074
INSEC3.2 V 93	-.061	-.098	.019	-.020	-.049
INSEC3.3 V 94	-.167	-.155	-.023	-.164	-.292
INSEC3.4 V 95	.016	.075	.138	-.055	-.101
INSEC3.5 V 96	-.280	-.211	-.235	-.418	-.471
INSEC3.6 V 97	-.047	-.140	-.135	-.201	-.288
CHANG3.1 V101	-.186	-.227	-.349	-.361	-.434
CHANG3.2 V102	-.078	-.054	.058	.054	-.065
CHANG3.3 V103	-.079	.117	.180	.236	-.027
CHANG3.4 V104	-.338	-.301	-.206	-.363	-.419
CHANG3.5 V105	-.217	-.176	-.043	-.118	-.248
CHANG3.6 V106	-.125	-.163	-.174	-.172	-.161
MARG3.1 V107	-.094	-.050	.106	-.068	-.085
MARG3.2 V108	-.315	-.199	-.330	-.481	-.388
MARG3.3 V109	-.247	-.031	.074	-.009	-.019
SATIN3.1 V118	.069	.095	-.131	-.030	.000
SATIN3.2 V119	.018	.085	-.037	.100	.078
SATIN3.3 V120	.160	.100	.075	.196	.185
SATEX3.1 V121	.057	.244	1.114	.296	.178
SATEX3.2 V122	.127	.116	.065	.092	.088
SATEX3.3 V123	.129	.145	-.074	.043	.019

	INSEC3.1 V 92	INSEC3.2 V 93	INSEC3.3 V 94	INSEC3.4 V 95	INSEC3.5 V 96
INSEC3.1 V 92	.155				
INSEC3.2 V 93	.211	.102			
INSEC3.3 V 94	.234	-.047	.116		
INSEC3.4 V 95	-.011	.465	-.009	.158	
INSEC3.5 V 96	.084	.021	.056	.404	.176
INSEC3.6 V 97	.072	.124	.267	.187	.119
CHANG3.1 V101	-.196	-.007	.019	-.082	.132
CHANG3.2 V102	.014	.195	.266	.265	.570
CHANG3.3 V103	-.194	.192	-.131	.070	.187
CHANG3.4 V104	-.109	.020	-.151	.104	.327
CHANG3.5 V105	.019	-.064	.216	.086	.352
CHANG3.6 V106	-.120	-.038	-.001	-.080	.195
MARG3.1 V107	.028	-.314	.227	-.025	.240
MARG3.2 V108	.166	.079	.327	.069	.512
MARG3.3 V109	-.123	-.273	.129	.023	.244
SATIN3.1 V118	-.100	-.028	-.067	-.089	-.159
SATIN3.2 V119	-.018	.034	-.037	.077	-.043
SATIN3.3 V120	-.200	-.040	-.211	-.054	-.144
SATEX3.1 V121	.131	.075	.020	.167	-.189
SATEX3.2 V122	-.257	-.188	-.325	-.081	-.327
SATEX3.3 V123	-.071	-.034	-.245	.025	-.302

	INSEC3.6 V 97	CHANG3.1 V101	CHANG3.2 V102	CHANG3.3 V103	CHANG3.4 V104
INSEC3.6 V 97	.136				
CHANG3.1 V101	.008	.050			
CHANG3.2 V102	.434	.029	.041		
CHANG3.3 V103	.142	.064	.364	.074	

CHANG3.4 V104	-.042	.144	-.066	.163	.076
CHANG3.5 V105	.141	-.009	.027	.049	.090
CHANG3.6 V106	.105	-.122	.005	-.164	-.042
MARG3.1 V107	.146	.122	.088	-.222	.094
MARG3.2 V108	.475	.453	.182	.103	.317
MARG3.3 V109	.018	.011	-.012	-.192	.103
SATIN3.1 V118	-.144	-.150	-.192	-.172	-.271
SATIN3.2 V119	-.153	-.112	.034	-.032	-.141
SATIN3.3 V120	-.250	-.177	-.047	.210	-.188
SATEX3.1 V121	-.044	-.557	-.114	.024	-.523
SATEX3.2 V122	-.304	-.216	-.046	.034	-.405
SATEX3.3 V123	-.269	-.253	-.100	.013	-.326

	CHANG3.5 V105	CHANG3.6 V106	MARG3.1 V107	MARG3.2 V108	MARG3.3 V109
CHANG3.5 V105	.076				
CHANG3.6 V106	.142	-.039			
MARG3.1 V107	.165	.166	.064		
MARG3.2 V108	.310	.271	.029	.049	
MARG3.3 V109	.100	.296	.088	-.001	.063
SATIN3.1 V118	-.171	-.175	-.049	-.236	-.212
SATIN3.2 V119	-.049	-.122	-.045	-.266	-.163
SATIN3.3 V120	-.086	-.222	-.140	-.274	-.163
SATEX3.1 V121	-.184	-.267	.095	-.343	.050
SATEX3.2 V122	-.259	-.206	-.010	-.454	-.011
SATEX3.3 V123	-.186	-.132	-.088	-.506	-.059

	SATIN3.1 V118	SATIN3.2 V119	SATIN3.3 V120	SATEX3.1 V121	SATEX3.2 V122
SATIN3.1 V118	.039				
SATIN3.2 V119	.049	.053			
SATIN3.3 V120	-.006	.123	.088		
SATEX3.1 V121	-.058	.034	.282	.064	
SATEX3.2 V122	.040	.117	.262	-.004	.096
SATEX3.3 V123	.058	.042	.354	-.049	.108

	SATEX3.3 V123
SATEX3.3 V123	.072

AVERAGE ABSOLUTE COVARIANCE RESIDUALS = .1222
AVERAGE OFF-DIAGONAL ABSOLUTE COVARIANCE RESIDUALS = .1241

AVERAGE ABSOLUTE STANDARDIZED RESIDUALS = .0539
AVERAGE OFF-DIAGONAL ABSOLUTE STANDARDIZED RESIDUALS = .0549

LARGEST STANDARDIZED RESIDUALS:

NO.	PARAMETER	ESTIMATE	NO.	PARAMETER	ESTIMATE
1	V78, V35	.392	11	V77, V24	.197
2	V121,V78	.363	12	V119,V22	-.194
3	V121,V35	.360	13	V122,V53	-.194
4	V121,V101	-.216	14	V103,V30	.194
5	V123,V120	.212	15	V101,V34	-.193
6	V26, V6	.210	16	V104,V30	.193
7	V101,V58	.208	17	V77, V29	.191
8	V123,V108	-.207	18	V62, V22	.191
9	V120,V24	.205	19	V106,V35	-.190
10	V37, V10	-.200	20	V101,V80	-.189

MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

DISTRIBUTION OF STANDARDIZED RESIDUALS

```
   ----------------------------------------
   !                                      !
  00-                    *                -
   !                  *  *                !
   !                  *  *                !
   !                  *  *                !
   !                  *  *                !          RANGE      FREQ PERCENT
825-                  *  *                -
   !                  *  *                !    1   -0.5  -  --         0     .00%
   !                  *  *                !    2   -0.4  -  -0.5       0     .00%
   !                  *  *                !    3   -0.3  -  -0.4       0     .00%
   !                  *  *                !    4   -0.2  -  -0.3       2     .08%
550-                  *  *                -    5   -0.1  -  -0.2     179    7.00%
   !                  *  *                !    6    0.0  -  -0.1    1050   41.08%
   !                  *  *                !    7    0.1  -   0.0    1116   43.66%
   !                  *  *                !    8    0.2  -   0.1     202    7.90%
   !                  *  *                !    9    0.3  -   0.2       4     .16%
275-                  *  *                -    A    0.4  -   0.3       3     .12%
   !                  *  *  *             !    B    0.5  -   0.4       0     .00%
   !               *  *  *  *             !    C     ++  -   0.5       0     .00%
   !               *  *  *  *             !    -------------------------------
   !               *  *  *  *             !            TOTAL      2556 100.00%
   ----------------------------------------
      1  2  3  4  5  6  7  8  9  A  B  C      EACH "*" REPRESENTS 55 RESIDUALS
```

```
MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)


GOODNESS OF FIT SUMMARY FOR METHOD = ML

INDEPENDENCE MODEL CHI-SQUARE       =   15933.839 ON  2485 DEGREES OF FREEDOM

INDEPENDENCE AIC = 10963.83862   INDEPENDENCE CAIC =  -252.03182
       MODEL AIC =  -903.90466          MODEL CAIC =-11289.30421

CHI-SQUARE =     3698.095 BASED ON    2301 DEGREES OF FREEDOM
PROBABILITY VALUE FOR THE CHI-SQUARE STATISTIC IS       .00000

THE NORMAL THEORY RLS CHI-SQUARE FOR THIS ML SOLUTION IS       3413.858.

FIT INDICES
-----------
BENTLER-BONETT     NORMED FIT INDEX =      .768
BENTLER-BONETT NON-NORMED FIT INDEX =      .888
COMPARATIVE FIT INDEX (CFI)         =      .896
BOLLEN   (IFI) FIT INDEX            =      .898
MCDONALD (MFI) FIT INDEX            =      .060
LISREL    GFI  FIT INDEX            =      .720
LISREL   AGFI  FIT INDEX            =      .689
ROOT MEAN-SQUARE RESIDUAL (RMR)     =      .167
STANDARDIZED RMR                    =      .069
ROOT MEAN-SQUARE ERROR OF APPROXIMATION (RMSEA)    =      .050
90% CONFIDENCE INTERVAL OF RMSEA  (        .047,        .052)

RELIABILITY COEFFICIENTS
------------------------
CRONBACH'S ALPHA                    =      .889
COEFFICIENT ALPHA FOR AN OPTIMAL SHORT SCALE                =      .960
BASED ON 45 VARIABLES, ALL EXCEPT:
PA1.1     PA1.2     NA1.1     PA1.3     NA1.2     PA1.4
NA1.3     NA1.4     SATIN1.1  SATIN1.2  SATIN1.3  SATEX1.1
SATEX1.2  SATEX1.3  SATIN2.1  SATIN2.2  SATIN2.3  SATEX2.1
SATEX2.2  SATEX2.3  SATIN3.1  SATIN3.2  SATIN3.3  SATEX3.1
SATEX3.2  SATEX3.3
RELIABILITY COEFFICIENT RHO         =      .928
GREATEST LOWER BOUND RELIABILITY                            =      .989
GLB RELIABILITY FOR AN OPTIMAL SHORT SCALE                  =      .989
BASED ON 70 VARIABLES, ALL EXCEPT:
PA1.2
BENTLER'S DIMENSION-FREE LOWER BOUND RELIABILITY             COULD NOT BE
CALCULATED BECAUSE OF FAILURE TO CONVERGE IN 500 ITERATIONS.
SHAPIRO'S LOWER BOUND RELIABILITY FOR A WEIGHTED COMPOSITE   COULD NOT BE
CALCULATED BECAUSE OF FAILURE TO CONVERGE IN 500 ITERATIONS.


GOODNESS OF FIT SUMMARY FOR METHOD = ROBUST

ROBUST INDEPENDENCE MODEL CHI-SQUARE =   13977.356 ON  2485 DEGREES OF FREEDOM

INDEPENDENCE AIC =  9007.35565   INDEPENDENCE CAIC = -2208.51478
       MODEL AIC = -1268.44863          MODEL CAIC =-11653.84818

SATORRA-BENTLER SCALED CHI-SQUARE =   3333.5514 ON    2301 DEGREES OF FREEDOM
PROBABILITY VALUE FOR THE CHI-SQUARE STATISTIC IS       .00000

FIT INDICES
-----------
BENTLER-BONETT     NORMED FIT INDEX =      .762
BENTLER-BONETT NON-NORMED FIT INDEX =      .903
COMPARATIVE FIT INDEX (CFI)         =      .910
BOLLEN   (IFI) FIT INDEX            =      .912
MCDONALD (MFI) FIT INDEX            =      .125
```

ROOT MEAN-SQUARE ERROR OF APPROXIMATION (RMSEA) = .043
90% CONFIDENCE INTERVAL OF RMSEA (.039, .046)

ITERATIVE SUMMARY

ITERATION	PARAMETER ABS CHANGE	ALPHA	FUNCTION
1	.708932	1.00000	25.96269
2	.208750	1.00000	16.57608
3	.055515	1.00000	15.13555
4	.014882	1.00000	14.97935
5	.003928	1.00000	14.97274
6	.001472	1.00000	14.97215
7	.000589	1.00000	14.97205

```
 MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)


 MEASUREMENT EQUATIONS WITH STANDARD ERRORS AND TEST STATISTICS
 STATISTICS SIGNIFICANT AT THE 5% LEVEL ARE MARKED WITH @.
 (ROBUST STATISTICS IN PARENTHESES)



INSEC1.1=V6  =    1.219*F3    +  1.000 E6
                   .095
                 12.885@
              (    .091)
              (  13.407@

INSEC1.2=V7  =    1.363*F3    +  1.000 E7
                   .109
                 12.477@
              (    .088)
              (  15.495@

INSEC1.3=V8  =     .973*F3    +  1.000 E8
                   .067
                 14.589@
              (    .069)
              (  14.055@

INSEC1.4=V9  =    1.451*F3    +  1.000 E9
                   .097
                 14.932@
              (    .074)
              (  19.566@

INSEC1.5=V10 =    1.271*F3    +  1.000 E10
                   .107
                 11.894@
              (    .094)
              (  13.549@

INSEC1.6=V11 =    1.405*F3    +  1.000 E11
                   .088
                 15.887@
              (    .075)
              (  18.674@

CHANG1.1=V15 =    1.163*F4    +  1.000 E15
                   .086
                 13.602@
              (    .078)
              (  14.861@

CHANG1.2=V16 =    1.346*F4    +  1.000 E16
                   .080
                 16.926@
              (    .070)
              (  19.344@

CHANG1.3=V17 =    1.252*F4    +  1.000 E17
                   .088
                 14.313@
              (    .076)
              (  16.395@

CHANG1.4=V18 =    1.316*F4    +  1.000 E18
                   .089
                 14.823@
              (    .081)
              (  16.193@
```

```
CHANG1.5=V19 =    1.152*F4    +  1.000 E19
                   .077
                 14.990@
              (    .068)
              (  17.053@

CHANG1.6=V20 =    1.209*F4    +  1.000 E20
                   .096
                 12.628@
              (    .087)
              (  13.836@
```

MEASUREMENT EQUATIONS WITH STANDARD ERRORS AND TEST STATISTICS (CONTINUED)

```
 MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)
 (ROBUST STATISTICS IN PARENTHESES)

MARG1.1 =V21 =    1.263*F5    +  1.000 E21
                   .069
                 18.315@
              (    .097)
              (  12.985@

MARG1.2 =V22 =    1.158*F5    +  1.000 E22
                   .093
                 12.432@
              (    .102)
              (  11.321@

MARG1.3 =V23 =    1.376*F5    +  1.000 E23
                   .074
                 18.667@
              (    .110)
              (  12.543@

PA1.1   =V24 =     .571*F1    +  1.000 E24
                   .045
                 12.740@
              (    .042)
              (  13.601@

PA1.2   =V25 =     .769*F1    +  1.000 E25
                   .057
                 13.397@
              (    .053)
              (  14.570@

NA1.1   =V26 =     .431*F2    +  1.000 E26
                   .034
                 12.794@
              (    .054)
              (   7.957@

PA1.3   =V27 =     .945*F1    +  1.000 E27
                   .057
                 16.464@
              (    .049)
              (  19.138@

NA1.2   =V28 =     .641*F2    +  1.000 E28
                   .050
                 12.858@
              (    .058)
              (  11.044@

PA1.4   =V29 =     .677*F1    +  1.000 E29
                   .050
                 13.606@
              (    .054)
              (  12.603@

NA1.3   =V30 =     .469*F2    +  1.000 E30
                   .047
                 10.024@
              (    .071)
              (   6.563@

NA1.4   =V31 =     .440*F2    +  1.000 E31
                   .029
                 15.008@
              (    .053)
              (   8.343@
```

```
SATIN1.1=V32 =      .819*F6    +  1.000 E32
                    .057
                  14.394@
               (    .084)
               (   9.704@


 MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)
 (ROBUST STATISTICS IN PARENTHESES)

SATIN1.2=V33 =     1.073*F6    +  1.000 E33
                    .066
                  16.375@
               (    .070)
               (  15.421@

SATIN1.3=V34 =      .672*F6    +  1.000 E34
                    .058
                  11.637@
               (    .078)
               (   8.598@

SATEX1.1=V35 =     1.092*F7    +  1.000 E35
                    .103
                  10.600@
               (    .095)
               (  11.554@

SATEX1.2=V36 =     1.499*F7    +  1.000 E36
                    .083
                  18.077@
               (    .063)
               (  23.745@

SATEX1.3=V37 =     1.327*F7    +  1.000 E37
                    .078
                  16.935@
               (    .076)
               (  17.443@

INSEC2.1=V49 =     1.000 F8    +  1.000 E49



INSEC2.2=V50 =     1.047*F8    +  1.000 E50
                    .083
                  12.648@
               (    .070)
               (  14.981@

INSEC2.3=V51 =      .679*F8    +  1.000 E51
                    .051
                  13.325@
               (    .047)
               (  14.374@

INSEC2.4=V52 =     1.015*F8    +  1.000 E52
                    .077
                  13.106@
               (    .068)
               (  15.007@

INSEC2.5=V53 =     1.022*F8    +  1.000 E53
                    .076
                  13.525@
               (    .066)
               (  15.413@

INSEC2.6=V54 =      .941*F8    +  1.000 E54
```

```
                  .068
                13.752@
             (    .057)
             (  16.569@

CHANG2.1=V58 =    1.000 F9    +  1.000 E58
```

MEASUREMENT EQUATIONS WITH STANDARD ERRORS AND TEST STATISTICS (CONTINUED)

MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)
(ROBUST STATISTICS IN PARENTHESES)

```
CHANG2.2=V59 =    1.169*F9    +  1.000 E59
                  .083
                14.048@
             (    .076)
             (  15.400@

CHANG2.3=V60 =    1.099*F9    +  1.000 E60
                  .093
                11.785@
             (    .086)
             (  12.778@

CHANG2.4=V61 =    1.215*F9    +  1.000 E61
                  .094
                12.961@
             (    .096)
             (  12.626@

CHANG2.5=V62 =    1.103*F9    +  1.000 E62
                  .079
                13.967@
             (    .080)
             (  13.724@

CHANG2.6=V63 =    1.127*F9    +  1.000 E63
                  .093
                12.143@
             (    .094)
             (  12.046@

MARG2.1 =V64 =    1.000 F10   +  1.000 E64

MARG2.2 =V65 =     .876*F10   +  1.000 E65
                  .064
                13.731@
             (    .056)
             (  15.628@

MARG2.3 =V66 =     .962*F10   +  1.000 E66
                  .048
                19.890@
             (    .049)
             (  19.813@

SATIN2.1=V75 =    1.000 F11   +  1.000 E75
```

```
SATIN2.2=V76 =    1.382*F11   +  1.000 E76
                   .087
                 15.939@
              (    .123)
              (  11.257@

SATIN2.3=V77 =     .805*F11   +  1.000 E77
                   .070
                 11.521@
              (    .097)
              (   8.252@

SATEX2.1=V78 =    1.000 F12   +  1.000 E78
```

```
 MEASUREMENT EQUATIONS WITH STANDARD ERRORS AND TEST STATISTICS (CONTINUED)

 MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)
 (ROBUST STATISTICS IN PARENTHESES)

SATEX2.2=V79 =    1.229*F12   +  1.000 E79
                   .097
                 12.662@
              (    .089)
              (  13.735@

SATEX2.3=V80 =    1.076*F12   +  1.000 E80
                   .088
                 12.178@
              (    .096)
              (  11.238@

INSEC3.1=V92 =    1.000 F13   +  1.000 E92


INSEC3.2=V93 =    1.033*F13   +  1.000 E93
                   .080
                 12.856@
              (    .079)
              (  13.058@

INSEC3.3=V94 =     .812*F13   +  1.000 E94
                   .059
                 13.836@
              (    .067)
              (  12.114@

INSEC3.4=V95 =    1.088*F13   +  1.000 E95
                   .077
                 14.227@
              (    .076)
              (  14.372@

INSEC3.5=V96 =    1.009*F13   +  1.000 E96
                   .075
                 13.409@
              (    .077)
              (  13.094@

INSEC3.6=V97 =    1.011*F13   +  1.000 E97
                   .070
                 14.514@
              (    .069)
              (  14.564@
```

```
CHANG3.1=V101=    1.000 F14   +  1.000 E101



CHANG3.2=V102=    1.228*F14   +  1.000 E102
                   .102
                 12.083@
              (    .112)
              (  10.936@

CHANG3.3=V103=    1.045*F14   +  1.000 E103
                   .104
                 10.041@
              (    .110)
              (   9.538@

CHANG3.4=V104=    1.224*F14   +  1.000 E104
                   .105
                 11.618@
              (    .111)
              (  11.051@
```

MEASUREMENT EQUATIONS WITH STANDARD ERRORS AND TEST STATISTICS (CONTINUED)

MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)
(ROBUST STATISTICS IN PARENTHESES)

```
CHANG3.5=V105=    1.257*F14   +  1.000 E105
                   .100
                 12.539@
              (    .122)
              (  10.332@

CHANG3.6=V106=    1.194*F14   +  1.000 E106
                   .111
                 10.794@
              (    .128)
              (   9.302@

MARG3.1 =V107=    1.000 F15   +  1.000 E107




MARG3.2 =V108=     .835*F15   +  1.000 E108
                   .066
                 12.635@
              (    .086)
              (   9.709@

MARG3.3 =V109=     .979*F15   +  1.000 E109
                   .052
                 18.663@
              (    .084)
              (  11.640@

SATIN3.1=V118=    1.000 F16   +  1.000 E118




SATIN3.2=V119=    1.294*F16   +  1.000 E119
                   .085
                 15.243@
              (    .103)
              (  12.527@
```

```
SATIN3.3=V120=      .750*F16   +  1.000 E120
                    .074
                  10.183@
               (     .112)
               (    6.689@

SATEX3.1=V121=     1.000 F17   +  1.000 E121



SATEX3.2=V122=     1.343*F17   +  1.000 E122
                    .132
                  10.173@
               (     .133)
               (  10.066@

SATEX3.3=V123=     1.245*F17   +  1.000 E123
                    .124
                  10.011@
               (     .136)
               (    9.142@
```

```
  MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)


 CONSTRUCT EQUATIONS WITH STANDARD ERRORS AND TEST STATISTICS
 STATISTICS SIGNIFICANT AT THE 5% LEVEL ARE MARKED WITH @.
 (ROBUST STATISTICS IN PARENTHESES)


INSEC2  =F8  =     -.054*F2    +   .763*F3    +   .191*F4    +  1.000 D8
                     .083          .099           .094
                   -.649          7.729@         2.028@
              (     .087)     (     .091)     (     .091)
              (    -.618)     (    8.414@     (    2.107@

CHANGE2 =F9  =      .007*F2    +   .749*F4    +  1.000 D9
                     .060          .082
                     .119         9.094@
              (     .065)     (     .080)
              (     .111)     (    9.393@

MARG2   =F10 =      .075*F2    +   .373*F4    +   .485*F5    +  1.000 D10
                     .076          .088           .084
                     .987         4.225@         5.800@
              (     .071)     (     .099)     (     .115)
              (    1.048)     (    3.756@     (    4.219@

SATIN2  =F11 =      .110*F1    +   .445*F6    +  1.000 D11
                     .061          .064
                   1.811          6.985@
              (     .064)     (     .070)
              (    1.703)     (    6.318@

SATEX2  =F12 =      .218*F1    +   .686*F7    +  1.000 D12
                     .078          .091
                   2.783@         7.496@
              (     .076)     (     .088)
              (    2.865@     (    7.804@

INSEC3  =F13 =      .597*F8    +   .216*F3    +  1.000 D13
                     .074          .087
                   8.039@         2.487@
              (     .068)     (     .082)
              (    8.769@     (    2.627@

CHANGE3 =F14 =      .522*F9    +   .209*F4    +  1.000 D14
                     .071          .067
                   7.314@         3.140@
              (     .077)     (     .082)
              (    6.815@     (    2.556@

MARG3   =F15 =      .441*F10   -   .204*F12   +   .230*F5    +  1.000 D15
                     .072          .072           .083
                   6.113@        -2.835@         2.789@
              (     .087)     (     .079)     (     .090)
              (    5.066@     (   -2.579@     (    2.559@

SATIN3  =F16 =      .376*F11   +   .231*F12   +   .150*F6    +  1.000 D16
                     .085          .056           .059
                   4.443@         4.166@         2.523@
              (     .111)     (     .065)     (     .060)
              (    3.395@     (    3.556@     (    2.495@

SATEX3  =F17 =      .526*F12   +   .182*F7    +  1.000 D17
                     .079          .064
                   6.663@         2.832@
              (     .075)     (     .075)
              (    6.973@     (    2.427@
```

```
MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

VARIANCES OF INDEPENDENT VARIABLES
----------------------------------
STATISTICS SIGNIFICANT AT THE 5% LEVEL ARE MARKED WITH @.

                V                                F
               ---                              ---
                              I F1  -  PA1              1.000 I
                              I                               I
                              I                               I
                              I                               I
                              I                               I
                              I                               I
                              I F2  -  NA1              1.000 I
                              I                               I
                              I                               I
                              I                               I
                              I                               I
                              I                               I
                              I F3  -INSEC1             1.000 I
                              I                               I
                              I                               I
                              I                               I
                              I                               I
                              I                               I
                              I F4  -CHANGE1            1.000 I
                              I                               I
                              I                               I
                              I                               I
                              I                               I
                              I                               I
                              I F5  -MARG1              1.000 I
                              I                               I
                              I                               I
                              I                               I
                              I                               I
                              I                               I
                              I F6  -SATIN1             1.000 I
                              I                               I
                              I                               I
                              I                               I
                              I                               I
                              I                               I
                              I F7  -SATEX              1.000 I
                              I                               I
                              I                               I
                              I                               I
                              I                               I
                              I                               I
```

```
 MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

 VARIANCES OF INDEPENDENT VARIABLES
 ----------------------------------
 STATISTICS SIGNIFICANT AT THE 5% LEVEL ARE MARKED WITH @.

                E                                 D
               ---                               ---
E6  -INSEC1.1           1.300*I D8  -INSEC2            1.176*I
                         .133 I                         .166 I
                        9.766@I                        7.064@I
                    (    .147)I                    (    .160)I
                    (   8.814@I                    (   7.342@I
                              I                              I
E7  -INSEC1.2           2.269*I D9  -CHANGE2            .814*I
                         .223 I                         .128 I
                       10.168@I                        6.350@I
                    (    .215)I                    (    .147)I
                    (  10.574@I                    (   5.554@I
                              I                              I
E8  -INSEC1.3            .563*I D10 -MARG2             1.210*I
                         .062 I                         .149 I
                        9.111@I                        8.111@I
                    (    .105)I                    (    .186)I
                    (   5.368@I                    (   6.497@I
                              I                              I
E9  -INSEC1.4           1.290*I D11 -SATIN2             .460*I
                         .140 I                         .065 I
                        9.200@I                        7.083@I
                    (    .138)I                    (    .099)I
                    (   9.344@I                    (   4.650@I
                              I                              I
E10 -INSEC1.5           2.062*I D12 -SATEX2             .769*I
                         .202 I                         .136 I
                       10.205@I                        5.660@I
                    (    .221)I                    (    .131)I
                    (   9.347@I                    (   5.866@I
                              I                              I
E11 -INSEC1.6            .907*I D13 -INSEC3             .987*I
                         .106 I                         .146 I
                        8.543@I                        6.759@I
                    (    .139)I                    (    .178)I
                    (   6.532@I                    (   5.535@I
                              I                              I
E15 -CHANG1.1           1.029*I D14 -CHANGE3            .561*I
                         .104 I                         .094 I
                        9.901@I                        5.938@I
                    (    .159)I                    (    .103)I
                    (   6.491@I                    (   5.469@I
                              I                              I
E16 -CHANG1.2            .605*I D15 -MARG3             1.021*I
                         .073 I                         .126 I
                        8.339@I                        8.084@I
                    (    .084)I                    (    .192)I
                    (   7.228@I                    (   5.315@I
                              I                              I
E17 -CHANG1.3           1.223*I D16 -SATIN3             .349*I
                         .123 I                         .051 I
                        9.934@I                        6.790@I
                    (    .169)I                    (    .072)I
                    (   7.261@I                    (   4.867@I
                              I                              I
E18 -CHANG1.4           1.008*I D17 -SATEX3             .407*I
                         .106 I                         .087 I
                        9.525@I                        4.660@I
                    (    .149)I                    (    .087)I
```

```
                    (   6.764@I                    (   4.698@I




                             I                                I
E19 -CHANG1.5           .731*I                                I
                        .078 I                                I
                       9.422@I                                I
                    (    .095)I                               I
                    (   7.698@I                               I
                             I                                I
E20 -CHANG1.6          1.550*I                                I
                        .151 I                                I
                      10.253@I                                I
                    (    .168)I                               I
                    (   9.250@I                               I
                             I                                I

 MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

 VARIANCES OF INDEPENDENT VARIABLES (CONTINUED)
 ----------------------------------------------

E21 -MARG1.1            .290*I                                I
                        .054 I                                I
                       5.345@I                                I
                    (    .073)I                               I
                    (   3.952@I                               I
                             I                                I
E22 -MARG1.2           1.442*I                                I
                        .140 I                                I
                      10.336@I                                I
                    (    .180)I                               I
                    (   8.013@I                               I
                             I                                I
E23 -MARG1.3            .302*I                                I
                        .063 I                                I
                       4.828@I                                I
                    (    .100)I                               I
                    (   3.019@I                               I
                             I                                I
E24 -PA1.1              .287*I                                I
                        .030 I                                I
                       9.514@I                                I
                    (    .035)I                               I
                    (   8.135@I                               I
                             I                                I
E25 -PA1.2              .443*I                                I
                        .048 I                                I
                       9.222@I                                I
                    (    .046)I                               I
                    (   9.629@I                               I
                             I                                I
E26 -NA1.1              .147*I                                I
                        .017 I                                I
                       8.527@I                                I
                    (    .031)I                               I
                    (   4.752@I                               I
                             I                                I
E27 -PA1.3              .287*I                                I
                        .043 I                                I
                       6.716@I                                I
                    (    .049)I                               I
```

```
                                (    5.833@I                                  I
                                          I                                  I
 E28 -NA1.2                           .320*I                                  I
                                      .038 I                                  I
                                     8.478@I                                  I
                                (     .041)I                                  I
                                (    7.729@I                                  I
                                          I                                  I
 E29 -PA1.4                           .326*I                                  I
                                      .036 I                                  I
                                     9.116@I                                  I
                                (     .037)I                                  I
                                (    8.848@I                                  I
                                          I                                  I


 E30 -NA1.3                           .356*I                                  I
                                      .036 I                                  I
                                     9.898@I                                  I
                                (     .063)I                                  I
                                (    5.617@I                                  I
                                          I                                  I
 E31 -NA1.4                           .079*I                                  I
                                      .013 I                                  I
                                     6.222@I                                  I
                                (     .017)I                                  I
                                (    4.634@I                                  I
                                          I                                  I
 E32 -SATIN1.1                        .372*I                                  I
                                      .046 I                                  I
                                     8.094@I                                  I
                                (     .061)I                                  I
                                (    6.110@I                                  I
                                          I                                  I
```

MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

VARIANCES OF INDEPENDENT VARIABLES (CONTINUED)

```
 ---------------------------------------------

E33 -SATIN1.2             .359*I                                I
                          .060 I                                I
                         5.962@I                                I
                    (     .066)I                                I
                    (    5.468@I                                I
                               I                                I
E34 -SATIN1.3             .573*I                                I
                          .058 I                                I
                         9.879@I                                I
                    (     .076)I                                I
                    (    7.550@I                                I
                               I                                I
E35 -SATEX1.1            1.825*I                                I
                          .176 I                                I
                        10.389@I                                I
                    (     .190)I                                I
                    (    9.611@I                                I
                               I                                I
E36 -SATEX1.2             .451*I                                I
                          .086 I                                I
                         5.238@I                                I
                    (     .099)I                                I
                    (    4.563@I                                I
                               I                                I
E37 -SATEX1.3             .552*I                                I
                          .079 I                                I
                         7.031@I                                I
                    (     .087)I                                I
                    (    6.351@I                                I
                               I                                I
E49 -INSEC2.1            1.028*I                                I
                          .114 I                                I
                         9.043@I                                I
                    (     .114)I                                I
                    (    8.987@I                                I
                               I                                I
E50 -INSEC2.2            2.135*I                                I
                          .213 I                                I
                        10.039@I                                I
                    (     .217)I                                I
                    (    9.858@I                                I
                               I                                I
E51 -INSEC2.3             .619*I                                I
                          .065 I                                I
                         9.509@I                                I
                    (     .079)I                                I
                    (    7.787@I                                I
                               I                                I
E52 -INSEC2.4            1.585*I                                I
                          .163 I                                I
                         9.744@I                                I
                    (     .200)I                                I
                    (    7.932@I                                I
                               I                                I
E53 -INSEC2.5            1.388*I                                I
                          .146 I                                I
                         9.521@I                                I
                    (     .166)I                                I
                    (    8.367@I                                I
                               I                                I
E54 -INSEC2.6            1.154*I                                I
                          .121 I                                I
                         9.501@I                                I
                    (     .166)I                                I
                    (    6.936@I                                I
                               I                                I
```

```
E58 -CHANG2.1            1.169*I                                I
                          .115 I                                I
                        10.182@I                                I
                    (     .140)I                                I
                    (    8.328@I                                I
```

MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

VARIANCES OF INDEPENDENT VARIABLES (CONTINUED)

```
E59 -CHANG2.2             .567*I                                I
                          .067 I                                I
                         8.458@I                                I
                    (     .093)I                                I
                    (    6.097@I                                I
                               I                                I
E60 -CHANG2.3            1.623*I                                I
                          .157 I                                I
                        10.311@I                                I
                    (     .195)I                                I
                    (    8.320@I                                I
                               I                                I
E61 -CHANG2.4            1.050*I                                I
                          .110 I                                I
                         9.567@I                                I
                    (     .122)I                                I
                    (    8.572@I                                I
                               I                                I
E62 -CHANG2.5             .529*I                                I
                          .062 I                                I
                         8.574@I                                I
                    (     .070)I                                I
                    (    7.533@I                                I
                               I                                I
E63 -CHANG2.6            1.340*I                                I
                          .133 I                                I
                        10.087@I                                I
                    (     .162)I                                I
                    (    8.252@I                                I
                               I                                I
E64 -MARG2.1              .567*I                                I
                          .074 I                                I
                         7.625@I                                I
                    (     .103)I                                I
                    (    5.517@I                                I
                               I                                I
E65 -MARG2.2             1.288*I                                I
                          .127 I                                I
                        10.100@I                                I
                    (     .164)I                                I
                    (    7.852@I                                I
                               I                                I
E66 -MARG2.3              .253*I                                I
                          .053 I                                I
                         4.751@I                                I
                    (     .049)I                                I
                    (    5.118@I                                I
                               I                                I
E75 -SATIN2.1             .339*I                                I
                          .043 I                                I
                         7.966@I                                I
                    (     .058)I                                I
                    (    5.812@I                                I
                               I                                I
E76 -SATIN2.2             .318*I                                I
                          .061 I                                I
                         5.232@I                                I
                    (     .063)I                                I
                    (    5.027@I                                I
                               I                                I
```

```
E77 -SATIN2.3             .603*I                                 I
                          .060 I                                 I
                        10.098@I                                 I
                    (     .081)I                                 I
                    (    7.442@I                                 I
                               I                                 I
E78 -SATEX2.1            1.677*I                                 I
                          .165 I                                 I
                        10.171@I                                 I
                    (     .187)I                                 I
                    (    8.964@I                                 I
 MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

 VARIANCES OF INDEPENDENT VARIABLES (CONTINUED)
 ----------------------------------------------

E79 -SATEX2.2             .433*I                                 I
                          .080 I                                 I
                         5.447@I                                 I
                    (     .088)I                                 I
                    (    4.933@I                                 I
                               I                                 I
E80 -SATEX2.3             .627*I                                 I
                          .079 I                                 I
                         7.911@I                                 I
                    (     .099)I                                 I
                    (    6.319@I                                 I
                               I                                 I
E92 -INSEC3.1            1.191*I                                 I
                          .125 I                                 I
                         9.506@I                                 I

                    (     .154)I                                 I
                    (    7.752@I                                 I
                               I                                 I
E93 -INSEC3.2            1.817*I                                 I
                          .182 I                                 I
                        10.004@I                                 I
                    (     .177)I                                 I
                    (   10.239@I                                 I
                               I                                 I
E94 -INSEC3.3             .719*I                                 I
                          .077 I                                 I
                         9.358@I                                 I
                    (     .080)I                                 I
                    (    9.019@I                                 I
                               I                                 I
E95 -INSEC3.4            1.211*I                                 I
                          .131 I                                 I
                         9.253@I                                 I
                    (     .181)I                                 I
                    (    6.678@I                                 I
                               I                                 I
E96 -INSEC3.5            1.379*I                                 I
                          .142 I                                 I
                         9.706@I                                 I
                    (     .190)I                                 I
                    (    7.255@I                                 I
                               I                                 I
E97 -INSEC3.6             .921*I                                 I
                          .102 I                                 I
                         8.997@I                                 I
                    (     .127)I                                 I
                    (    7.265@I                                 I
                               I                                 I
E101-CHANG3.1            1.078*I                                 I
                          .109 I                                 I
                         9.926@I                                 I
                    (     .139)I                                 I
                    (    7.771@I                                 I
                               I                                 I
```

```
E102-CHANG3.2              .976*I                              I
                           .107 I                              I
                          9.119@I                              I
                    (      .145)I                              I
                    (     6.749@I                              I
                                I                              I
E103-CHANG3.3             1.851*I                              I
                           .178 I                              I
                         10.370@I                              I
                    (      .178)I                              I
                    (    10.383@I                              I
                                I                              I
E104-CHANG3.4             1.163*I                              I
                           .123 I                              I
                          9.447@I                              I
                    (      .120)I                              I
                    (     9.708@I                              I
```

MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

VARIANCES OF INDEPENDENT VARIABLES (CONTINUED)

```
 ----------------------------------------------

E105-CHANG3.5            .790*I                              I
                         .093 I                              I
                        8.525@I                              I
                    (    .116)I                              I
                    (   6.815@I                              I
                              I                              I
E106-CHANG3.6           1.696*I                              I
                         .169 I                              I
                       10.047@I                              I
                    (    .204)I                              I
                    (   8.331@I                              I
                              I                              I
E107-MARG3.1             .398*I                              I
                         .073 I                              I
                        5.472@I                              I
                    (    .123)I                              I
                    (   3.236@I                              I
                              I                              I
E108-MARG3.2            1.428*I                              I
                         .141 I                              I
                       10.140@I                              I
                    (    .177)I                              I
                    (   8.089@I                              I
                              I                              I
E109-MARG3.3             .443*I                              I
                         .073 I                              I
                        6.083@I                              I
                    (    .129)I                              I
                    (   3.434@I                              I
                              I                              I
E118-SATIN3.1            .373*I                              I
                         .048 I                              I
                        7.782@I                              I
                    (    .079)I                              I
                    (   4.712@I                              I
                              I                              I
E119-SATIN3.2            .292*I                              I
                         .061 I                              I
                        4.793@I                              I
                    (    .069)I                              I
                    (   4.239@I                              I
                              I                              I
E120-SATIN3.3            .763*I                              I
                         .074 I                              I
                       10.340@I                              I
                    (    .090)I                              I
                    (   8.503@I                              I
                              I                              I
E121-SATEX3.1           1.851*I                              I
                         .177 I                              I
                       10.465@I                              I
                    (    .175)I                              I
                    (  10.580@I                              I
                              I                              I
E122-SATEX3.2            .410*I                              I
                         .075 I                              I
                        5.466@I                              I
                    (    .082)I                              I
                    (   4.974@I                              I
                              I                              I
E123-SATEX3.3            .551*I                              I
                         .076 I                              I
                        7.270@I                              I
                    (    .102)I                              I
                    (   5.414@I                              I
```

```
                              I                              I


 COVARIANCES AMONG INDEPENDENT VARIABLES
 ---------------------------------------
 STATISTICS SIGNIFICANT AT THE 5% LEVEL ARE MARKED WITH @.

                V                               F
               ---                             ---
                              I F2  -  NA1              -.065*I
                              I F1  -  PA1               .074 I
                              I                         -.879 I
                              I                     (    .068)I
                              I                     (   -.952)I
                              I                               I
                              I F3  -INSEC1             -.426*I
                              I F1  -  PA1               .060 I
                              I                        -7.072@I
                              I                     (    .064)I
                              I                     (  -6.611@I
                              I                               I
                              I F4  -CHANGE1            -.628*I
                              I F1  -  PA1               .046 I
                              I                       -13.574@I
                              I                     (    .047)I
                              I                     ( -13.290@I
                              I                               I
                              I F5  -MARG1              -.436*I
                              I F1  -  PA1               .059 I
                              I                        -7.442@I
                              I                     (    .069)I
                              I                     (  -6.309@I
                              I                               I
                              I F6  -SATIN1              .592*I
                              I F1  -  PA1               .052 I
                              I                        11.443@I
                              I                     (    .055)I
                              I                     (  10.719@I
                              I                               I
                              I F7  -SATEX               .626*I
                              I F1  -  PA1               .047 I
                              I                        13.263@I
                              I                     (    .050)I
                              I                     (  12.511@I
                              I                               I
                              I F3  -INSEC1              .339*I
                              I F2  -  NA1               .066 I
                              I                         5.149@I
                              I                     (    .072)I
                              I                     (   4.691@I
                              I                               I
                              I F4  -CHANGE1             .302*I
                              I F2  -  NA1               .067 I
                              I                         4.532@I
                              I                     (    .077)I
                              I                     (   3.898@I
                              I                               I
                              I F5  -MARG1               .275*I
                              I F2  -  NA1               .067 I
                              I                         4.107@I
                              I                     (    .080)I
                              I                     (   3.444@I
                              I                               I
                              I F6  -SATIN1             -.235*I
                              I F2  -  NA1               .071 I
                              I                        -3.306@I
                              I                     (    .077)I
                              I                     (  -3.032@I
```

```
I                                  I
I F7  -SATEX               -.086*I
I F2  -  NA1                .072 I
I                         -1.184 I
I                     (     .067)I
I                     (   -1.273)I
```

```
I                                  I
I F4  -CHANGE1              .573*I
I F3  -INSEC1               .049 I
I                         11.587@I
I                     (     .053)I
I                     (   10.797@I
I                                  I

I F5  -MARG1                .491*I
I F3  -INSEC1               .054 I
I                          9.034@I
I                     (     .062)I
I                     (    7.889@I
I                                  I
I F6  -SATIN1              -.436*I
I F3  -INSEC1               .060 I
I                         -7.213@I
I                     (     .072)I
I                     (   -6.091@I
I                                  I
I F7  -SATEX               -.391*I
I F3  -INSEC1               .061 I
I                         -6.399@I
I                     (     .063)I
I                     (   -6.180@I
I                                  I
I F5  -MARG1                .521*I
I F4  -CHANGE1              .052 I
I                         10.049@I
I                     (     .065)I
I                     (    7.985@I
I                                  I
I F6  -SATIN1              -.482*I
I F4  -CHANGE1              .057 I
I                         -8.442@I
I                     (     .064)I
I                     (   -7.491@I
I                                  I
I F7  -SATEX               -.590*I
I F4  -CHANGE1              .048 I
I                        -12.256@I
I                     (     .048)I
I                     ( -12.402@I
I                                  I
I F6  -SATIN1              -.481*I
I F5  -MARG1                .057 I
I                         -8.505@I
I                     (     .061)I
I                     (   -7.955@I
I                                  I
I F7  -SATEX               -.431*I
I F5  -MARG1                .058 I
I                         -7.464@I
I                     (     .073)I
I                     (   -5.914@I
I                                  I
I F7  -SATEX                .666*I
I F6  -SATIN1               .045 I
I                         14.875@I
```

```
I                         (     .052)I
I                         (  12.801@I
I                                   I
```

MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

COVARIANCES AMONG INDEPENDENT VARIABLES

STATISTICS SIGNIFICANT AT THE 5% LEVEL ARE MARKED WITH @.

```
                E                                D
               ---                              ---
E50 -INSEC2.2           1.081*I D9  -CHANGE2             .576*I
E7  -INSEC1.2            .169 I D8  -INSEC2              .093 I
                        6.384@I                         6.221@I
                   (     .198)I                    (     .105)I
                   (    5.448@I                    (    5.503@I
                              I                               I
E93 -INSEC3.2            .919*I D10 -MARG2               .525*I
E7  -INSEC1.2            .154 I D8  -INSEC2              .099 I
                        5.954@I                         5.281@I
                   (     .189)I                    (     .106)I
                   (    4.865@I                    (    4.966@I
                              I                               I
E51 -INSEC2.3            .029*I D11 -SATIN2             -.293*I
E8  -INSEC1.3            .044 I D8  -INSEC2              .062 I
                         .650 I                        -4.705@I
                   (     .049)I                    (     .086)I
                   (     .591)I                    (   -3.428@I
                              I                               I
E94 -INSEC3.3            .144*I D12 -SATEX2             -.270*I
E8  -INSEC1.3            .049 I D8  -INSEC2              .078 I
                        2.923@I                        -3.478@I
                   (     .053)I                    (     .082)I
                   (    2.746@I                    (   -3.275@I
                              I                               I
E52 -INSEC2.4            .520*I D10 -MARG2               .481*I
E9  -INSEC1.4            .112 I D9  -CHANGE2             .086 I
                        4.651@I                         5.594@I
                   (     .127)I                    (     .090)I
                   (    4.091@I                    (    5.341@I
                              I                               I
E95 -INSEC3.4            .487*I D11 -SATIN2             -.297*I
E9  -INSEC1.4            .101 I D9  -CHANGE2             .055 I
                        4.839@I                        -5.438@I
                   (     .104)I                    (     .079)I
                   (    4.684@I                    (   -3.778@I
                              I                               I
E53 -INSEC2.5            .491*I D12 -SATEX2             -.466*I
E10 -INSEC1.5            .125 I D9  -CHANGE2             .079 I
                        3.922@I                        -5.904@I
                   (     .141)I                    (     .086)I
                   (    3.496@I                    (   -5.433@I
                              I                               I
E96 -INSEC3.5            .691*I D11 -SATIN2             -.394*I
E10 -INSEC1.5            .128 I D10 -MARG2               .066 I
                        5.405@I                        -6.013@I
                   (     .149)I                    (     .068)I
                   (    4.654@I                    (   -5.827@I
                              I                               I
E54 -INSEC2.6            .391*I D12 -SATEX2             -.476*I
E11 -INSEC1.6            .084 I D10 -MARG2               .087 I
                        4.651@I                        -5.494@I
                   (     .108)I                    (     .080)I
                   (    3.629@I                    (   -5.949@I
                              I                               I
E97 -INSEC3.6            .276*I D12 -SATEX2              .343*I
E11 -INSEC1.6            .075 I D11 -SATIN2              .059 I
                        3.657@I                         5.869@I
                   (     .087)I                    (     .068)I
                   (    3.165@I                    (    5.061@I
                              I                               I
E59 -CHANG2.2            .115*I D14 -CHANGE3             .438*I
E16 -CHANG1.2            .050 I D13 -INSEC3              .073 I
                        2.326@I                         5.972@I
```

```
                    (    .061)I                            (    .078)I
                    (   1.878)I                            (   5.591@I
                              I                                      I


E102-CHANG3.2            .179*I D15 -MARG3                      .317*I
E16 -CHANG1.2            .063 I D13 -INSEC3                     .081 I
                        2.852@I                                3.891@I
                    (    .064)I                            (    .096)I
                    (   2.778@I                            (   3.301@I
                              I                                      I

E60 -CHANG2.3            .680*I D16 -SATIN3                    -.083*I
E17 -CHANG1.3            .108 I D13 -INSEC3                     .047 I
                        6.297@I                               -1.764 I
                    (    .150)I                            (    .057)I
                    (   4.539@I                            (  -1.447)I
                              I                                      I
E103-CHANG3.3            .620*I D17 -SATEX3                    -.246*I
E17 -CHANG1.3            .112 I D13 -INSEC3                     .058 I
                        5.536@I                               -4.224@I
                    (    .115)I                            (    .062)I
                    (   5.382@I                            (  -3.969@I
                              I                                      I
E61 -CHANG2.4            .239*I D15 -MARG3                      .281*I
E18 -CHANG1.4            .078 I D14 -CHANGE3                    .065 I
                        3.084@I                                4.340@I
                    (    .087)I                            (    .065)I
                    (   2.765@I                            (   4.340@I
                              I                                      I
E104-CHANG3.4            .101*I D16 -SATIN3                    -.093*I
E18 -CHANG1.4            .080 I D14 -CHANGE3                    .037 I
                        1.260 I                               -2.512@I
                    (    .086)I                            (    .040)I
                    (   1.177)I                            (  -2.303@I
                              I                                      I
E62 -CHANG2.5            .119*I D17 -SATEX3                    -.252*I
E19 -CHANG1.5            .049 I D14 -CHANGE3                    .050 I
                        2.411@I                               -5.029@I
                    (    .060)I                            (    .055)I
                    (   1.989@I                            (  -4.576@I
                              I                                      I
E105-CHANG3.5            .067*I D16 -SATIN3                    -.149*I
E19 -CHANG1.5            .059 I D15 -MARG3                      .049 I
                        1.137 I                               -3.054@I
                    (    .066)I                            (    .060)I
                    (   1.026)I                            (  -2.501@I
                              I                                      I
E63 -CHANG2.6            .478*I D17 -SATEX3                    -.251*I
E20 -CHANG1.6            .105 I D15 -MARG3                      .059 I
                        4.558@I                               -4.266@I
                    (    .119)I                            (    .060)I
                    (   4.005@I                            (  -4.193@I
                              I                                      I
E106-CHANG3.6            .521*I D17 -SATEX3                     .149*I
E20 -CHANG1.6            .117 I D16 -SATIN3                     .036 I
                        4.433@I                                4.144@I
                    (    .138)I                            (    .040)I
                    (   3.786@I                            (   3.691@I
                              I                                      I
E65 -MARG2.2             .399*I                                      I
E22 -MARG1.2             .097 I                                      I
                        4.100@I                                      I
                    (    .133)I                                      I
                    (   2.990@I                                      I
                              I                                      I
E108-MARG3.2             .169*I                                      I
E22 -MARG1.2             .099 I                                      I
                        1.706 I                                      I
                    (    .124)I                                      I
                    (   1.363)I                                      I
```

```
                                I                               I
E66 -MARG2.3               .057*I                               I
E23 -MARG1.3               .034 I                               I
                          1.676 I                               I
                     (     .039)I                               I
                     (    1.450)I                               I
                                I                               I



E109-MARG3.3               .075*I                               I
E23 -MARG1.3               .039 I                               I
                          1.929 I                               I
                     (     .068)I                               I
                     (    1.100)I                               I
                                I                               I
E76 -SATIN2.2              .085*I                               I
E33 -SATIN1.2              .040 I                               I
                          2.128@I                               I
                     (     .050)I                               I
                     (    1.716)I                               I
                                I                               I
E119-SATIN3.2              .074*I                               I
E33 -SATIN1.2              .038 I                               I
                          1.942 I                               I
                     (     .040)I                               I
                     (    1.848)I                               I
                                I                               I
E77 -SATIN2.3              .209*I                               I
E34 -SATIN1.3              .044 I                               I
                          4.813@I                               I
                     (     .052)I                               I
                     (    4.043@I                               I
                                I                               I
E120-SATIN3.3              .226*I                               I
E34 -SATIN1.3              .048 I                               I
                          4.695@I                               I
                     (     .053)I                               I
                     (    4.278@I                               I
                                I                               I
E79 -SATEX2.2              .160*I                               I
E36 -SATEX1.2              .058 I                               I
                          2.757@I                               I
                     (     .059)I                               I
                     (    2.725@I                               I
                                I                               I
E122-SATEX3.2              .162*I                               I
E36 -SATEX1.2              .055 I                               I
                          2.946@I                               I
                     (     .068)I                               I
                     (    2.371@I                               I
                                I                               I
E80 -SATEX2.3              .209*I                               I
E37 -SATEX1.3              .057 I                               I
                          3.694@I                               I
                     (     .075)I                               I
                     (    2.784@I                               I
                                I                               I
E123-SATEX3.3              .182*I                               I
E37 -SATEX1.3              .054 I                               I
                          3.365@I                               I
                     (     .065)I                               I
                     (    2.820@I                               I
                                I                               I
E93 -INSEC3.2              .832*I                               I
E50 -INSEC2.2              .149 I                               I
                          5.571@I                               I
                     (     .182)I                               I
                     (    4.574@I                               I
                                I                               I
```

```
E94 -INSEC3.3              .140*I                                   I
E51 -INSEC2.3              .051 I                                   I
                          2.770@I                                   I
                    (      .068)I                                   I
                    (     2.057@I                                   I
                                I                                   I
E95 -INSEC3.4              .397*I                                   I
E52 -INSEC2.4              .106 I                                   I
                          3.738@I                                   I
                    (      .116)I                                   I
                    (     3.424@I                                   I
                                I                                   I
E96 -INSEC3.5              .324*I                                   I
E53 -INSEC2.5              .104 I                                   I
                          3.121@I                                   I
                    (      .125)I                                   I
                    (     2.585@I                                   I


E97 -INSEC3.6              .366*I                                   I
E54 -INSEC2.6              .082 I                                   I
                          4.442@I                                   I
                    (      .095)I                                   I
                    (     3.845@I                                   I
                                I                                   I
E102-CHANG3.2              .130*I                                   I
E59 -CHANG2.2              .060 I                                   I
                          2.167@I                                   I
                    (      .063)I                                   I
                    (     2.058@I                                   I
                                I                                   I
E103-CHANG3.3              .818*I                                   I
E60 -CHANG2.3              .130 I                                   I
                          6.302@I                                   I
                    (      .137)I                                   I
                    (     5.951@I                                   I
                                I                                   I
E104-CHANG3.4              .101*I                                   I
E61 -CHANG2.4              .082 I                                   I
                          1.235 I                                   I
                    (      .087)I                                   I
                    (     1.158)I                                   I
                                I                                   I
E105-CHANG3.5              .103*I                                   I
E62 -CHANG2.5              .053 I                                   I
                          1.938 I                                   I
                    (      .062)I                                   I
                    (     1.660)I                                   I
                                I                                   I
E106-CHANG3.6              .514*I                                   I
E63 -CHANG2.6              .111 I                                   I
                          4.638@I                                   I
                    (      .151)I                                   I
                    (     3.413@I                                   I
                                I                                   I
E108-MARG3.2               .221*I                                   I
E65 -MARG2.2               .095 I                                   I
                          2.328@I                                   I
                    (      .104)I                                   I
                    (     2.124@I                                   I
                                I                                   I
E109-MARG3.3               .081*I                                   I
E66 -MARG2.3               .039 I                                   I
                          2.093@I                                   I
                    (      .045)I                                   I
                    (     1.818)I                                   I
                                I                                   I
E119-SATIN3.2              .148*I                                   I
E76 -SATIN2.2              .040 I                                   I
                          3.673@I                                   I
                    (      .048)I                                   I
```

```
                        (   3.094@I                                 I
                                  I                                 I
E120-SATIN3.3                .256*I                                 I
E77 -SATIN2.3                .050 I                                 I
                            5.146@I                                 I
                        (    .057)I                                 I
                        (   4.511@I                                 I
                                  I                                 I
E122-SATEX3.2                .125*I                                 I
E79 -SATEX2.2                .055 I                                 I
                            2.281@I                                 I
                        (    .059)I                                 I
                        (   2.109@I                                 I
                                  I                                 I
E123-SATEX3.3                .278*I                                 I
E80 -SATEX2.3                .058 I                                 I
                            4.805@I                                 I
                        (    .077)I                                 I
                        (   3.602@I                                 I
                                  I                                 I
```

```
MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

DECOMPOSITION OF EFFECTS WITH NONSTANDARDIZED VALUES
STATISTICS SIGNIFICANT AT THE 5% LEVEL ARE MARKED WITH @.

PARAMETER TOTAL EFFECTS
-----------------------

INSEC1.1=V6  =    1.219*F3    +  1.000 E6

INSEC1.2=V7  =    1.363*F3    +  1.000 E7

INSEC1.3=V8  =     .973*F3    +  1.000 E8

INSEC1.4=V9  =    1.451*F3    +  1.000 E9

INSEC1.5=V10 =    1.271*F3    +  1.000 E10

INSEC1.6=V11 =    1.405*F3    +  1.000 E11

CHANG1.1=V15 =    1.163*F4    +  1.000 E15

CHANG1.2=V16 =    1.346*F4    +  1.000 E16

CHANG1.3=V17 =    1.252*F4    +  1.000 E17

CHANG1.4=V18 =    1.316*F4    +  1.000 E18

CHANG1.5=V19 =    1.152*F4    +  1.000 E19
```

```
CHANG1.6=V20 =    1.209*F4    +  1.000 E20

MARG1.1 =V21 =    1.263*F5    +  1.000 E21

MARG1.2 =V22 =    1.158*F5    +  1.000 E22

MARG1.3 =V23 =    1.376*F5    +  1.000 E23

PA1.1   =V24 =     .571*F1    +  1.000 E24

PA1.2   =V25 =     .769*F1    +  1.000 E25

NA1.1   =V26 =     .431*F2    +  1.000 E26

PA1.3   =V27 =     .945*F1    +  1.000 E27

NA1.2   =V28 =     .641*F2    +  1.000 E28

PA1.4   =V29 =     .677*F1    +  1.000 E29

NA1.3   =V30 =     .469*F2    +  1.000 E30
```

```
NA1.4   =V31 =     .440*F2    +  1.000 E31


SATIN1.1=V32 =     .819*F6    +  1.000 E32


SATIN1.2=V33 =    1.073*F6    +  1.000 E33


SATIN1.3=V34 =     .672*F6    +  1.000 E34


SATEX1.1=V35 =    1.092*F7    +  1.000 E35


SATEX1.2=V36 =    1.499*F7    +  1.000 E36


SATEX1.3=V37 =    1.327*F7    +  1.000 E37


INSEC2.1=V49 =    1.000 F8    -   .054 F2    +   .763 F3    +   .191 F4
                                  .083            .099            .094
                                 -.649           7.729@          2.028@
                              (    .087)     (    .091)     (    .091)
                              (   -.618)     (   8.414@     (   2.107@

               +  1.000 E49   +  1.000 D8


INSEC2.2=V50 =    1.047*F8    -   .057 F2    +   .798 F3    +   .200 F4
                   .083           .087            .109            .099
                 12.648@         -.649           7.313@          2.029@
               (    .070)     (    .091)     (    .112)     (    .099)
               (  14.981@     (   -.620)     (   7.140@     (   2.028@

               +  1.000 E50   +  1.047 D8
                                  .083
                                12.648@
                              (    .070)
                              (  14.981@

INSEC2.3=V51 =     .679*F8    -   .037 F2    +   .518 F3    +   .130 F4
                   .051           .057            .069            .064
                 13.325@         -.649           7.560@          2.026@
               (    .047)     (    .059)     (    .069)     (    .063)
               (  14.374@     (   -.618)     (   7.509@     (   2.061@
```

```
               +  1.000 E51   +   .679 D8
                                  .051
                                13.325@
                              (    .047)
                              (  14.374@



INSEC2.4=V52 =    1.015*F8    -   .055 F2    +   .774 F3    +   .194 F4
                   .077           .085           .104           .096
                 13.106@         -.649          7.422@         2.030@
               (    .068)     (    .089)     (    .112)     (    .095)
               (  15.007@     (   -.619)     (   6.893@     (   2.051@

               +  1.000 E52   +  1.015 D8
                                  .077
                                13.106@
                              (    .068)
                              (  15.007@

 INSEC2.5=V53 =    1.022*F8    -   .055 F2    +   .780 F3    +   .196 F4
                   .076           .085           .103           .096
                 13.525@         -.649          7.551@         2.029@
               (    .066)     (    .089)     (    .117)     (    .094)
               (  15.413@     (   -.621)     (   6.642@     (   2.077@

               +  1.000 E53   +  1.022 D8
                                  .076
                                13.525@
                              (    .066)
                              (  15.413@

 INSEC2.6=V54 =     .941*F8    -   .051 F2    +   .718 F3    +   .180 F4
                   .068           .078           .095           .089
                 13.752@         -.649          7.521@         2.033@
               (    .057)     (    .082)     (    .099)     (    .087)
               (  16.569@     (   -.617)     (   7.276@     (   2.061@

               +  1.000 E54   +   .941 D8
                                  .068
                                13.752@
                              (    .057)
                              (  16.569@

 CHANG2.1=V58 =    1.000 F9    +   .007 F2    +   .749 F4    +  1.000 E58
                                  .060           .082
                                  .119          9.094@
                              (    .065)     (    .080)
                              (    .111)     (   9.393@

               +  1.000 D9


 CHANG2.2=V59 =    1.169*F9    +   .008 F2    +   .875 F4    +  1.000 E59
                   .083           .071           .087
                 14.048@          .119         10.100@
               (    .076)     (    .076)     (    .132)
               (  15.400@     (    .111)     (   6.655@

               +  1.169 D9
                   .083
                 14.048@
```

```
              (     .076)
              (  15.400@

 CHANG2.3=V60 =     1.099*F9    +   .008 F2    +   .823 F4    +  1.000 E60
                     .093           .066           .091
                   11.785@          .119          9.051@
              (     .086)     (     .071)     (     .128)
              (  12.778@      (     .111)     (    6.418@

               +  1.099 D9
                     .093
                   11.785@
              (     .086)
              (  12.778@

CHANG2.4=V61 =     1.215*F9    +   .009 F2    +   .910 F4    +  1.000 E61
                     .094           .073           .094
                   12.961@          .119          9.653@
              (     .096)     (     .079)     (     .145)
              (  12.626@      (     .111)     (    6.257@

               +  1.215 D9
                     .094
                   12.961@
              (     .096)
              (  12.626@

 CHANG2.5=V62 =     1.103*F9    +   .008 F2    +   .826 F4    +  1.000 E62
                     .079           .067           .082
                   13.967@          .119         10.077@
              (     .080)     (     .072)     (     .129)
              (  13.724@      (     .111)     (    6.404@

               +  1.103 D9
                     .079
                   13.967@
              (     .080)
              (  13.724@

 CHANG2.6=V63 =     1.127*F9    +   .008 F2    +   .844 F4    +  1.000 E63
                     .093           .068           .091
                   12.143@          .119          9.280@
              (     .094)     (     .073)     (     .133)
              (  12.046@      (     .111)     (    6.324@

               +  1.127 D9
                     .093
                   12.143@
              (     .094)
              (  12.046@

 MARG2.1 =V64 =     1.000 F10   +   .075 F2    +   .373 F4    +   .485 F5
                                    .076           .088           .084
                                    .987          4.225@         5.800@
                              (     .071)     (     .099)     (     .115)
                              (    1.048)     (    3.756@     (    4.219@

               +  1.000 E64   +  1.000 D10

 MARG2.2 =V65 =      .876*F10   +   .066 F2    +   .327 F4    +   .425 F5
                     .064           .066           .079           .077
```

```
                 13.731@           .986           4.150@          5.543@
              (    .056)      (    .063)     (    .089)     (    .108)
              (  15.628@      (   1.049)     (   3.662@     (   3.924@

               +  1.000 E65   +   .876 D10
                                  .064
                                13.731@
                              (    .056)
                              (  15.628@

MARG2.3 =V66 =      .962*F10   +   .072 F2    +   .359 F4    +   .467 F5
                    .048           .073           .084           .080
                  19.890@          .988          4.266@         5.855@
              (    .049)      (    .069)     (    .098)     (    .113)
              (  19.813@      (   1.045)     (   3.658@     (   4.116@

               +  1.000 E66   +   .962 D10
                                  .048
                                19.890@
                              (    .049)
                              (  19.813@

SATIN2.1=V75 =     1.000 F11   +   .110 F1    +   .445 F6    +  1.000 E75
                                   .061           .064
                                  1.811          6.985@
                              (    .064)     (    .070)
                              (   1.703)     (   6.318@

               +  1.000 D11




SATIN2.2=V76 =     1.382*F11   +   .152 F1    +   .615 F6    +  1.000 E76
                    .087           .083           .087
                  15.939@         1.820          7.109@
              (    .123)      (    .092)     (    .131)
              (  11.257@      (   1.652)     (   4.707@

               +  1.382 D11
                    .087
                  15.939@
              (    .123)
              (  11.257@

SATIN2.3=V77 =      .805*F11   +   .088 F1    +   .358 F6    +  1.000 E77
                    .070           .049           .056
                  11.521@         1.809          6.420@
              (    .097)      (    .054)     (    .082)
              (   8.252@      (   1.635)     (   4.392@

               +   .805 D11
                    .070
                  11.521@
              (    .097)
              (   8.252@

SATEX2.1=V78 =     1.000 F12   +   .218 F1    +   .686 F7    +  1.000 E78
                                   .078           .091
                                  2.783@         7.496@
                              (    .076)     (    .088)
                              (   2.865@     (   7.804@

               +  1.000 D12



SATEX2.2=V79 =     1.229*F12   +   .268 F1    +   .843 F7    +  1.000 E79
                    .097           .094           .100
```

```
                12.662@         2.844@         8.427@
             (    .089)     (    .098)     (    .148)
             (  13.735@     (   2.724@     (   5.686@

              +  1.229 D12
                  .097
                12.662@
             (    .089)
             (  13.735@

SATEX2.3=V80 =    1.076*F12   +   .235 F1    +   .738 F7    +  1.000 E80
                  .088            .083           .090
                12.178@         2.835@         8.222@
             (    .096)     (    .088)     (    .138)
             (  11.238@     (   2.678@     (   5.343@

              +  1.076 D12
                  .088
                12.178@
             (    .096)
             (  11.238@

INSEC3.1=V92 =     .597 F8    +  1.000 F13   -   .032 F2    +   .672 F3
                  .074                           .050           .092
                 8.039@                         -.647          7.335@
             (    .068)                    (    .052)     (    .136)
             (   8.769@                    (   -.624)     (   4.943@

              +   .114 F4    +  1.000 E92   +   .597 D8    +  1.000 D13
                  .058                           .074
                 1.985@                         8.039@
             (    .057)                    (    .068)
             (   2.008@                    (   8.769@


INSEC3.2=V93 =     .617 F8    +  1.033*F13   -   .033 F2    +   .694 F3
                  .078            .080           .052           .097
                 7.879@        12.856@          -.647          7.138@
             (    .077)     (    .079)     (    .053)     (    .150)
             (   8.048@     (  13.058@     (   -.626)     (   4.622@

              +   .118 F4    +  1.000 E93   +   .617 D8    +  1.033 D13
                  .059                           .078           .080
                 1.986@                         7.879@        12.856@
             (    .059)                    (    .077)     (    .079)
             (   1.997@                    (   8.048@     (  13.058@


INSEC3.3=V94 =     .485 F8    +   .812*F13   -   .026 F2    +   .546 F3
                  .060            .059           .041           .074
                 8.112@        13.836@          -.647          7.342@
             (    .061)     (    .067)     (    .042)     (    .117)
             (   7.940@     (  12.114@     (   -.626)     (   4.645@

              +   .093 F4    +  1.000 E94   +   .485 D8    +   .812 D13
                  .047                           .060           .059
                 1.988@                         8.112@        13.836@
             (    .046)                    (    .061)     (    .067)
             (   2.030@                    (   7.940@     (  12.114@


INSEC3.4=V95 =     .650 F8    +  1.088*F13   -   .035 F2    +   .731 F3
                  .079            .077           .054           .099
                 8.210@        14.227@          -.647          7.360@
             (    .076)     (    .076)     (    .056)     (    .155)
             (   8.526@     (  14.372@     (   -.625)     (   4.706@

              +   .124 F4    +  1.000 E95   +   .650 D8    +  1.088 D13
                  .063                           .079           .077
                 1.991@                         8.210@        14.227@
             (    .062)                    (    .076)     (    .076)
```

```
            (   2.006@                    (   8.526@     (  14.372@


INSEC3.5=V96 =     .603 F8    + 1.009*F13   -   .033 F2    +   .678 F3
                   .075          .075           .050           .094
                  8.043@       13.409@         -.647           7.245@
            (    .069)     (    .077)     (    .052)     (    .141)
            (   8.705@     (  13.094@     (   -.624)     (   4.808@

             +   .115 F4    +  1.000 E96   +   .603 D8    +  1.009 D13
                 .058                          .075           .075
                1.988@                        8.043@        13.409@
            (    .058)                    (    .069)     (    .077)
            (   2.000@                    (   8.705@     (  13.094@


INSEC3.6=V97 =     .604 F8    + 1.011*F13   -   .033 F2    +   .679 F3
                   .073          .070           .050           .091
                  8.221@       14.514@         -.648           7.426@
            (    .070)     (    .069)     (    .052)     (    .143)
            (   8.652@     (  14.564@     (   -.626)     (   4.750@

             +   .116 F4    +  1.000 E97   +   .604 D8    +  1.011 D13
                 .058                          .073           .070
                1.991@                        8.221@        14.514@
            (    .057)                    (    .070)     (    .069)
            (   2.041@                    (   8.652@     (  14.564@


CHANG3.1=V101=     .522 F9    +  1.000 F14   +   .004 F2    +   .600 F4
                   .071                         .032           .073
                  7.314@                         .119          8.270@
            (    .077)                    (    .034)     (    .125)
            (   6.815@                    (    .111)     (   4.783@

             +  1.000 E101  +    .522 D9    +  1.000 D14
                                 .071
                                7.314@
                           (    .077)
                           (   6.815@

CHANG3.2=V102=     .641 F9    + 1.228*F14   +   .005 F2    +   .737 F4
                   .083          .102           .039           .084
                  7.684@       12.083@          .119           8.742@
            (    .088)     (    .112)     (    .042)     (    .167)
            (   7.288@     (  10.936@     (    .111)     (   4.403@

             +  1.000 E102  +    .641 D9    +  1.228 D14
                                 .083           .102
                                7.684@        12.083@
                           (    .088)     (    .112)
                           (   7.288@     (  10.936@

CHANG3.3=V103=     .545 F9    + 1.045*F14   +   .004 F2    +   .627 F4
                   .078          .104           .033           .080
                  7.028@       10.041@          .119           7.811@
            (    .084)     (    .110)     (    .035)     (    .149)
            (   6.497@     (   9.538@     (    .111)     (   4.212@

             +  1.000 E103  +    .545 D9    +  1.045 D14
                                 .078           .104
                                7.028@        10.041@
                           (    .084)     (    .110)
                           (   6.497@     (   9.538@

CHANG3.4=V104=     .639 F9    + 1.224*F14   +   .005 F2    +   .735 F4
                   .085          .105           .039           .085
                  7.555@       11.618@          .119           8.608@
            (    .092)     (    .111)     (    .042)     (    .170)
            (   6.936@     (  11.051@     (    .111)     (   4.330@
```

```
             +  1.000 E104  +   .639 D9    +  1.224 D14
                                .085           .105
                               7.555@        11.618@
                           (    .092)     (    .111)
                           (   6.936@     (  11.051@

CHANG3.5=V105=      .656 F9    +  1.257*F14   +   .005 F2    +   .754 F4
                    .084          .100           .040           .084
                   7.780@       12.539@          .119          8.975@
             (    .093)     (    .122)     (    .043)     (    .178)
             (   7.038@     (  10.332@     (    .111)     (   4.248@

             +  1.000 E105  +   .656 D9    +  1.257 D14
                                .084           .100
                               7.780@        12.539@
                           (    .093)     (    .122)
                           (   7.038@     (  10.332@

CHANG3.6=V106=      .623 F9    +  1.194*F14   +   .004 F2    +   .716 F4
                    .085          .111           .038           .087
                   7.290@       10.794@          .119          8.196@
             (    .094)     (    .128)     (    .040)     (    .168)
             (   6.596@     (   9.302@     (    .111)     (   4.260@

             +  1.000 E106  +   .623 D9    +  1.194 D14
                                .085           .111
                               7.290@        10.794@
                           (    .094)     (    .128)
                           (   6.596@     (   9.302@

MARG3.1 =V107=      .441 F10   -   .204 F12   +  1.000 F15   -   .045 F1
                    .072          .072                          .022
                   6.113@       -2.835@                       -2.024@
             (    .087)     (    .079)                    (    .023)
             (   5.066@     (  -2.579@                    (  -1.943)

             +   .033 F2    +   .165 F4    +   .444 F5    -   .140 F7
                    .034          .047           .082           .051
                    .976         3.521@         5.400@        -2.753@
             (    .031)     (    .054)     (    .133)     (    .059)
             (   1.049)     (   3.069@     (   3.343@     (  -2.359@

             +  1.000 E107  +   .441 D10   -   .204 D12   +  1.000 D15
                                .072           .072
                               6.113@        -2.835@
                           (    .087)     (    .079)
                           (   5.066@     (  -2.579@


MARG3.2 =V108=      .368 F10   -   .170 F12   +   .835*F15   -   .037 F1
                    .065          .061           .066           .018
                   5.690@       -2.796@        12.635@        -2.010@
             (    .072)     (    .068)     (    .086)     (    .019)
             (   5.094@     (  -2.500@     (   9.709@     (  -1.930)

             +   .028 F2    +   .137 F4    +   .371 F5    -   .117 F7
                    .028          .040           .073           .043
                    .975         3.435@         5.109@        -2.717@
             (    .026)     (    .044)     (    .118)     (    .051)
             (   1.072)     (   3.119@     (   3.143@     (  -2.313@

             +  1.000 E108  +   .368 D10   -   .170 D12   +   .835 D15
                                .065           .061           .066
                               5.690@        -2.796@        12.635@
                           (    .072)     (    .068)     (    .086)
                           (   5.094@     (  -2.500@     (   9.709@


MARG3.3 =V109=      .432 F10   -   .200 F12   +   .979*F15   -   .044 F1
                    .071          .070           .052           .022
                   6.048@       -2.840@        18.663@        -2.026@
```

```
              (    .085)     (    .078)     (    .084)     (    .022)
              (   5.069@     (  -2.573@     (  11.640@     (  -1.948)

               +   .032 F2    +   .161 F4    +   .435 F5    -   .137 F7
                   .033           .046           .081           .050
                   .976          3.513@         5.360@        -2.758@
              (    .031)     (    .052)     (    .133)     (    .058)
              (   1.055)     (   3.084@     (   3.263@     (  -2.374@

               +  1.000 E109  +   .432 D10   -   .200 D12   +   .979 D15
                                  .071           .070           .052
                                 6.048@        -2.840@        18.663@
                             (    .085)     (    .078)     (    .084)
                             (   5.069@     (  -2.573@     (  11.640@


 SATIN3.1=V118=     .376 F11   +   .231 F12   +  1.000 F16   +   .092 F1
                    .085           .056                          .034
                   4.443@         4.166@                        2.682@
              (    .111)     (    .065)                    (    .036)
              (   3.395@     (   3.556@                    (   2.518@

               +   .318 F6    +   .159 F7    +  1.000 E118  +   .376 D11
                   .060           .040                          .085
                  5.257@         3.924@                        4.443@
              (    .097)     (    .051)                    (    .111)
              (   3.272@     (   3.084@                    (   3.395@

               +   .231 D12   +  1.000 D16
                   .056
                  4.166@
              (    .065)
              (   3.556@

 SATIN3.2=V119=     .487 F11   +   .299 F12   +  1.294*F16   +   .119 F1
                    .109           .070           .085           .044
                   4.445@         4.271@        15.243@         2.699@
              (    .141)     (    .082)     (    .103)     (    .048)
              (   3.455@     (   3.659@     (  12.527@     (   2.492@

               +   .411 F6    +   .205 F7    +  1.000 E119  +   .487 D11
                   .078           .051                          .109
                  5.299@         4.012@                        4.445@
              (    .128)     (    .065)                    (    .141)
              (   3.205@     (   3.151@                    (   3.455@

               +   .299 D12   +  1.294 D16
                   .070           .085
                  4.271@        15.243@
              (    .082)     (    .103)
              (   3.659@     (  12.527@


SATIN3.3=V120=      .282 F11   +   .174 F12   +   .750*F16   +   .069 F1
                    .067           .043           .074           .026
                   4.206@         4.051@        10.183@         2.645@
              (    .086)     (    .054)     (    .112)     (    .028)
              (   3.268@     (   3.203@     (   6.689@     (   2.452@

               +   .238 F6    +   .119 F7    +  1.000 E120  +   .282 D11
                   .049           .031                          .067
                  4.851@         3.827@                        4.206@
              (    .082)     (    .042)                    (    .086)
              (   2.890@     (   2.803@                    (   3.268@

               +   .174 D12   +   .750 D16
                   .043           .074
                  4.051@        10.183@
              (    .054)     (    .112)
              (   3.203@     (   6.689@
```

```
SATEX3.1=V121=     .526 F12   +  1.000 F17   +   .115 F1    +   .543 F7
                   .079                          .043           .078
                  6.663@                        2.664@         6.940@
              (    .075)                    (    .043)     (    .125)
              (   6.973@                    (   2.696@     (   4.324@

               +  1.000 E121  +   .526 D12   +  1.000 D17
                                  .079
                                 6.663@
                             (    .075)
                             (   6.973@

SATEX3.2=V122=     .706 F12   +  1.343*F17   +   .154 F1    +   .729 F7
                   .088           .132           .056           .086
                  8.043@        10.173@         2.743@         8.463@
              (    .097)     (    .133)     (    .059)     (    .190)
              (   7.296@     (  10.066@     (   2.628@     (   3.835@

               +  1.000 E122  +   .706 D12   +  1.343 D17
                                  .088           .132
                                 8.043@        10.173@
                             (    .097)     (    .133)
                             (   7.296@     (  10.066@

SATEX3.3=V123=     .655 F12   +  1.245*F17   +   .143 F1    +   .675 F7
                   .083           .124           .052           .081
                  7.888@        10.011@         2.735@         8.310@
              (    .094)     (    .136)     (    .055)     (    .178)
              (   6.974@     (   9.142@     (   2.594@     (   3.804@

               +  1.000 E123  +   .655 D12   +  1.245 D17
                                  .083           .124
                                 7.888@        10.011@
                             (    .094)     (    .136)
                             (   6.974@     (   9.142@

INSEC2  =F8  =    -.054*F2    +   .763*F3    +   .191*F4    +  1.000 D8


CHANGE2 =F9  =     .007*F2    +   .749*F4    +  1.000 D9


MARG2   =F10 =     .075*F2    +   .373*F4    +   .485*F5    +  1.000 D10


SATIN2  =F11 =     .110*F1    +   .445*F6    +  1.000 D11


SATEX2  =F12 =     .218*F1    +   .686*F7    +  1.000 D12


INSEC3  =F13 =     .597*F8    -   .032 F2    +   .672*F3    +   .114 F4
                   .074           .050           .092           .058
                  8.039@         -.647          7.335@         1.985@
              (    .068)     (    .052)     (    .136)     (    .057)
              (   8.769@     (   -.624)     (   4.943@     (   2.008@

               +   .597 D8    +  1.000 D13
```

```
                    .074
                   8.039@
               (    .068)
               (   8.769@

CHANGE3 =F14 =      .522*F9    +   .004 F2    +   .600*F4    +   .522 D9
                    .071           .032           .073           .071
                   7.314@          .119          8.270@         7.314@
               (    .077)     (    .034)     (    .125)     (    .077)
               (   6.815@     (    .111)     (   4.783@     (   6.815@

                +  1.000 D14




MARG3   =F15 =      .441*F10   -   .204*F12   -   .045 F1    +   .033 F2
                    .072           .072           .022           .034
                   6.113@        -2.835@        -2.024@          .976
               (    .087)     (    .079)     (    .023)     (    .031)
               (   5.066@     (  -2.579@     (  -1.943)     (   1.049)

                +   .165 F4    +   .444*F5    -   .140 F7    +   .441 D10
                    .047           .082           .051           .072
                   3.521@         5.400@        -2.753@         6.113@
               (    .054)     (    .133)     (    .059)     (    .087)
               (   3.069@     (   3.343@     (  -2.359@     (   5.066@

                -   .204 D12   +  1.000 D15
                    .072
                  -2.835@
               (    .079)
               (  -2.579@

SATIN3  =F16 =      .376*F11   +   .231*F12   +   .092 F1    +   .318*F6
                    .085           .056           .034           .060
                   4.443@         4.166@         2.682@         5.257@
               (    .111)     (    .065)     (    .036)     (    .097)
               (   3.395@     (   3.556@     (   2.518@     (   3.272@

                +   .159 F7    +   .376 D11   +   .231 D12   +  1.000 D16
                    .040           .085           .056
                   3.924@         4.443@         4.166@
               (    .051)     (    .111)     (    .065)
               (   3.084@     (   3.395@     (   3.556@


SATEX3  =F17 =      .526*F12   +   .115 F1    +   .543*F7    +   .526 D12
                    .079           .043           .078           .079
                   6.663@         2.664@         6.940@         6.663@
               (    .075)     (    .043)     (    .125)     (    .075)
               (   6.973@     (   2.696@     (   4.324@     (   6.973@

                +  1.000 D17
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MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

DECOMPOSITION OF EFFECTS WITH NONSTANDARDIZED VALUES
STATISTICS SIGNIFICANT AT THE 5% LEVEL ARE MARKED WITH @.

PARAMETER INDIRECT EFFECTS
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INSEC2.1=V49 =    -.054 F2    +   .763 F3    +   .191 F4    +  1.000 D8
                   .083           .099           .094
                  -.649          7.729@         2.028@
             (     .087)     (    .091)     (    .091)
             (    -.618)     (   8.414@     (   2.107@


INSEC2.2=V50 =    -.057 F2    +   .798 F3    +   .200 F4    +  1.047 D8
                   .087           .109           .099           .083
                  -.649          7.313@         2.029@        12.648@
             (     .091)     (    .112)     (    .099)     (    .070)
             (    -.620)     (   7.140@     (   2.028@     (  14.981@


INSEC2.3=V51 =    -.037 F2    +   .518 F3    +   .130 F4    +   .679 D8
                   .057           .069           .064           .051
                  -.649          7.560@         2.026@        13.325@
             (     .059)     (    .069)     (    .063)     (    .047)
             (    -.618)     (   7.509@     (   2.061@     (  14.374@


INSEC2.4=V52 =    -.055 F2    +   .774 F3    +   .194 F4    +  1.015 D8
                   .085           .104           .096           .077
                  -.649          7.422@         2.030@        13.106@
             (     .089)     (    .112)     (    .095)     (    .068)
             (    -.619)     (   6.893@     (   2.051@     (  15.007@


INSEC2.5=V53 =    -.055 F2    +   .780 F3    +   .196 F4    +  1.022 D8
                   .085           .103           .096           .076
                  -.649          7.551@         2.029@        13.525@
             (     .089)     (    .117)     (    .094)     (    .066)
             (    -.621)     (   6.642@     (   2.077@     (  15.413@


INSEC2.6=V54 =    -.051 F2    +   .718 F3    +   .180 F4    +   .941 D8
                   .078           .095           .089           .068
                  -.649          7.521@         2.033@        13.752@
             (     .082)     (    .099)     (    .087)     (    .057)
             (    -.617)     (   7.276@     (   2.061@     (  16.569@


CHANG2.1=V58 =     .007 F2    +   .749 F4    +  1.000 D9
                   .060           .082
                   .119          9.094@
             (     .065)     (    .080)
             (     .111)     (   9.393@

CHANG2.2=V59 =     .008 F2    +   .875 F4    +  1.169 D9
                   .071           .087           .083
                   .119         10.100@        14.048@
             (     .076)     (    .132)     (    .076)
             (     .111)     (   6.655@     (  15.400@

CHANG2.3=V60 =     .008 F2    +   .823 F4    +  1.099 D9
                   .066           .091           .093
                   .119          9.051@        11.785@
             (     .071)     (    .128)     (    .086)
             (     .111)     (   6.418@     (  12.778@

CHANG2.4=V61 =     .009 F2    +   .910 F4    +  1.215 D9
                   .073           .094           .094
                   .119          9.653@        12.961@
```

```
             (    .079)     (    .145)     (    .096)
             (    .111)     (   6.257@     (  12.626@


CHANG2.5=V62 =     .008 F2    +   .826 F4    +  1.103 D9
                   .067           .082           .079
                   .119         10.077@        13.967@
             (    .072)     (    .129)     (    .080)
             (    .111)     (   6.404@     (  13.724@

 CHANG2.6=V63 =     .008 F2    +   .844 F4    +  1.127 D9
                    .068           .091           .093
                    .119          9.280@        12.143@
             (    .073)     (    .133)     (    .094)
             (    .111)     (   6.324@     (  12.046@

 MARG2.1 =V64 =     .075 F2    +   .373 F4    +   .485 F5    +  1.000 D10
                    .076           .088           .084
                    .987          4.225@         5.800@
             (    .071)     (    .099)     (    .115)
             (   1.048)     (   3.756@     (   4.219@


 MARG2.2 =V65 =     .066 F2    +   .327 F4    +   .425 F5    +   .876 D10
                    .066           .079           .077           .064
                    .986          4.150@         5.543@        13.731@
             (    .063)     (    .089)     (    .108)     (    .056)
             (   1.049)     (   3.662@     (   3.924@     (  15.628@


 MARG2.3 =V66 =     .072 F2    +   .359 F4    +   .467 F5    +   .962 D10
                    .073           .084           .080           .048
                    .988          4.266@         5.855@        19.890@
             (    .069)     (    .098)     (    .113)     (    .049)
             (   1.045)     (   3.658@     (   4.116@     (  19.813@


 SATIN2.1=V75 =     .110 F1    +   .445 F6    +  1.000 D11
                    .061           .064
                   1.811          6.985@
             (    .064)     (    .070)
             (   1.703)     (   6.318@

 SATIN2.2=V76 =     .152 F1    +   .615 F6    +  1.382 D11
                    .083           .087           .087
                   1.820          7.109@        15.939@
             (    .092)     (    .131)     (    .123)
             (   1.652)     (   4.707@     (  11.257@

 SATIN2.3=V77 =     .088 F1    +   .358 F6    +   .805 D11
                    .049           .056           .070
                   1.809          6.420@        11.521@
             (    .054)     (    .082)     (    .097)
             (   1.635)     (   4.392@     (   8.252@

 SATEX2.1=V78 =     .218 F1    +   .686 F7    +  1.000 D12
                    .078           .091
                   2.783@         7.496@
             (    .076)     (    .088)
             (   2.865@     (   7.804@

 SATEX2.2=V79 =     .268 F1    +   .843 F7    +  1.229 D12
                    .094           .100           .097
                   2.844@         8.427@        12.662@
             (    .098)     (    .148)     (    .089)
             (   2.724@     (   5.686@     (  13.735@

 SATEX2.3=V80 =     .235 F1    +   .738 F7    +  1.076 D12
                    .083           .090           .088
                   2.835@         8.222@        12.178@
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            (    .088)     (    .138)     (    .096)
            (   2.678@     (   5.343@     (  11.238@



INSEC3.1=V92 =     .597 F8    -   .032 F2    +   .672 F3    +   .114 F4
                   .074           .050           .092           .058
                  8.039@         -.647          7.335@         1.985@
            (    .068)     (    .052)     (    .136)     (    .057)
            (   8.769@     (   -.624)     (   4.943@     (   2.008@

             +    .597 D8    +  1.000 D13
                   .074
                  8.039@
            (    .068)
            (   8.769@

 INSEC3.2=V93 =     .617 F8    -   .033 F2    +   .694 F3    +   .118 F4
                   .078           .052           .097           .059
                  7.879@         -.647          7.138@         1.986@
            (    .077)     (    .053)     (    .150)     (    .059)
            (   8.048@     (   -.626)     (   4.622@     (   1.997@

             +    .617 D8    +  1.033 D13
                   .078           .080
                  7.879@        12.856@
            (    .077)     (    .079)
            (   8.048@     (  13.058@

 INSEC3.3=V94 =     .485 F8    -   .026 F2    +   .546 F3    +   .093 F4
                   .060           .041           .074           .047
                  8.112@         -.647          7.342@         1.988@
            (    .061)     (    .042)     (    .117)     (    .046)
            (   7.940@     (   -.626)     (   4.645@     (   2.030@

             +    .485 D8    +   .812 D13
                   .060           .059
                  8.112@        13.836@
            (    .061)     (    .067)
            (   7.940@     (  12.114@

 INSEC3.4=V95 =     .650 F8    -   .035 F2    +   .731 F3    +   .124 F4
                   .079           .054           .099           .063
                  8.210@         -.647          7.360@         1.991@
            (    .076)     (    .056)     (    .155)     (    .062)
            (   8.526@     (   -.625)     (   4.706@     (   2.006@

             +    .650 D8    +  1.088 D13
                   .079           .077
                  8.210@        14.227@
            (    .076)     (    .076)
            (   8.526@     (  14.372@

 INSEC3.5=V96 =     .603 F8    -   .033 F2    +   .678 F3    +   .115 F4
                   .075           .050           .094           .058
                  8.043@         -.647          7.245@         1.988@
            (    .069)     (    .052)     (    .141)     (    .058)
            (   8.705@     (   -.624)     (   4.808@     (   2.000@

             +    .603 D8    +  1.009 D13
                   .075           .075
                  8.043@        13.409@
            (    .069)     (    .077)
            (   8.705@     (  13.094@
```

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INSEC3.6=V97 =      .604 F8    -   .033 F2    +   .679 F3    +   .116 F4
                    .073           .050           .091           .058
                   8.221@         -.648           7.426@         1.991@
              (     .070)     (    .052)     (    .143)     (    .057)
              (    8.652@     (   -.626)     (   4.750@     (   2.041@

               +    .604 D8    +  1.011 D13
                    .073           .070
                   8.221@        14.514@
              (     .070)     (    .069)
              (    8.652@     (  14.564@



CHANG3.1=V101=      .522 F9    +   .004 F2    +   .600 F4    +   .522 D9
                    .071           .032           .073           .071
                   7.314@          .119           8.270@         7.314@
              (     .077)     (    .034)     (    .125)     (    .077)
              (    6.815@     (    .111)     (   4.783@     (   6.815@

               +  1.000 D14



CHANG3.2=V102=      .641 F9    +   .005 F2    +   .737 F4    +   .641 D9
                    .083           .039           .084           .083
                   7.684@          .119           8.742@         7.684@
              (     .088)     (    .042)     (    .167)     (    .088)
              (    7.288@     (    .111)     (   4.403@     (   7.288@

               +  1.228 D14
                    .102
                  12.083@
              (     .112)
              (   10.936@

CHANG3.3=V103=      .545 F9    +   .004 F2    +   .627 F4    +   .545 D9
                    .078           .033           .080           .078
                   7.028@          .119           7.811@         7.028@
              (     .084)     (    .035)     (    .149)     (    .084)
              (    6.497@     (    .111)     (   4.212@     (   6.497@

               +  1.045 D14
                    .104
                  10.041@
              (     .110)
              (    9.538@

CHANG3.4=V104=      .639 F9    +   .005 F2    +   .735 F4    +   .639 D9
                    .085           .039           .085           .085
                   7.555@          .119           8.608@         7.555@
              (     .092)     (    .042)     (    .170)     (    .092)
              (    6.936@     (    .111)     (   4.330@     (   6.936@

               +  1.224 D14
                    .105
                  11.618@
              (     .111)
              (   11.051@

CHANG3.5=V105=      .656 F9    +   .005 F2    +   .754 F4    +   .656 D9
                    .084           .040           .084           .084
                   7.780@          .119           8.975@         7.780@
              (     .093)     (    .043)     (    .178)     (    .093)
              (    7.038@     (    .111)     (   4.248@     (   7.038@

               +  1.257 D14
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                   .100
                 12.539@
             (     .122)
             (   10.332@

 CHANG3.6=V106=      .623 F9    +   .004 F2    +   .716 F4    +   .623 D9
                     .085           .038           .087           .085
                    7.290@          .119          8.196@         7.290@
             (      .094)     (    .040)     (    .168)     (    .094)
             (     6.596@     (    .111)     (   4.260@     (   6.596@

              +  1.194 D14
                   .111
                 10.794@
             (     .128)
             (    9.302@




MARG3.1 =V107=      .441 F10   -   .204 F12   -   .045 F1    +   .033 F2
                    .072           .072           .022           .034
                   6.113@        -2.835@        -2.024@          .976
             (     .087)     (    .079)     (    .023)     (    .031)
             (    5.066@     (  -2.579@     (  -1.943)     (   1.049)

              +   .165 F4    +   .444 F5    -   .140 F7    +   .441 D10
                  .047           .082           .051           .072
                 3.521@         5.400@        -2.753@         6.113@
             (    .054)     (    .133)     (    .059)     (    .087)
             (   3.069@     (   3.343@     (  -2.359@     (   5.066@

              -   .204 D12   +  1.000 D15
                  .072
                -2.835@
             (    .079)
             (  -2.579@

 MARG3.2 =V108=      .368 F10   -   .170 F12   -   .037 F1    +   .028 F2
                     .065           .061           .018           .028
                    5.690@        -2.796@        -2.010@          .975
             (      .072)     (    .068)     (    .019)     (    .026)
             (     5.094@     (  -2.500@     (  -1.930)     (   1.072)

              +   .137 F4    +   .371 F5    -   .117 F7    +   .368 D10
                  .040           .073           .043           .065
                 3.435@         5.109@        -2.717@         5.690@
             (    .044)     (    .118)     (    .051)     (    .072)
             (   3.119@     (   3.143@     (  -2.313@     (   5.094@

              -   .170 D12   +   .835 D15
                  .061           .066
                -2.796@        12.635@
             (    .068)     (    .086)
             (  -2.500@     (   9.709@

 MARG3.3 =V109=      .432 F10   -   .200 F12   -   .044 F1    +   .032 F2
                     .071           .070           .022           .033
                    6.048@        -2.840@        -2.026@          .976
             (      .085)     (    .078)     (    .022)     (    .031)
             (     5.069@     (  -2.573@     (  -1.948)     (   1.055)

              +   .161 F4    +   .435 F5    -   .137 F7    +   .432 D10
                  .046           .081           .050           .071
                 3.513@         5.360@        -2.758@         6.048@
             (    .052)     (    .133)     (    .058)     (    .085)
             (   3.084@     (   3.263@     (  -2.374@     (   5.069@
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               -   .200 D12   +   .979 D15
                   .070           .052
                 -2.840@        18.663@
              (    .078)     (    .084)
              (  -2.573@     (  11.640@

 SATIN3.1=V118=    .376 F11   +   .231 F12   +   .092 F1    +   .318 F6
                   .085           .056           .034           .060
                  4.443@         4.166@         2.682@         5.257@
              (    .111)     (    .065)     (    .036)     (    .097)
              (   3.395@     (   3.556@     (   2.518@     (   3.272@

               +   .159 F7    +   .376 D11   +   .231 D12   +  1.000 D16
                   .040           .085           .056
                  3.924@         4.443@         4.166@
              (    .051)     (    .111)     (    .065)
              (   3.084@     (   3.395@     (   3.556@


SATIN3.2=V119=     .487 F11   +   .299 F12   +   .119 F1    +   .411 F6
                   .109           .070           .044           .078
                  4.445@         4.271@         2.699@         5.299@
              (    .141)     (    .082)     (    .048)     (    .128)
              (   3.455@     (   3.659@     (   2.492@     (   3.205@

               +   .205 F7    +   .487 D11   +   .299 D12   +  1.294 D16
                   .051           .109           .070           .085
                  4.012@         4.445@         4.271@        15.243@
              (    .065)     (    .141)     (    .082)     (    .103)
              (   3.151@     (   3.455@     (   3.659@     (  12.527@


 SATIN3.3=V120=    .282 F11   +   .174 F12   +   .069 F1    +   .238 F6
                   .067           .043           .026           .049
                  4.206@         4.051@         2.645@         4.851@
              (    .086)     (    .054)     (    .028)     (    .082)
              (   3.268@     (   3.203@     (   2.452@     (   2.890@

               +   .119 F7    +   .282 D11   +   .174 D12   +   .750 D16
                   .031           .067           .043           .074
                  3.827@         4.206@         4.051@        10.183@
              (    .042)     (    .086)     (    .054)     (    .112)
              (   2.803@     (   3.268@     (   3.203@     (   6.689@


 SATEX3.1=V121=    .526 F12   +   .115 F1    +   .543 F7    +   .526 D12
                   .079           .043           .078           .079
                  6.663@         2.664@         6.940@         6.663@
              (    .075)     (    .043)     (    .125)     (    .075)
              (   6.973@     (   2.696@     (   4.324@     (   6.973@

               +  1.000 D17


 SATEX3.2=V122=    .706 F12   +   .154 F1    +   .729 F7    +   .706 D12
                   .088           .056           .086           .088
                  8.043@         2.743@         8.463@         8.043@
              (    .097)     (    .059)     (    .190)     (    .097)
              (   7.296@     (   2.628@     (   3.835@     (   7.296@
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               +  1.343 D17
                    .132
                  10.173@
               (    .133)
               (  10.066@

SATEX3.3=V123=      .655 F12   +   .143 F1    +   .675 F7    +   .655 D12
                    .083           .052           .081           .083
                   7.888@         2.735@         8.310@         7.888@
               (    .094)     (    .055)     (    .178)     (    .094)
               (   6.974@     (   2.594@     (   3.804@     (   6.974@

               +  1.245 D17
                    .124
                  10.011@
               (    .136)
               (   9.142@

INSEC3  =F13 =    -.032 F2    +   .456*F3    +   .114 F4    +   .597 D8
                    .050           .076           .058           .074
                   -.647          5.966@         1.985@         8.039@
               (    .052)     (    .079)     (    .057)     (    .068)
               (   -.624)     (   5.796@     (   2.008@     (   8.769@


CHANGE3 =F14 =      .004 F2    +   .391*F4    +   .522 D9
                    .032           .060           .071
                    .119          6.498@         7.314@
               (    .034)     (    .071)     (    .077)
               (    .111)     (   5.540@     (   6.815@



MARG3   =F15 =    -.045 F1    +   .033 F2    +   .165 F4    +   .214*F5
                    .022           .034           .047           .050
                  -2.024@          .976          3.521@         4.308@
               (    .023)     (    .031)     (    .054)     (    .069)
               (  -1.943)     (   1.049)     (   3.069@     (   3.097@

               -    .140 F7    +   .441 D10   -   .204 D12
                    .051           .072           .072
                  -2.753@         6.113@        -2.835@
               (    .059)     (    .087)     (    .079)
               (  -2.359@     (   5.066@     (  -2.579@

SATIN3  =F16 =      .092 F1    +   .167*F6    +   .159 F7    +   .376 D11
                    .034           .043           .040           .085
                   2.682@         3.885@         3.924@         4.443@
               (    .036)     (    .060)     (    .051)     (    .111)
               (   2.518@     (   2.807@     (   3.084@     (   3.395@

               +    .231 D12
                    .056
                   4.166@
               (    .065)
               (   3.556@

SATEX3  =F17 =      .115 F1    +   .361*F7    +   .526 D12
                    .043           .063           .079
                   2.664@         5.706@         6.663@
               (    .043)     (    .076)     (    .075)
               (   2.696@     (   4.767@     (   6.973@
```

MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

DECOMPOSITION OF EFFECTS WITH STANDARDIZED VALUES

PARAMETER TOTAL EFFECTS

```
INSEC1.1=V6  =     .730*F3    +   .683 E6

INSEC1.2=V7  =     .671*F3    +   .742 E7

INSEC1.3=V8  =     .792*F3    +   .611 E8

INSEC1.4=V9  =     .787*F3    +   .616 E9

INSEC1.5=V10 =     .663*F3    +   .749 E10

INSEC1.6=V11 =     .828*F3    +   .561 E11

CHANG1.1=V15 =     .754*F4    +   .657 E15

CHANG1.2=V16 =     .866*F4    +   .500 E16

CHANG1.3=V17 =     .750*F4    +   .662 E17

CHANG1.4=V18 =     .795*F4    +   .607 E18

CHANG1.5=V19 =     .803*F4    +   .596 E19

CHANG1.6=V20 =     .697*F4    +   .717 E20

MARG1.1 =V21 =     .920*F5    +   .392 E21

MARG1.2 =V22 =     .694*F5    +   .720 E22

MARG1.3 =V23 =     .929*F5    +   .371 E23

PA1.1   =V24 =     .729*F1    +   .684 E24

PA1.2   =V25 =     .756*F1    +   .654 E25

NA1.1   =V26 =     .747*F2    +   .664 E26

PA1.3   =V27 =     .870*F1    +   .493 E27

NA1.2   =V28 =     .750*F2    +   .661 E28

PA1.4   =V29 =     .764*F1    +   .645 E29

NA1.3   =V30 =     .618*F2    +   .786 E30

NA1.4   =V31 =     .842*F2    +   .540 E31

SATIN1.1=V32 =     .802*F6    +   .598 E32

SATIN1.2=V33 =     .873*F6    +   .487 E33

SATIN1.3=V34 =     .664*F6    +   .748 E34

SATEX1.1=V35 =     .629*F7    +   .778 E35

SATEX1.2=V36 =     .913*F7    +   .409 E36

SATEX1.3=V37 =     .873*F7    +   .489 E37

INSEC2.1=V49 =     .808 F8    -   .031 F2    +   .443 F3    +   .111 F4
               +   .589 E49   +   .631 D8

INSEC2.2=V50 =     .705*F8    -   .027 F2    +   .387 F3    +   .097 F4
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                +   .709 E50   +   .551 D8

INSEC2.3=V51 =      .768*F8    -   .030 F2    +   .422 F3    +   .106 F4
                +   .640 E51   +   .600 D8

INSEC2.4=V52 =      .746*F8    -   .029 F2    +   .410 F3    +   .103 F4
                +   .666 E52   +   .582 D8

INSEC2.5=V53 =      .770*F8    -   .030 F2    +   .422 F3    +   .106 F4
                +   .638 E53   +   .601 D8

INSEC2.6=V54 =      .773*F8    -   .030 F2    +   .424 F3    +   .106 F4
                +   .635 E54   +   .603 D8

CHANG2.1=V58 =      .736 F9    +   .005 F2    +   .469 F4    +   .678 E58
                +   .565 D9

CHANG2.2=V59 =      .877*F9    +   .005 F2    +   .559 F4    +   .481 E59
                +   .674 D9

CHANG2.3=V60 =      .712*F9    +   .004 F2    +   .454 F4    +   .703 E60
                +   .547 D9

CHANG2.4=V61 =      .812*F9    +   .005 F2    +   .518 F4    +   .583 E61
                +   .624 D9

CHANG2.5=V62 =      .872*F9    +   .005 F2    +   .556 F4    +   .490 E62
                +   .670 D9

CHANG2.6=V63 =      .752*F9    +   .005 F2    +   .480 F4    +   .659 E63
                +   .578 D9

MARG2.1 =V64 =      .873 F10   +   .049 F2    +   .242 F4    +   .314 F5
                +   .488 E64   +   .713 D10

MARG2.2 =V65 =      .721*F10   +   .040 F2    +   .200 F4    +   .260 F5
                +   .693 E65   +   .588 D10

MARG2.3 =V66 =      .932*F10   +   .052 F2    +   .258 F4    +   .336 F5
                +   .362 E66   +   .761 D10

SATIN2.1=V75 =      .826 F11   +   .106 F1    +   .431 F6    +   .564 E75
                +   .656 D11

SATIN2.2=V76 =      .902*F11   +   .116 F1    +   .471 F6    +   .432 E76
                +   .717 D11

SATIN2.3=V77 =      .662*F11   +   .085 F1    +   .346 F6    +   .749 E77
                +   .526 D11

SATEX2.1=V78 =      .684 F12   +   .123 F1    +   .386 F7    +   .729 E78
                +   .494 D12

SATEX2.2=V79 =      .915*F12   +   .164 F1    +   .517 F7    +   .404 E79
                +   .661 D12

SATEX2.3=V80 =      .855*F12   +   .154 F1    +   .483 F7    +   .518 E80
                +   .618 D12

INSEC3.1=V92 =      .469 F8    +   .787 F13   -   .018 F2    +   .379 F3
                +   .065 F4    +   .616 E92   +   .366 D8    +   .561 D13

INSEC3.2=V93 =      .435 F8    +   .730*F13   -   .017 F2    +   .352 F3
                +   .060 F4    +   .683 E93   +   .339 D8    +   .520 D13

INSEC3.3=V94 =      .477 F8    +   .801*F13   -   .019 F2    +   .386 F3
                +   .066 F4    +   .599 E94   +   .372 D8    +   .571 D13

INSEC3.4=V95 =      .482 F8    +   .809*F13   -   .019 F2    +   .390 F3
                +   .066 F4    +   .587 E95   +   .376 D8    +   .577 D13
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INSEC3.5=V96 =     .457 F8    +  .768*F13   -   .018 F2    +   .370 F3
               +   .063 F4    +  .641 E96   +   .357 D8    +   .547 D13

INSEC3.6=V97 =     .492 F8    +  .827*F13   -   .019 F2    +   .398 F3
               +   .068 F4    +  .563 E97   +   .384 D8    +   .589 D13

CHANG3.1=V101=     .411 F9    +  .718 F14   +   .003 F2    +   .403 F4
               +   .697 E101  +  .316 D9    +   .502 D14

CHANG3.2=V102=     .458 F9    +  .799*F14   +   .003 F2    +   .448 F4
               +   .601 E102  +  .352 D9    +   .560 D14

CHANG3.3=V103=     .364 F9    +  .635*F14   +   .002 F2    +   .356 F4
               +   .773 E103  +  .279 D9    +   .444 D14

CHANG3.4=V104=     .442 F9    +  .772*F14   +   .003 F2    +   .433 F4
               +   .636 E104  +  .340 D9    +   .540 D14

CHANG3.5=V105=     .478 F9    +  .834*F14   +   .003 F2    +   .468 F4
               +   .552 E105  +  .367 D9    +   .584 D14

CHANG3.6=V106=     .401 F9    +  .700*F14   +   .002 F2    +   .393 F4
               +   .714 E106  +  .308 D9    +   .490 D14

MARG3.1 =V107=     .399 F10   -  .166 F12   +   .906 F15   -   .030 F1
               +   .022 F2    +  .110 F4    +   .298 F5    -   .094 F7
               +   .423 E107  +  .325 D10   -   .120 D12   +   .678 D15

MARG3.2 =V108=     .302 F10   -  .126 F12   +   .686*F15   -   .023 F1
               +   .017 F2    +  .084 F4    +   .226 F5    -   .071 F7
               +   .727 E108  +  .246 D10   -   .091 D12   +   .513 D15

MARG3.3 =V109=     .393 F10   -  .164 F12   +   .893*F15   -   .029 F1
               +   .022 F2    +  .109 F4    +   .294 F5    -   .093 F7
               +   .450 E109  +  .321 D10   -   .118 D12   +   .668 D15

SATIN3.1=V118=     .300 F11   +  .263 F12   +   .821 F16   +   .086 F1
               +   .297 F6    +  .148 F7    +   .571 E118  +   .239 D11
               +   .190 D12   +  .553 D16

SATIN3.2=V119=     .330 F11   +  .289 F12   +   .903*F16   +   .094 F1
               +   .327 F6    +  .163 F7    +   .430 E119  +   .262 D11
               +   .209 D12   +  .608 D16

SATIN3.3=V120=     .220 F11   +  .193 F12   +   .602*F16   +   .063 F1
               +   .218 F6    +  .109 F7    +   .799 E120  +   .175 D11
               +   .139 D12   +  .406 D16

SATEX3.1=V121=     .378 F12   +  .593 F17   +   .068 F1    +   .321 F7
               +   .805 E121  +  .273 D12   +   .378 D17

SATEX3.2=V122=     .575 F12   +  .903*F17   +   .103 F1    +   .489 F7
               +   .429 E122  +  .415 D12   +   .575 D17

SATEX3.3=V123=     .547 F12   +  .860*F17   +   .098 F1    +   .465 F7
               +   .511 E123  +  .395 D12   +   .547 D17

INSEC2  =F8  =    -.039*F2    +  .549*F3    +   .138*F4    +   .781 D8

CHANGE2 =F9  =     .006*F2    +  .638*F4    +   .769 D9

MARG2   =F10 =     .056*F2    +  .277*F4    +   .360*F5    +   .816 D10

SATIN2  =F11 =     .129*F1    +  .522*F6    +   .795 D11

SATEX2  =F12 =     .180*F1    +  .565*F7    +   .722 D12

INSEC3  =F13 =     .595*F8    -  .023 F2    +   .482*F3    +   .082 F4
               +   .465 D8    +  .713 D13

CHANGE3 =F14 =     .573*F9    +  .004 F2    +   .561*F4    +   .440 D9
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                +   .700 D14

MARG3   =F15 =      .440*F10   -   .183*F12   -   .033 F1    +   .024 F2
                +   .122 F4    +   .329*F5    -   .104 F7    +   .359 D10
                -   .133 D12   +   .748 D15

SATIN3  =F16 =      .366*F11   +   .320*F12   +   .105 F1    +   .362*F6
                +   .181 F7    +   .291 D11   +   .231 D12   +   .674 D16

SATEX3  =F17 =      .637*F12   +   .114 F1    +   .541*F7    +   .460 D12
                +   .637 D17
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 MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

 DECOMPOSITION OF EFFECTS WITH STANDARDIZED VALUES

 PARAMETER INDIRECT EFFECTS
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INSEC2.1=V49 =    -.031 F2    +   .443 F3    +   .111 F4    +   .631 D8

INSEC2.2=V50 =    -.027 F2    +   .387 F3    +   .097 F4    +   .551 D8

INSEC2.3=V51 =    -.030 F2    +   .422 F3    +   .106 F4    +   .600 D8

INSEC2.4=V52 =    -.029 F2    +   .410 F3    +   .103 F4    +   .582 D8

INSEC2.5=V53 =    -.030 F2    +   .422 F3    +   .106 F4    +   .601 D8

INSEC2.6=V54 =    -.030 F2    +   .424 F3    +   .106 F4    +   .603 D8

CHANG2.1=V58 =     .005 F2    +   .469 F4    +   .565 D9

CHANG2.2=V59 =     .005 F2    +   .559 F4    +   .674 D9

CHANG2.3=V60 =     .004 F2    +   .454 F4    +   .547 D9

CHANG2.4=V61 =     .005 F2    +   .518 F4    +   .624 D9

CHANG2.5=V62 =     .005 F2    +   .556 F4    +   .670 D9

CHANG2.6=V63 =     .005 F2    +   .480 F4    +   .578 D9

MARG2.1 =V64 =     .049 F2    +   .242 F4    +   .314 F5    +   .713 D10

MARG2.2 =V65 =     .040 F2    +   .200 F4    +   .260 F5    +   .588 D10

MARG2.3 =V66 =     .052 F2    +   .258 F4    +   .336 F5    +   .761 D10

SATIN2.1=V75 =     .106 F1    +   .431 F6    +   .656 D11

SATIN2.2=V76 =     .116 F1    +   .471 F6    +   .717 D11

SATIN2.3=V77 =     .085 F1    +   .346 F6    +   .526 D11

SATEX2.1=V78 =     .123 F1    +   .386 F7    +   .494 D12

SATEX2.2=V79 =     .164 F1    +   .517 F7    +   .661 D12

SATEX2.3=V80 =     .154 F1    +   .483 F7    +   .618 D12

INSEC3.1=V92 =     .469 F8    -   .018 F2    +   .379 F3    +   .065 F4
              +    .366 D8    +   .561 D13

INSEC3.2=V93 =     .435 F8    -   .017 F2    +   .352 F3    +   .060 F4
              +    .339 D8    +   .520 D13

INSEC3.3=V94 =     .477 F8    -   .019 F2    +   .386 F3    +   .066 F4
              +    .372 D8    +   .571 D13

INSEC3.4=V95 =     .482 F8    -   .019 F2    +   .390 F3    +   .066 F4
              +    .376 D8    +   .577 D13

INSEC3.5=V96 =     .457 F8    -   .018 F2    +   .370 F3    +   .063 F4
              +    .357 D8    +   .547 D13

INSEC3.6=V97 =     .492 F8    -   .019 F2    +   .398 F3    +   .068 F4
              +    .384 D8    +   .589 D13

CHANG3.1=V101=     .411 F9    +   .003 F2    +   .403 F4    +   .316 D9
              +    .502 D14
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CHANG3.2=V102=     .458 F9    +   .003 F2    +   .448 F4    +   .352 D9
               +   .560 D14


CHANG3.3=V103=     .364 F9    +   .002 F2    +   .356 F4    +   .279 D9
               +   .444 D14

CHANG3.4=V104=     .442 F9    +   .003 F2    +   .433 F4    +   .340 D9
               +   .540 D14

CHANG3.5=V105=     .478 F9    +   .003 F2    +   .468 F4    +   .367 D9
               +   .584 D14

CHANG3.6=V106=     .401 F9    +   .002 F2    +   .393 F4    +   .308 D9
               +   .490 D14

MARG3.1 =V107=     .399 F10   -   .166 F12   -   .030 F1    +   .022 F2
               +   .110 F4    +   .298 F5    -   .094 F7    +   .325 D10
               -   .120 D12   +   .678 D15

MARG3.2 =V108=     .302 F10   -   .126 F12   -   .023 F1    +   .017 F2
               +   .084 F4    +   .226 F5    -   .071 F7    +   .246 D10
               -   .091 D12   +   .513 D15

MARG3.3 =V109=     .393 F10   -   .164 F12   -   .029 F1    +   .022 F2
               +   .109 F4    +   .294 F5    -   .093 F7    +   .321 D10
               -   .118 D12   +   .668 D15

SATIN3.1=V118=     .300 F11   +   .263 F12   +   .086 F1    +   .297 F6
               +   .148 F7    +   .239 D11   +   .190 D12   +   .553 D16

SATIN3.2=V119=     .330 F11   +   .289 F12   +   .094 F1    +   .327 F6
               +   .163 F7    +   .262 D11   +   .209 D12   +   .608 D16

SATIN3.3=V120=     .220 F11   +   .193 F12   +   .063 F1    +   .218 F6
               +   .109 F7    +   .175 D11   +   .139 D12   +   .406 D16

SATEX3.1=V121=     .378 F12   +   .068 F1    +   .321 F7    +   .273 D12
               +   .378 D17

SATEX3.2=V122=     .575 F12   +   .103 F1    +   .489 F7    +   .415 D12
               +   .575 D17

SATEX3.3=V123=     .547 F12   +   .098 F1    +   .465 F7    +   .395 D12
               +   .547 D17

INSEC3  =F13 =    -.023 F2    +   .327*F3    +   .082 F4    +   .465 D8

CHANGE3 =F14 =     .004 F2    +   .365*F4    +   .440 D9

MARG3   =F15 =    -.033 F1    +   .024 F2    +   .122 F4    +   .158*F5
               -   .104 F7    +   .359 D10   -   .133 D12

SATIN3  =F16 =     .105 F1    +   .191*F6    +   .181 F7    +   .291 D11
               +   .231 D12

SATEX3  =F17 =     .114 F1    +   .360*F7    +   .460 D12
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 MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

STANDARDIZED SOLUTION:                                                R-SQUARED


INSEC1.1=V6  =   .730*F3    + .683 E6                                    .533
INSEC1.2=V7  =   .671*F3    + .742 E7                                    .450
INSEC1.3=V8  =   .792*F3    + .611 E8                                    .627
INSEC1.4=V9  =   .787*F3    + .616 E9                                    .620
INSEC1.5=V10 =   .663*F3    + .749 E10                                   .439
INSEC1.6=V11 =   .828*F3    + .561 E11                                   .685
CHANG1.1=V15 =   .754*F4    + .657 E15                                   .568
CHANG1.2=V16 =   .866*F4    + .500 E16                                   .750
CHANG1.3=V17 =   .750*F4    + .662 E17                                   .562
CHANG1.4=V18 =   .795*F4    + .607 E18                                   .632
CHANG1.5=V19 =   .803*F4    + .596 E19                                   .645
CHANG1.6=V20 =   .697*F4    + .717 E20                                   .485
MARG1.1 =V21 =   .920*F5    + .392 E21                                   .846
MARG1.2 =V22 =   .694*F5    + .720 E22                                   .482
MARG1.3 =V23 =   .929*F5    + .371 E23                                   .863
PA1.1   =V24 =   .729*F1    + .684 E24                                   .532
PA1.2   =V25 =   .756*F1    + .654 E25                                   .572
NA1.1   =V26 =   .747*F2    + .664 E26                                   .558
PA1.3   =V27 =   .870*F1    + .493 E27                                   .757
NA1.2   =V28 =   .750*F2    + .661 E28                                   .563
PA1.4   =V29 =   .764*F1    + .645 E29                                   .584
NA1.3   =V30 =   .618*F2    + .786 E30                                   .382
NA1.4   =V31 =   .842*F2    + .540 E31                                   .709
SATIN1.1=V32 =   .802*F6    + .598 E32                                   .643
SATIN1.2=V33 =   .873*F6    + .487 E33                                   .762
SATIN1.3=V34 =   .664*F6    + .748 E34                                   .441
SATEX1.1=V35 =   .629*F7    + .778 E35                                   .395
SATEX1.2=V36 =   .913*F7    + .409 E36                                   .833
SATEX1.3=V37 =   .873*F7    + .489 E37                                   .761
INSEC2.1=V49 =   .808 F8    + .589 E49                                   .653
INSEC2.2=V50 =   .705*F8    + .709 E50                                   .498
INSEC2.3=V51 =   .768*F8    + .640 E51                                   .590
INSEC2.4=V52 =   .746*F8    + .666 E52                                   .557
INSEC2.5=V53 =   .770*F8    + .638 E53                                   .592
INSEC2.6=V54 =   .773*F8    + .635 E54                                   .597
CHANG2.1=V58 =   .736 F9    + .678 E58                                   .541
CHANG2.2=V59 =   .877*F9    + .481 E59                                   .768
CHANG2.3=V60 =   .712*F9    + .703 E60                                   .506
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STANDARDIZED SOLUTION:                                                R-SQUARED

 CHANG2.4=V61 =   .812*F9    + .583 E61                                    .660
 CHANG2.5=V62 =   .872*F9    + .490 E62                                    .760
 CHANG2.6=V63 =   .752*F9    + .659 E63                                    .566
 MARG2.1 =V64 =   .873 F10   + .488 E64                                    .762
 MARG2.2 =V65 =   .721*F10   + .693 E65                                    .520
 MARG2.3 =V66 =   .932*F10   + .362 E66                                    .869
 SATIN2.1=V75 =   .826 F11   + .564 E75                                    .682
 SATIN2.2=V76 =   .902*F11   + .432 E76                                    .814
 SATIN2.3=V77 =   .662*F11   + .749 E77                                    .439
 SATEX2.1=V78 =   .684 F12   + .729 E78                                    .468
 SATEX2.2=V79 =   .915*F12   + .404 E79                                    .837
 SATEX2.3=V80 =   .855*F12   + .518 E80                                    .732
 INSEC3.1=V92 =   .787 F13   + .616 E92                                    .620
 INSEC3.2=V93 =   .730*F13   + .683 E93                                    .533
 INSEC3.3=V94 =   .801*F13   + .599 E94                                    .641
 INSEC3.4=V95 =   .809*F13   + .587 E95                                    .655
 INSEC3.5=V96 =   .768*F13   + .641 E96                                    .589
 INSEC3.6=V97 =   .827*F13   + .563 E97                                    .683
 CHANG3.1=V101=   .718 F14   + .697 E101                                   .515
 CHANG3.2=V102=   .799*F14   + .601 E102                                   .639
 CHANG3.3=V103=   .635*F14   + .773 E103                                   .403
 CHANG3.4=V104=   .772*F14   + .636 E104                                   .596
 CHANG3.5=V105=   .834*F14   + .552 E105                                   .696
 CHANG3.6=V106=   .700*F14   + .714 E106                                   .490
 MARG3.1 =V107=   .906 F15   + .423 E107                                   .821
 MARG3.2 =V108=   .686*F15   + .727 E108                                   .471
 MARG3.3 =V109=   .893*F15   + .450 E109                                   .798
 SATIN3.1=V118=   .821 F16   + .571 E118                                   .674
 SATIN3.2=V119=   .903*F16   + .430 E119                                   .815
 SATIN3.3=V120=   .602*F16   + .799 E120                                   .362
 SATEX3.1=V121=   .593 F17   + .805 E121                                   .352
 SATEX3.2=V122=   .903*F17   + .429 E122                                   .816
 SATEX3.3=V123=   .860*F17   + .511 E123                                   .739

 INSEC2  =F8  =  -.039*F2    + .549*F3    + .138*F4    + .781 D8           .391
 CHANGE2 =F9  =   .006*F2    + .638*F4    + .769 D9                        .409
 MARG2   =F10 =   .056*F2    + .277*F4    + .360*F5    + .816 D10          .334
 SATIN2  =F11 =   .129*F1    + .522*F6    + .795 D11                       .369
 SATEX2  =F12 =   .180*F1    + .565*F7    + .722 D12                       .478
 INSEC3  =F13 =   .595*F8    + .155*F3    + .713 D13                       .492
 CHANGE3 =F14 =   .573*F9    + .196*F4    + .700 D14                       .510
 MARG3   =F15 =   .440*F10   - .183*F12   + .171*F5    + .748 D15          .441
 SATIN3  =F16 =   .366*F11   + .320*F12   + .171*F6    + .674 D16          .546
 SATEX3  =F17 =   .637*F12   + .181*F7    + .637 D17                       .595
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MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

CORRELATIONS AMONG INDEPENDENT VARIABLES F = PHI MATRIX (EXOGENOUS VARIABLES)
---------------------------------------

                V                                F
               ---                              ---
                              I F2  -  NA1              -.065*I
```

```
I F1  -  PA1                      I
I                                 I
I F3  -INSEC1               -.426*I
I F1  -  PA1                      I
I                                 I
I F4  -CHANGE1              -.628*I
I F1  -  PA1                      I
I                                 I
I F5  -MARG1                -.436*I
I F1  -  PA1                      I
I                                 I
I F6  -SATIN1                .592*I
I F1  -  PA1                      I
I                                 I
I F7  -SATEX                 .626*I
I F1  -  PA1                      I
I                                 I
I F3  -INSEC1                .339*I
I F2  -  NA1                      I
I                                 I
I F4  -CHANGE1               .302*I
I F2  -  NA1                      I
I                                 I
I F5  -MARG1                 .275*I
I F2  -  NA1                      I
I                                 I
I F6  -SATIN1               -.235*I
I F2  -  NA1                      I
I                                 I
I F7  -SATEX                -.086*I
I F2  -  NA1                      I
I                                 I
I F4  -CHANGE1               .573*I
I F3  -INSEC1                     I
I                                 I
I F5  -MARG1                 .491*I
I F3  -INSEC1                     I
I                                 I
I F6  -SATIN1               -.436*I
I F3  -INSEC1                     I
I                                 I
I F7  -SATEX                -.391*I
I F3  -INSEC1                     I
I                                 I
I F5  -MARG1                 .521*I
I F4  -CHANGE1                    I
I                                 I
I F6  -SATIN1               -.482*I
I F4  -CHANGE1                    I
I                                 I
I F7  -SATEX                -.590*I
I F4  -CHANGE1                    I
I                                 I
I F6  -SATIN1               -.481*I
I F5  -MARG1                      I
I                                 I
I F7  -SATEX                -.431*I
I F5  -MARG1                      I
I                                 I
I F7  -SATEX                 .666*I
I F6  -SATIN1                     I
I                                 I
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 MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

CORRELATIONS AMONG INDEPENDENT VARIABLES D = PSI MATRIX (ENDOGENOUS VARIABLES)
---------------------------------------

               E                               D
              ---                             ---
E50 -INSEC2.2           .491*I D9  -CHANGE2           .589*I
E7  -INSEC1.2                I D8  -INSEC2                 I
                             I                             I
E93 -INSEC3.2           .453*I D10 -MARG2             .440*I
E7  -INSEC1.2                I D8  -INSEC2                 I
                             I                             I
E51 -INSEC2.3           .049*I D11 -SATIN2           -.399*I
E8  -INSEC1.3                I D8  -INSEC2                 I
                             I                             I
E94 -INSEC3.3           .227*I D12 -SATEX2           -.284*I
E8  -INSEC1.3                I D8  -INSEC2                 I
                             I                             I
E52 -INSEC2.4           .364*I D10 -MARG2             .485*I
E9  -INSEC1.4                I D9  -CHANGE2                I
                             I                             I
E95 -INSEC3.4           .390*I D11 -SATIN2           -.486*I
E9  -INSEC1.4                I D9  -CHANGE2                I
                             I                             I
E53 -INSEC2.5           .290*I D12 -SATEX2           -.589*I
E10 -INSEC1.5                I D9  -CHANGE2                I
                             I                             I
E96 -INSEC3.5           .410*I D11 -SATIN2           -.529*I
E10 -INSEC1.5                I D10 -MARG2                  I
                             I                             I
E54 -INSEC2.6           .382*I D12 -SATEX2           -.493*I
E11 -INSEC1.6                I D10 -MARG2                  I
                             I                             I
E97 -INSEC3.6           .302*I D12 -SATEX2            .578*I
E11 -INSEC1.6                I D11 -SATIN2                 I
                             I                             I
E59 -CHANG2.2           .197*I D14 -CHANGE3           .589*I
E16 -CHANG1.2                I D13 -INSEC3                 I
                             I                             I
E102-CHANG3.2           .232*I D15 -MARG3             .315*I
E16 -CHANG1.2                I D13 -INSEC3                 I
                             I                             I
E60 -CHANG2.3           .482*I D16 -SATIN3           -.141*I
E17 -CHANG1.3                I D13 -INSEC3                 I
                             I                             I
E103-CHANG3.3           .412*I D17 -SATEX3           -.388*I
E17 -CHANG1.3                I D13 -INSEC3                 I
                             I                             I
E61 -CHANG2.4           .233*I D15 -MARG3             .371*I
E18 -CHANG1.4                I D14 -CHANGE3                I
                             I                             I
E104-CHANG3.4           .093*I D16 -SATIN3           -.209*I
E18 -CHANG1.4                I D14 -CHANGE3                I
                             I                             I
```

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 MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

 CORRELATIONS AMONG INDEPENDENT VARIABLES (CONTINUED)
 ---------------------------------------------------

E62 -CHANG2.5             .191*I D17 -SATEX3             -.527*I
E19 -CHANG1.5                  I D14 -CHANGE3                 I
                               I                              I
E105-CHANG3.5             .089*I D16 -SATIN3             -.250*I
E19 -CHANG1.5                  I D15 -MARG3                   I
                               I                              I
E63 -CHANG2.6             .332*I D17 -SATEX3             -.388*I
E20 -CHANG1.6                  I D15 -MARG3                   I
                               I                              I
E106-CHANG3.6             .321*I D17 -SATEX3              .395*I
E20 -CHANG1.6                  I D16 -SATIN3                  I
                               I                              I
E65 -MARG2.2              .293*I                              I
E22 -MARG1.2                   I                              I
                               I                              I
E108-MARG3.2              .118*I                              I
E22 -MARG1.2                   I                              I
                               I                              I
E66 -MARG2.3              .207*I                              I
E23 -MARG1.3                   I                              I
                               I                              I
E109-MARG3.3              .206*I                              I
E23 -MARG1.3                   I                              I
                               I                              I
E76 -SATIN2.2             .252*I                              I
E33 -SATIN1.2                  I                              I
                               I                              I
E119-SATIN3.2             .229*I                              I
E33 -SATIN1.2                  I                              I
                               I                              I
E77 -SATIN2.3             .356*I                              I
E34 -SATIN1.3                  I                              I
                               I                              I
E120-SATIN3.3             .342*I                              I
E34 -SATIN1.3                  I                              I
                               I                              I
E79 -SATEX2.2             .363*I                              I
E36 -SATEX1.2                  I                              I
                               I                              I
E122-SATEX3.2             .377*I                              I
E36 -SATEX1.2                  I                              I
                               I                              I
E80 -SATEX2.3             .356*I                              I
E37 -SATEX1.3                  I                              I
                               I                              I
E123-SATEX3.3             .330*I                              I
E37 -SATEX1.3                  I                              I
                               I                              I
```

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  MAXIMUM LIKELIHOOD SOLUTION (NORMAL DISTRIBUTION THEORY)

 CORRELATIONS AMONG INDEPENDENT VARIABLES (CONTINUED)
 ---------------------------------------------------

E93 -INSEC3.2            .422*I                                 I
E50 -INSEC2.2                 I                                 I
                              I                                 I
E94 -INSEC3.3            .210*I                                 I
E51 -INSEC2.3                 I                                 I
                              I                                 I
E95 -INSEC3.4            .287*I                                 I
E52 -INSEC2.4                 I                                 I
                              I                                 I
E96 -INSEC3.5            .234*I                                 I
E53 -INSEC2.5                 I                                 I
                              I                                 I
E97 -INSEC3.6            .355*I                                 I
E54 -INSEC2.6                 I                                 I
                              I                                 I
E102-CHANG3.2            .175*I                                 I
E59 -CHANG2.2                 I                                 I
                              I                                 I
E103-CHANG3.3            .472*I                                 I
E60 -CHANG2.3                 I                                 I
                              I                                 I
E104-CHANG3.4            .091*I                                 I
E61 -CHANG2.4                 I                                 I
                              I                                 I
E105-CHANG3.5            .160*I                                 I
E62 -CHANG2.5                 I                                 I
                              I                                 I
E106-CHANG3.6            .341*I                                 I
E63 -CHANG2.6                 I                                 I
                              I                                 I
E108-MARG3.2             .163*I                                 I
E65 -MARG2.2                  I                                 I
                              I                                 I
E109-MARG3.3             .242*I                                 I
E66 -MARG2.3                  I                                 I
                              I                                 I
E119-SATIN3.2            .486*I                                 I
E76 -SATIN2.2                 I                                 I
                              I                                 I
E120-SATIN3.3            .377*I                                 I
E77 -SATIN2.3                 I                                 I
                              I                                 I
E122-SATEX3.2            .297*I                                 I
E79 -SATEX2.2                 I                                 I
                              I                                 I
E123-SATEX3.3            .473*I                                 I
E80 -SATEX2.3                 I                                 I
                              I                                 I


--------------------------------------------------------------------------------
                          E N D    O F    M E T H O D
--------------------------------------------------------------------------------
 Execution begins at 19:25:04
 Execution ends   at 19:33:53
 Elapsed time =     529.00 seconds
```