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Job Pressure and Ill-Health in Physical Education Teachers:

The Mediating Role of Psychological Need Thwarting

Abstract

1
2 Drawing from self-determination theory, this study examined the interplay among PE teachers'
3 ($N = 364$) self-reported perceptions of job pressure, psychological need thwarting, burnout, and
4 somatic complaints. Structural equation modeling indicated that autonomy, competence, and
5 relatedness need thwarting were predicted by teachers' perceptions of job pressure. In turn, the
6 thwarting of each need was positively associated with burnout; the thwarting of the need for
7 competence also predicted somatic complaints. Mediation analyses supported the explanatory
8 role of need thwarting. The findings point to the understudied construct of need thwarting as a
9 promising underlying mechanism for explaining negative health-related outcomes in teachers.

10
11 Keywords: self-determination theory, teachers, job pressure, psychological needs, burnout, ill-
12 health

13

1 Job Pressure and Ill-Health in Physical Education Teachers:

2 The Mediating Role of Psychological Need Thwarting

3 **1. Introduction**

4 Levels of stress-related ill-health and associated sickness absence are high among teachers (de
5 Heus & Diekstra, 1999; Maslach, Schaufeli & Leiter, 2001). A number of sources of stress have
6 been identified in the educational literature including work overload (Hakanen, Bakker &
7 Schaufeli, 2006), a perceived lack of control and autonomy (Skaalvik & Skaalvik, 2009),
8 disruptive pupil behavior (Evers, Tomic & Brouwers, 2004; Kokkinos, 2007), and inadequate
9 support from school management (Fernet, Guay, Senécal & Austin, 2012; Devos, Dupriez &
10 Paquay, 2012). The potential repercussions of these occupational hazards on the education
11 system are of great concern. For example, poor health amongst teachers is likely to affect the
12 quality of both the teaching and the pastoral care provided to students (Maslach & Leiter, 1999;
13 2005). In addition, ill-health and sickness absence in any one individual is likely to cause
14 increased work and stress for other staff. The study of teacher stress and ill-health is, therefore,
15 of great importance in relation to the productivity of schools, the well-being of teachers, and the
16 standard of education provided to young people (Farber, 1991).

17 Surprisingly, empirical studies which explore the processes underlying the relationships
18 between job demands and ill-health are relatively scarce (Van den Broeck, Vansteenkiste, De
19 Witte & Lens, 2008). Guglielmi and Tatrow (1998) suggested that there is a need for research to
20 move away from simplistic investigations of bivariate stress-illness relationships and examine
21 the role of potential mediators which may explain causal pathways between job-related stress
22 and ill-health. In line with these recommendations, the present study examines whether the
23 thwarting of basic psychological needs, as defined in self-determination theory (SDT; Deci &
24 Ryan, 1985; Ryan & Deci, 2002), mediates the relationship between perceived job pressure and

1 ill-health in physical education teachers. Before outlining SDT and the concept of psychological
2 need thwarting, however, we first discuss two related forms of ill-health reported to be prevalent
3 amongst teachers.

4 **1.1 Ill-Health in Physical Education Teachers**

5 Work-related stress can be defined as an adverse reaction to excessive pressures placed upon
6 employees' in the work context. Taylor and Ntoumanis (2007) interviewed physical education
7 teachers about their work environment and identified several sources of perceived work-related
8 stress including evaluations of their own effectiveness based on their students' performance, time
9 constraints during physical education lessons, and pressures from the school management and
10 colleagues to conform to certain teaching methods. Physical education teachers are often faced
11 with additional sources of frustration including the low social status frequently afforded to the
12 subject and inadequate facilities (Fejgin, Ephraty & Ben-Sira, 1995). Moreover, research with
13 Spanish physical education teachers indicates that issues to do with organization and discipline
14 are more pertinent than in other subjects because students have more freedom of movement
15 during lessons (Saenz-Lopez, Almagro & Ibanez, 2011). Further stress for physical education
16 teachers will occur if the subject is devalued by colleagues and school management (Saenz-
17 Lopez et al., 2011). For instance, colleague support has been shown to moderate the relationship
18 between job demands and burnout among physical education teachers and managerial support
19 has been shown to effect self-efficacy beliefs (Brouwers, Tomic & Boluijt, 2011). Thus, this
20 group of specialist teachers may be particularly vulnerable to experiencing stress from the
21 sources of pressure examined in the current study.

22 Research has indicated that excessive work-related stress over a prolonged period of time
23 can lead to both mental and physical illness. Burnout, for example, is considered to be the final
24 step of extensive exposure to stress and can be defined as the inability of the employee to

1 continuously invest the energy needed to meet the demands of his or her job (Maslach et al.,
2 2001). This psychophysiological response to chronic situational stress is characterized by three
3 main components: emotional exhaustion, depersonalization, and reduced personal
4 accomplishment (Maslach, Jackson & Leiter, 1996). Emotional exhaustion refers to the feeling
5 of mental fatigue and the depletion of one's emotional resources. Depersonalization refers to
6 negative, cynical, or excessively detached responses which are employed to protect the
7 individual from the psychological stress coming from people with whom they interact. Finally,
8 reduced personal accomplishment refers to a decrease in feelings of efficiency and productivity
9 at work (Maslach et al., 2001). Thus, in addition to a marked loss of emotional energy, burnout
10 also implies a negative assessment of others (i.e., depersonalization) and the self (i.e., reduced
11 personal accomplishment).

12 Numerous studies indicate high prevalence rates of burnout amongst teachers (Kyriacou,
13 2001), including physical education teachers (Pascual, Monfort & Gonzalez, 2008; Smith &
14 Leng, 2003). For example, Vilorio, Paredes, and Paredes' (2001) findings indicated that 58.6%
15 of the physical education teachers involved in their study reported either intermediate (48.6%) or
16 high (10%) levels of burnout symptoms. Moreover, a review by Martín (2006) suggested that
17 Spanish physical education teachers are similarly affected with 60% having taken extended sick
18 leave at some point during their career. Furthermore, 23.4% of these periods of absence were
19 caused primarily by psychological illness which was accompanied by physical symptoms.
20 Burned-out educators are unable to deal successfully with the emotional stress caused by
21 teaching pressures (Brouwers & Tomic, 2000). This failure to cope can manifest itself in
22 impaired performance and absenteeism, reduced levels of empathy and tolerance towards
23 students, failure to prepare lessons adequately, and a lack of commitment to the teaching

1 profession (Burke, Greenglass & Schwarzer, 1996). It appears, therefore, that physical education
2 teacher burnout is particularly worthy of research attention.

3 There is also a large body of literature which outlines the negative physical effects of
4 work-stress on teachers' health (see Guglielmi & Tatrow, 1998). Somatic consequences of stress
5 include cardiovascular disorders such as coronary heart disease, angina and high blood pressure,
6 gastrointestinal problems such as stomach ulcers, as well as recurrent headaches, respiratory tract
7 infections and other symptoms of colds and influenza (Danhof-Pont, Van Veen & Zitman, 2011;
8 Burke & Greenglass, 1995; Seidman & Zager, 1991). As such, somatic symptoms were included
9 in the current study to further explore links between perceived job pressures and self-reported
10 physical health among physical education teachers. The objective of this study was to explore
11 why and how perceived job pressure is associated with teacher burnout and adverse physical
12 health-related outcomes. To this end, we used SDT, a motivational theory which explicates how
13 pressurizing social environments can thwart basic psychological needs and result in poor human
14 functioning and ill-health (Deci & Ryan, 2000).

15 **1.2 Self-Determination Theory**

16 SDT proposes that individuals will develop and function most effectively in social environments
17 which support their innate psychological needs. The theory identifies three basic psychological
18 needs, those for autonomy, competence, and relatedness. Autonomy reflects a need for
19 individuals to feel volitional and responsible for their own behaviour (deCharms, 1968).
20 Competence reflects a need to succeed at optimally challenging tasks and attain desired
21 outcomes (White, 1959). Finally, relatedness concerns the degree to which individuals feel
22 connected to and accepted by others (Baumeister & Leary, 1995).

23 Research conducted in various life domains, including the workplace (Baard, Deci &
24 Ryan, 2004; Van den Broeck et al., 2008), has established a clear empirical link between

1 psychological need satisfaction (or lack thereof) and well-being (e.g., Milyavskaya & Koestner
2 2011; Ntoumanis, 2012; Ryan & Deci, 2000). However, SDT recognizes that beyond
3 psychological growth and well-being, people can display cognitive, affective, and behavioral
4 patterns that represent the non-optimal or darker sides of human existence (Deci & Ryan, 2000).
5 To explain the causes of such diminished functioning, Deci and Ryan proposed that the
6 thwarting of basic psychological needs will lead to non-optimal development and ill-health.
7 Although widely discussed in theoretical overviews (e.g., Deci & Ryan, 2000; Ryan, Deci,
8 Grolnick & La Guardia, 2006), comparatively little research has focused on the direct
9 consequences of psychological need thwarting (Vallerand, Pelletier & Koestner, 2008), primarily
10 due to the way in which the construct has previously be operationalized and assessed.

11 Initial research by Author and colleagues (Author et al., 2011a; Author et al., 2011b) has
12 indicated that direct assessments of need thwarting, the negative experiential state which occurs
13 when individuals perceive their psychological needs to be actively undermined by others, should
14 be used when ill-being and other maladaptive outcomes are the focus of investigation. This is
15 because need thwarting does not simply reflect the perception that need satisfaction is low, but
16 more so the feeling that psychological needs are being obstructed or actively frustrated within a
17 given context. There is also growing empirical evidence which supports this differentiation (e.g.,
18 Stebbings, Taylor, Spray & Ntoumanis, 2012). For instance, Author et al. has revealed that need
19 thwarting predicts athletes' exhaustion over and above low need satisfaction (Author et al.,
20 2011a) and, compared to low need satisfaction, is more strongly associated with a range of other
21 maladaptive outcomes including depression, negative affect, physical symptoms, and biological
22 indicators of perturbed immunological functioning Author et al., 2011b). Based on Author et
23 al.'s arguments, a recent study by Gillet, Frouquereau, Forest, Brunault and Colombat (2012)
24 utilized a measure of need thwarting and reported conceptually similar results regarding its

1 detrimental impact on well-being in company workers. Nonetheless, these authors only
2 considered positive indicators of well-being (i.e., work satisfaction, happiness and self-
3 realization). In line with the conceptualization of well-being endorsed by SDT, it is important to
4 recognize that well-being and ill-being are not antipodal (Diener, Suh, Lucas & Smith, 1999;
5 Ryan & Deci, 2001). As such, the absence of optimal functioning does not necessarily equate to
6 the presence of psychological or physical ill-health and vice versa (Seligman &
7 Cskiszentmihayli, 2000). Moreover, both the Van den Broeck et al. (2008) and Gillet et al.
8 (2012) studies considered the three psychological needs as one undifferentiated construct. In line
9 with SDT and the rationale articulated earlier, we suggest that a direct assessment of the
10 thwarting of each need may play an important, and understudied, role in explaining the
11 associations between job pressure and employee ill-health in the education sector.

12 **1.3 The Present Study**

13 In summary, there is some evidence to support the mediating role of psychological needs in the
14 relationship between job characteristics and burnout (Van den Broeck et al., 2008), but such
15 research has conceptual and methodological limitations and has been conducted in non-
16 educational settings. In the present study, we examined the links between job pressure, the
17 thwarting of each of the three psychological needs, and indicators of psychological and physical
18 illness in a sample of physical education teachers. It was hypothesized that job pressure would be
19 positively and significantly associated with perceptions of thwarting of all three needs which, in
20 turn, would positively and significantly predict burnout and somatic complaints. In addition,
21 perceptions of need thwarting were expected to significantly mediate the relationships between
22 job pressure and ill-health. Based on past findings (e.g., Author et al., 2011b; Burke &
23 Greenglass, 1995) we expected the three needs to be significantly intercorrelated; the same was
24 the case for burnout and physical complaints. Because this is the first study to examine the

1 mediating role of teachers' perceptions of need thwarting, the model tested is unique and adds to
2 the SDT literature as well as research exploring mental and physical ill-health amongst teachers.
3 If we are to develop more adaptive and healthy school environments, we need to better
4 understand the way in which the pressures teachers experience in their role lead to burnout and
5 ill-health.

6 **2. Method**

7 **2.1 Procedure and Participants**

8 Ethical approval was obtained from a University in Spain. The study was also approved and
9 supported by the Spanish Professional Association of Physical Education Teachers, who
10 facilitated the contact and recruitment of participants via the Internet. Participation was voluntary
11 and informed consent was gained from each participant. The sample consisted of 364 physical
12 education teachers (232 males and 123 females) aged between 22 and 61 years old ($M = 40.47$;
13 $SD = 9.06$). Teachers were drawn from both public ($n = 339$) and private ($n = 25$) high schools in
14 Spain. On average, they had 14.56 years of teaching experience ($SD = 9.67$).

15 **2.2 Measures**

16 **Perceived job pressure.** To assess four types of work-related pressure experienced by
17 physical education teachers, 16 items (4 per subscale) were translated into Spanish (Pelletier,
18 Séguin-Lévesque & Legault, 2002; Taylor, Ntoumanis & Standage, 2008). The first subscale
19 measured perceived time constraints associated with physical education lessons (e.g., "I am
20 sometimes rushing to complete my lessons"). The second and third subscales evaluated pressures
21 stemming from school authorities (e.g., "My teaching methods are dictated by school policy")
22 and school colleagues (e.g., "I feel my colleagues question my teaching methods"), respectively.
23 The final subscale assessed the amount of pressure teachers felt from being evaluated based on
24 their students' performances (e.g., "If the students don't perform, it looks bad on my record").

1 Responses were reported on a 7-point scale ranging from 1 (*not at all true*) to 7 (*very true*). Two
2 items were reversed scored so that higher scores represented higher levels of perceived pressure.
3 Taylor et al. and Pelletier et al. reported satisfactory factor loadings and internal consistency
4 coefficients for this measure.

5 **Psychological need thwarting.** Teachers' perceptions of need thwarting were assessed
6 using an adapted and translated version of the 12-item Psychological Need Thwarting Scale
7 (PNTS; Author et al., 2011a). The stem used in the questionnaire was "In my PE classes..." and
8 teachers rated the extent to which they felt their psychological needs for autonomy (e.g., "I feel
9 prevented from making choices with regard to the way I teach"), competence (e.g., "Situations
10 occur in which I am made to feel inadequate"), and relatedness (e.g., "I feel other people dislike
11 me") were thwarted in the teaching context. Each of the three subscales comprised 4 items and
12 responses were provided on a 7-point scale ranging from 1 (*strongly disagree*) to 7 (*strongly*
13 *agree*). The reliability and factorial validity of the PNTS has been supported in both English
14 (Author et al., 2011a) and Spanish (Cuevas, Ntoumanis, Sanchez-Oliva, Bartholomew & Garcia-
15 Calvo, 2012).

16 **Burnout.** The 16-item version of the Maslach Burnout Inventory - General Survey (MBI-
17 GS; Schaufeli, Leite, Maslach & Jackson, 1996) was used to measure burnout symptoms. The
18 scale contains three subscales measuring exhaustion (five items, e.g., "I feel tired when I get up
19 in the morning and have to face another day on the job"), depersonalization (five items, e.g., "I
20 have become less enthusiastic about my work") and reduced accomplishment (six items, e.g., "In
21 my opinion, I am good at my job"). Responses were reported on a 7-point scale ranging from 0
22 (*not at all true*) to 6 (*very true*). The reduced accomplishment items were reversed scored so that
23 higher scores represented higher levels of perceived burnout. The validity and reliability of this

1 scale has been supported in English (Bakker, Demerouti & Schaufeli, 2002) and Spanish (Gil-
2 Monte, 2002).

3 **Somatic complaints.** Two dimensions of the Teacher Stress Inventory (TSI; Fimian &
4 Fastenu, 1990) were translated into Spanish in order to assess physical education teachers' self-
5 reported somatic complaints. The stem used in the questionnaire was "My work tends to
6 cause..." and teachers rated the extent to which they experienced cardiovascular symptoms (e.g.,
7 "Feelings of increased blood pressure") and gastrointestinal symptoms (e.g., "Stomach cramps").
8 Each subscale consisted of three items and responses were provided on a 5-point scale ranging
9 from 1 (*not at all true*) to 5 (*very true*). Anderson, Levinson, Barker and Kiewra (1999) have
10 reported adequate levels of reliability and validity for this scale.

11 **2. 3 Data Analysis**

12 The data were analysed via structural equation modeling (SEM) using Mplus version 6.1
13 (Muthén & Muthén, 1998-2012). The degree of model fit was evaluated using multiple fit
14 indices, such as the chi-square statistic, the comparative fit index (CFI), the Tucker-Lewis index
15 (TLI), the standardized root mean residual (SRMR), and the root mean square error of
16 approximation (RMSEA). Although values indicative of acceptable model fit remain
17 controversial (Marsh, Hau & Wen, 2004), it is typically accepted that CFI and TLI values
18 exceeding .95 are indicative of good fit and SRMR and RMSEA values of .08 and .06,
19 respectively, are satisfactory (Hu & Bentler, 1999).

20 Mediation analyses of the effect of job pressure on the outcome variables (i.e., burnout
21 and somatic complaints) via the thwarting of each psychological need were performed following
22 the recommendations of MacKinnon, Lockwood, Hoffman, West and Sheets (2002) and
23 Preacher and Hayes (2008). Typically, mediation effects have been tested using the causal step
24 approach proposed by Baron and Kenny (1986). It has been argued, however, that Baron and

1 Kenny's causal steps method of testing mediation merely probes, rather than fully explicates, the
2 relationship of an independent variable to a dependent variable via a mediating variable
3 (MacKinnon & Fairchild, 2009). The causal steps approach has also been criticized for having
4 limited applications to multiple mediation models and not being based on a quantification of the
5 very thing it is attempting to test – the intervening effect of the mediating variable(s) (Hayes,
6 2009). Stimulation research has shown that bootstrapping is a superior method for testing
7 intervening variable effects and should be used instead of the causal step approach (MacKinnon
8 et al., 2002; Hayes, 2009). Bootstrapping can generate a bias-corrected confidence interval (e.g.,
9 95% CI) and, as a consequence, inferences can be made about the significance of the indirect
10 effect in the population sampled if zero is not between the lower and upper bound of the CI.

11 **3. Results**

12 Table 1 presents the descriptive statistics, internal reliability estimates, and intercorrelations for
13 all of the scales used to assess the variables in the study. All scales demonstrated Cronbach's
14 alpha coefficients of $\geq .80$.

15 All constructs were tested as latent variables in the SEM. To increase the stability of the
16 parameter estimates and improve the ratio of sample size to estimated parameters (Bagozzi &
17 Edwards, 1998), construct specific parcels were created for the autonomy, competence, and
18 relatedness need thwarting subscales. Each parcel represented unweighted average scores created
19 by pairing stronger loading items with weaker loading items from the same scale (Little,
20 Cunningham, Shahar & Widaman, 2002). The four job pressure subscales were used as indicators
21 of a general perceived job pressure latent variable. Similarly, burnout and somatic complaints
22 were modeled as latent factors indexed by the three subscales of the MBI and the two dimensions
23 of the TSI.

1 The structural model demonstrated a good fit to the data: $\chi^2(176) = 297.11, p < .001, CFI$
 2 $= .96, TLI = .95, SRMR = .05, RMSEA = .04$ (90% CI = 0.04 - 0.05). The standardized path
 3 coefficients and residuals are presented in Figure 1. Perceived job pressure significantly
 4 predicted teachers' feelings of autonomy ($\beta = .85, p < .001; R^2 = .73$), competence ($\beta = .59, p <$
 5 $.001; R^2 = .34$), and relatedness ($\beta = .62, p < .001; R^2 = .38$) need thwarting. In turn, the
 6 thwarting of each need was positively associated with burnout (autonomy $\beta = .40, p < .001;$
 7 competence $\beta = .25, p = .003$; relatedness $\beta = .20, p = .023; R^2 = .57$). However, somatic
 8 complaints were predicted by competence need thwarting only ($\beta = .39, p < .001; R^2 = .31$).
 9 Pathways between autonomy ($\beta = .13, p = .243$) and relatedness ($\beta = .09, p = .448$) need
 10 thwarting and somatic complaints were non-significant. The model fit and the structural paths
 11 remained unchanged when gender, age, and years of teaching experience were controlled for. All
 12 paths from these two variables on the latent factors of the model were non-significant.

13 The indirect effects of job pressure on burnout and physical ill-health via psychological
 14 need thwarting are presented in Table 2. An examination of the total indirect effects revealed
 15 that, as hypothesised, need thwarting mediated the relationships between job pressure and
 16 burnout and somatic complaints. Moreover, an examination of the specific indirect effects
 17 revealed that the thwarting of each need significantly mediated the relationship between job
 18 pressure and burnout. Autonomy need thwarting was the strongest mediator. The thwarting of
 19 the need for competence also mediated the effects of job pressure on somatic complaints. The
 20 indirect effects of autonomy and relatedness were not significant.

21 **4. Discussion**

22 Teaching has been described as a stressful profession characterized by high levels of burnout and
 23 physical ill-health (de Heus & Diekstra, 1999; Maslach & Leiter, 1999; 2005). Moreover,

1 physical education teaching is frequently associated with additional stress due to the low social
2 status often afforded to the subject, inadequate facilities, and the difficulties involved in keeping
3 control of students outside of the normal classroom environment (Saenz-Lopez et al., 2011;
4 Smith & Leng, 2003). However, little is known about the motivational mechanisms which
5 underlie the observed relationship between job-related stress and the manifestation of ill-being in
6 physical education teachers.

7 We suggested that the negative experiential state of burnout may be prevalent amongst
8 teachers who perceive their psychological needs to be actively thwarted by pressuring teaching
9 environments. The present findings revealed strong correlations between job pressure and the
10 need thwarting variables (*Mdn r* = .56) as well as between the need thwarting variables and
11 burnout (*Mdn r* = .57). In line with previous SDT-based research (Author et al., 2011b), these
12 findings suggest that a direct measurement of need thwarting can explain a large amount of the
13 variance in negative outcomes such as burnout ($R^2 = .57$). Moreover, the perceived thwarting of
14 each basic need played a separate and significant role in mediating the relationship between job
15 pressure and burnout. In line with previous research which has identified a lack of control as a
16 strong predictor of job-related burnout (Skaalvik & Skaalvik, 2009), the thwarting of the need for
17 autonomy emerged as the strongest mediator in this relationship. These findings provide further
18 empirical support for the role of need thwarting in SDT's theoretical account of the darker sides
19 of human existence and should allow researchers to better understand psychophysiological
20 symptoms of chronic stress amongst teachers and other employees working in social professions
21 (Maslach et al., 2001).

22 In contrast, only competence need thwarting mediated the relationship between job
23 pressure and somatic complaints, although the thwarting of all three needs were hypothesized to
24 contribute to the manifestation of ill-being. The fact that feelings of inadequacy and

1 incompetence strongly predicted the somatic symptoms associated with stress and anxiety is not
2 surprising. If teachers are repeatedly confronted with performance evaluations which are
3 contingent on student performance or if they are questioned about their teaching methods, one
4 would expect the resultant ego threat and psychosocial stress to lead to physiological responses
5 associated with the cardiovascular and gastrointestinal systems (Brosschot, Gerin & Thayer,
6 2006; Danhof-Pont et al., 2011). Despite the lack of mediation effects for autonomy and
7 relatedness, both of these variables exhibited significant and moderate sized correlations with
8 physical complaints.

9 **4.1 Applied Implications**

10 The current findings highlighted the deleterious role of various sources of perceived job pressure
11 which have been previously identified as relevant to physical education teachers (Taylor &
12 Ntoumanis, 2007). In contrast to some literature which indicates that pressure can be a positive
13 and motivating factor and is often essential in a job (e.g., Andrews & Farris, 1972), our findings
14 suggest that job pressures are often experienced by teachers as detrimental to their psychological
15 needs and health. Job characteristics, such as excessive workload and time pressure, have been
16 consistently related to burnout (Burke & Greenglass, 1995; Kokkinos, 2007). In addition, the
17 current findings extend the list of such pressures to include pressures from school authorities and
18 colleagues to conform to certain teaching methods as well as the constant evaluation of teachers'
19 effectiveness based on student performance. These sources of stress may be particularly
20 problematic among physical education teachers due to the fact that the subject is often
21 undervalued (Saenz-Lopez et al., 2011). This negative attitude towards the subject can cause
22 school management and colleagues to engage in behaviors, deliberately or otherwise, that
23 actively thwart physical education teachers' psychological needs. For example, colleagues that
24 are actively dismissive of the subject and demeaning towards those that teach it could induce

1 feelings of rejection and isolation. Furthermore, a school principal may not be very attentive to
2 the work carried out by physical education teachers and this may lead to a lack of need
3 satisfaction, however management practices which directly undervalue and belittle the
4 contributions made by particular members of staff are likely to actively undermine psychological
5 needs and elicit malfunctioning and ill-health among those individuals subjected to them. This
6 greater insight into the social psychological mechanisms that underpin indices of maladaptive
7 and compromised functioning is important for the effective implementation of interventions that
8 support teachers' health and well-being. Identifying and tackling work-related stressors should
9 help to reduce perceptions of coercion, ineffectiveness, and isolation or rejection, and thus
10 contribute to a decrease in teacher ill-being.

11 **4.2 Limitations and Future Directions**

12 Cross-sectional designs do not allow for an examination of reciprocal effects between variables.
13 Future research would do well to explore the manifestation of burnout symptoms and physical
14 ill-health from a longitudinal perspective. In addition, many researchers view burnout as a
15 process (Burke & Richardsen, 2000); it may be that the thwarting of each need plays a
16 particularly important role during different stages of the burnout syndrome. According to
17 Cherniss (1980), the process shows three stages, the first of which is characterized by an
18 imbalance between the demands of the job and the individual's resources to meet these demands.
19 The thwarting of the needs for autonomy and competence are most likely to be associated with
20 the demands placed on the employee and their perceived inability to deal with these pressures at
21 the initial stage. The second stage is characterized by an immediate short-lived emotional
22 response to the ill-balanced situation, in which anxiety, stress and subsequent fatigue and
23 exhaustion manifest. Again, feeling incapable may be associated with anxiety, stress and
24 exhaustion. In the third stage of the burnout process a number of behavioural and attitudinal

1 changes occur, such as withdrawal from colleagues and students, and also from the job in general
2 (e.g., Taris, Le Blanc, Schaufeli & Schreurs, 2005). Thus the thwarting of the need for
3 relatedness is likely to play a key role during this final stage. Examining the role of each
4 psychological need during the manifestation of teacher burnout over time may, therefore, provide
5 a profitable avenue for future research and help inform stage-appropriate interventions.
6 Moreover, the current sample was limited to Spanish physical education teachers who may be
7 particularly at risk due, in part, to the low status frequently afforded to the subject (Saenz-Lopez
8 et al., 2011). It is, therefore, vital that future research also examines the relations between job
9 pressure, psychological need thwarting, and ill-being among teachers from a range of other
10 disciplines and cultures.

11 In sum, the study supports previous SDT-based research which has recommended
12 incorporating direct assessments of need thwarting and contributes to a better understanding of
13 how and why job pressure predicts burnout and associated somatic symptoms. The concept of
14 need thwarting might be a useful frame of reference through which pressuring educational
15 contexts and management policies can be adjusted to reduce perceptions of coercion,
16 incompetence and rejection and, therefore, reduce teacher ill-being.

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Table 1. *Descriptive Statistics, Internal Reliabilities, and Pearson Correlations for Variables*

Variable	Range	<i>M</i>	<i>SD</i>	α	1	2	3	4	5
1. Job pressure	1 - 7	3.20	0.79	.80					
2. Autonomy	1 - 7	1.89	1.24	.90	.67*				
3. Competence	1 - 7	2.30	1.38	.85	.52*	.60*			
4. Relatedness	1 - 7	1.82	1.10	.82	.49*	.62*	.58*		
5. Burnout	0 - 6	2.56	0.98	.89	.47*	.61*	.58*	.53*	
7. Somatic complaints	1 - 5	1.40	0.66	.87	.28*	.40*	.46*	.37*	.48*

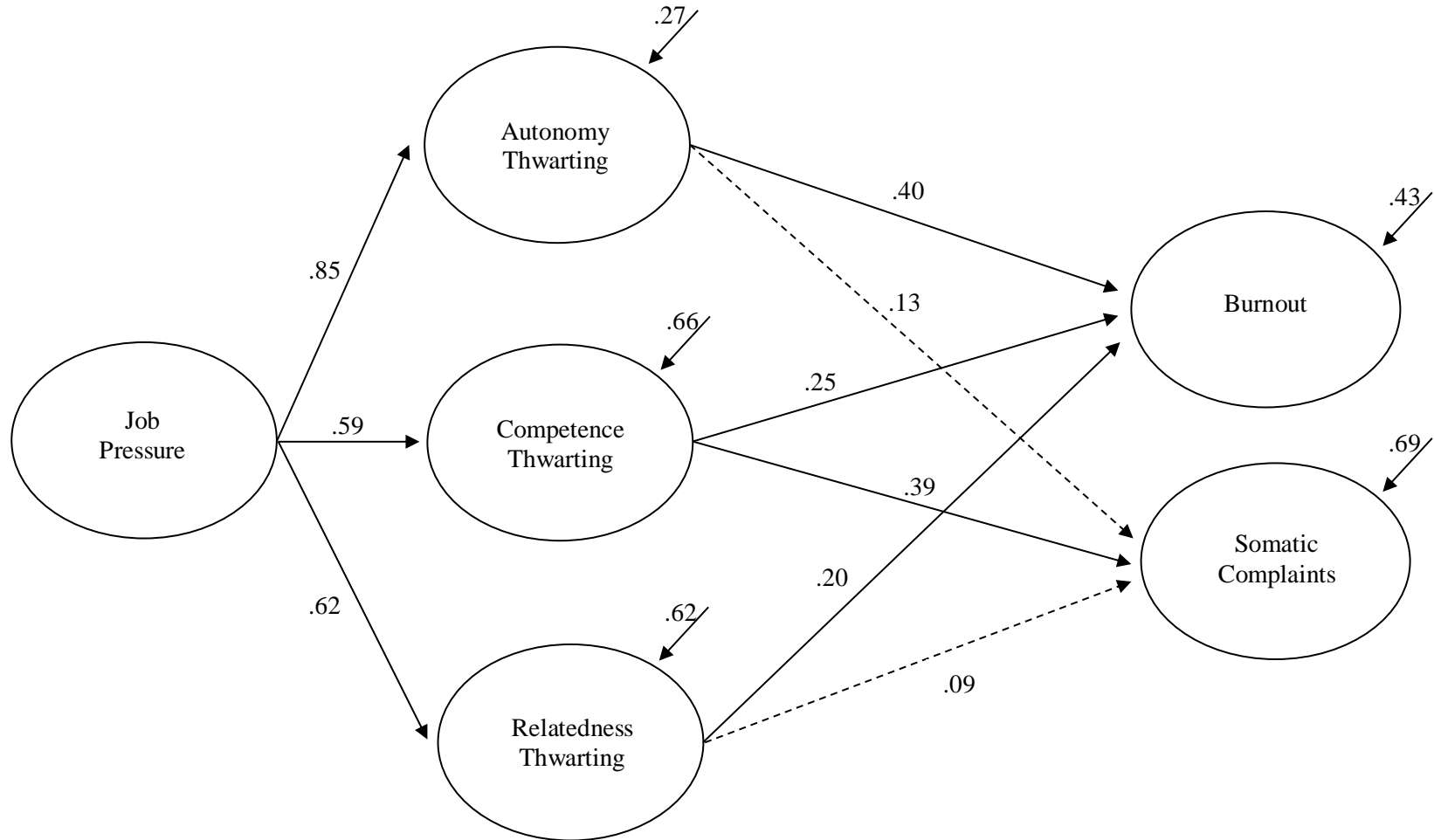
* $p < 0.01$.

Table 2. *Indirect Effects of Job Pressure on Burnout and Somatic Complaints via Psychological Need Thwarting*

Independent Variable	Criterion Variable	Total Indirect Effect (95% CI)	Specific Indirect Effect		
			Autonomy (95% CI)	Competence (95% CI)	Relatedness (95% CI)
Job pressure	Burnout	.61* (.53 to .70)	.34* (.19 to .50)	.15* (.04 to .25)	.12* (.01 to .24)
	Somatic complaints	.40* (.27 to .53)	.11 (-.09 to .32)	.23* (.11 to .35)	.06 (-.09 to .21)

Note: * $p < 0.05$. Standardized beta coefficients are presented with biased corrected 95% confidence intervals.

Figure 1. Latent Variable Modeling Predicting Burnout and Somatic Complaints amongst PE Teachers.



Note: Standardized path coefficients and residuals are presented. Dotted lines represent non-significant parameters. Item indicators are not presented for presentation simplicity purposes. Correlations between disturbance terms were as follows: Autonomy–Competence = .37, Autonomy–Relatedness = .41, Competence–Relatedness = .44, Burnout–Somatic Complaints = .33.