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Job Pressure and Ill-Health in Physical Education Teachers:

The Mediating Role of Psychological Need Thwarting
Abstract

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

Keywords: self-determination theory, teachers, job pressure, psychological needs, burnout, ill-health
Job Pressure and Ill-Health in Physical Education Teachers: The Mediating Role of Psychological Need Thwarting

1. Introduction

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

Surprisingly, empirical studies which explore the processes underlying the relationships between job demands and ill-health are relatively scarce (Van den Broeck, Vansteenkiste, De Witte & Lens, 2008). Guglielmi and Tatrow (1998) suggested that there is a need for research to move away from simplistic investigations of bivariate stress-illness relationships and examine the role of potential mediators which may explain causal pathways between job-related stress and ill-health. In line with these recommendations, the present study examines whether the thwarting of basic psychological needs, as defined in self-determination theory (SDT; Deci & Ryan, 1985; Ryan & Deci, 2002), mediates the relationship between perceived job pressure and
ill-health in physical education teachers. Before outlining SDT and the concept of psychological need thwarting, however, we first discuss two related forms of ill-health reported to be prevalent amongst teachers.

1.1 Ill-Health in Physical Education Teachers

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

Research has indicated that excessive work-related stress over a prolonged period of time can lead to both mental and physical illness. Burnout, for example, is considered to be the final step of extensive exposure to stress and can be defined as the inability of the employee to
continuously invest the energy needed to meet the demands of his or her job (Maslach et al., 2001). This psychophysiological response to chronic situational stress is characterized by three main components: emotional exhaustion, depersonalization, and reduced personal accomplishment (Maslach, Jackson & Leiter, 1996). Emotional exhaustion refers to the feeling of mental fatigue and the depletion of one’s emotional resources. Depersonalization refers to negative, cynical, or excessively detached responses which are employed to protect the individual from the psychological stress coming from people with whom they interact. Finally, reduced personal accomplishment refers to a decrease in feelings of efficiency and productivity at work (Maslach et al., 2001). Thus, in addition to a marked loss of emotional energy, burnout also implies a negative assessment of others (i.e., depersonalization) and the self (i.e., reduced personal accomplishment).

Numerous studies indicate high prevalence rates of burnout amongst teachers (Kyriacou, 2001), including physical education teachers (Pascual, Monfort & Gonzalez, 2008; Smith & Leng, 2003). For example, Viloria, Paredes, and Paredes’ (2001) findings indicated that 58.6% of the physical education teachers involved in their study reported either intermediate (48.6%) or high (10%) levels of burnout symptoms. Moreover, a review by Martín (2006) suggested that Spanish physical education teachers are similarly affected with 60% having taken extended sick leave at some point during their career. Furthermore, 23.4% of these periods of absence were caused primarily by psychological illness which was accompanied by physical symptoms. Burned-out educators are unable to deal successfully with the emotional stress caused by teaching pressures (Brouwers & Tomic, 2000). This failure to cope can manifest itself in impaired performance and absenteeism, reduced levels of empathy and tolerance towards students, failure to prepare lessons adequately, and a lack of commitment to the teaching
profession (Burke, Greenglass & Schwarzer, 1996). It appears, therefore, that physical education teacher burnout is particularly worthy of research attention.

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

1.2 Self-Determination Theory

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

Research conducted in various life domains, including the workplace (Baard, Deci & Ryan, 2004; Van den Broeck et al., 2008), has established a clear empirical link between
psychological need satisfaction (or lack thereof) and well-being (e.g., Milyavskaya & Koestner 2011; Ntoumanis, 2012; Ryan & Deci, 2000). However, SDT recognizes that beyond psychological growth and well-being, people can display cognitive, affective, and behavioral patterns that represent the non-optimal or darker sides of human existence (Deci & Ryan, 2000). To explain the causes of such diminished functioning, Deci and Ryan proposed that the thwarting of basic psychological needs will lead to non-optimal development and ill-health. Although widely discussed in theoretical overviews (e.g., Deci & Ryan, 2000; Ryan, Deci, Grolnick & La Guardia, 2006), comparatively little research has focused on the direct consequences of psychological need thwarting (Vallerand, Pelletier & Koestner, 2008), primarily due to the way in which the construct has previously be operationalized and assessed.

Initial research by Author and colleagues (Author et al., 2011a; Author et al., 2011b) has indicated that direct assessments of need thwarting, the negative experiential state which occurs when individuals perceive their psychological needs to be actively undermined by others, should be used when ill-being and other maladaptive outcomes are the focus of investigation. This is because need thwarting does not simply reflect the perception that need satisfaction is low, but more so the feeling that psychological needs are being obstructed or actively frustrated within a given context. There is also growing empirical evidence which supports this differentiation (e.g., Stebbings, Taylor, Spray & Ntoumanis, 2012). For instance, Author et al. has revealed that need thwarting predicts athletes’ exhaustion over and above low need satisfaction (Author et al., 2011a) and, compared to low need satisfaction, is more strongly associated with a range of other maladaptive outcomes including depression, negative affect, physical symptoms, and biological indicators of perturbed immunological functioning Author et al., 2011b). Based on Author et al.’s arguments, a recent study by Gillet, Frouquereau, Forest, Brunault and Colombat (2012) utilized a measure of need thwarting and reported conceptually similar results regarding its
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detrimental impact on well-being in company workers. Nonetheless, these authors only considered positive indicators of well-being (i.e., work satisfaction, happiness and self-realization). In line with the conceptualization of well-being endorsed by SDT, it is important to recognize that well-being and ill-being are not antipodal (Diener, Suh, Lucas & Smith, 1999; Ryan & Deci, 2001). As such, the absence of optimal functioning does not necessarily equate to the presence of psychological or physical ill-health and vice versa (Seligman & Csikszentmihayli, 2000). Moreover, both the Van den Broeck et al. (2008) and Gillet et al. (2012) studies considered the three psychological needs as one undifferentiated construct. In line with SDT and the rationale articulated earlier, we suggest that a direct assessment of the thwarting of each need may play an important, and understudied, role in explaining the associations between job pressure and employee ill-health in the education sector.

1.3 The Present Study

In summary, there is some evidence to support the mediating role of psychological needs in the relationship between job characteristics and burnout (Van den Broeck et al., 2008), but such research has conceptual and methodological limitations and has been conducted in non-educational settings. In the present study, we examined the links between job pressure, the thwarting of each of the three psychological needs, and indicators of psychological and physical illness in a sample of physical education teachers. It was hypothesized that job pressure would be positively and significantly associated with perceptions of thwarting of all three needs which, in turn, would positively and significantly predict burnout and somatic complaints. In addition, perceptions of need thwarting were expected to significantly mediate the relationships between job pressure and ill-health. Based on past findings (e.g., Author et al., 2011b; Burke & Greenglass, 1995) we expected the three needs to be significantly intercorrelated; the same was the case for burnout and physical complaints. Because this is the first study to examine the
mediating role of teachers’ perceptions of need thwarting, the model tested is unique and adds to the SDT literature as well as research exploring mental and physical ill-health amongst teachers. If we are to develop more adaptive and healthy school environments, we need to better understand the way in which the pressures teachers experience in their role lead to burnout and ill-health.

2. Method

2.1 Procedure and Participants

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

2.2 Measures

Perceived job pressure. To assess four types of work-related pressure experienced by physical education teachers, 16 items (4 per subscale) were translated into Spanish (Pelletier, Séguin-Lévesque & Legault, 2002; Taylor, Ntoumanis & Standage, 2008). The first subscale measured perceived time constraints associated with physical education lessons (e.g., “I am sometimes rushing to complete my lessons”). The second and third subscales evaluated pressures stemming from school authorities (e.g., “My teaching methods are dictated by school policy”) and school colleagues (e.g., “I feel my colleagues question my teaching methods”), respectively. The final subscale assessed the amount of pressure teachers felt from being evaluated based on their students’ performances (e.g., “If the students don’t perform, it looks bad on my record”).
Responses were reported on a 7-point scale ranging from 1 (not at all true) to 7 (very true). Two items were reversed scored so that higher scores represented higher levels of perceived pressure. Taylor et al. and Pelletier et al. reported satisfactory factor loadings and internal consistency coefficients for this measure.

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

**Burnout.** The 16-item version of the Maslach Burnout Inventory - General Survey (MBI-GS; Schaufeli, Leite, Maslach & Jackson, 1996) was used to measure burnout symptoms. The scale contains three subscales measuring exhaustion (five items, e.g., “I feel tired when I get up in the morning and have to face another day on the job”), depersonalization (five items, e.g., “I have become less enthusiastic about my work”) and reduced accomplishment (six items, e.g., “In my opinion, I am good at my job”). Responses were reported on a 7-point scale ranging from 0 (not at all true) to 6 (very true). The reduced accomplishment items were reversed scored so that higher scores represented higher levels of perceived burnout. The validity and reliability of this
scale has been supported in English (Bakker, Demerouti & Schaufeli, 2002) and Spanish (Gil-Monte, 2002).

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

2.3 Data Analysis

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

Mediation analyses of the effect of job pressure on the outcome variables (i.e., burnout and somatic complaints) via the thwarting of each psychological need were performed following the recommendations of MacKinnon, Lockwood, Hoffman, West and Sheets (2002) and Preacher and Hayes (2008). Typically, mediation effects have been tested using the causal step approach proposed by Baron and Kenny (1986). It has been argued, however, that Baron and
Kenny’s causal steps method of testing mediation merely probes, rather than fully explicates, the relationship of an independent variable to a dependent variable via a mediating variable (MacKinnon & Fairchild, 2009). The causal steps approach has also been criticized for having limited applications to multiple mediation models and not being based on a quantification of the very thing it is attempting to test – the intervening effect of the mediating variable(s) (Hayes, 2009). Stimulation research has shown that bootstrapping is a superior method for testing intervening variable effects and should be used instead of the causal step approach (MacKinnon et al., 2002; Hayes, 2009). Bootstrapping can generate a bias-corrected confidence interval (e.g., 95% CI) and, as a consequence, inferences can be made about the significance of the indirect effect in the population sampled if zero is not between the lower and upper bound of the CI.

3. Results

Table 1 presents the descriptive statistics, internal reliability estimates, and intercorrelations for all of the scales used to assess the variables in the study. All scales demonstrated Cronbach’s alpha coefficients of ≥ .80.

All constructs were tested as latent variables in the SEM. To increase the stability of the parameter estimates and improve the ratio of sample size to estimated parameters (Bagozzi & Edwards, 1998), construct specific parcels were created for the autonomy, competence, and relatedness need thwarting subscales. Each parcel represented unweighted average scores created by pairing stronger loading items with weaker loading items from the same scale (Little, Cunningham, Shahar & Widaman, 2002). The four job pressure subscales were used as indicators of a general perceived job pressure latent variable. Similarly, burnout and somatic complaints were modeled as latent factors indexed by the three subscales of the MBI and the two dimensions of the TSI.
The structural model demonstrated a good fit to the data: $\chi^2 (176) = 297.11$, $p < .001$, CFI = .96, TLI = .95, SRMR = .05, RMSEA = .04 (90% CI = 0.04 - 0.05). The standardized path coefficients and residuals are presented in Figure 1. Perceived job pressure significantly predicted teachers’ feelings of autonomy ($\beta = .85, p < .001; R^2 = .73$), competence ($\beta = .59, p < .001; R^2 = .34$), and relatedness ($\beta = .62, p < .001; R^2 = .38$) need thwarting. In turn, the thwarting of each need was positively associated with burnout (autonomy $\beta = .40, p < .001$; competence $\beta = .25, p = .003$; relatedness $\beta = .20, p = .023; R^2 = .57$). However, somatic complaints were predicted by competence need thwarting only ($\beta = .39, p < .001; R^2 = .31$). Pathways between autonomy ($\beta = .13, p = .243$) and relatedness ($\beta = .09, p = .448$) need thwarting and somatic complaints were non-significant. The model fit and the structural paths remained unchanged when gender, age, and years of teaching experience were controlled for. All paths from these two variables on the latent factors of the model were non-significant.

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

4. Discussion

Teaching has been described as a stressful profession characterized by high levels of burnout and physical ill-health (de Heus & Diekstra, 1999; Maslach & Leiter, 1999; 2005). Moreover,
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physical education teaching is frequently associated with additional stress due to the low social status often afforded to the subject, inadequate facilities, and the difficulties involved in keeping control of students outside of the normal classroom environment (Saenz-Lopez et al., 2011; Smith & Leng, 2003). However, little is known about the motivational mechanisms which underlie the observed relationship between job-related stress and the manifestation of ill-being in physical education teachers.

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

In contrast, only competence need thwarting mediated the relationship between job pressure and somatic complaints, although the thwarting of all three needs were hypothesized to contribute to the manifestation of ill-being. The fact that feelings of inadequacy and
incompetence strongly predicted the somatic symptoms associated with stress and anxiety is not surprising. If teachers are repeatedly confronted with performance evaluations which are contingent on student performance or if they are questioned about their teaching methods, one would expect the resultant ego threat and psychosocial stress to lead to physiological responses associated with the cardiovascular and gastrointestinal systems (Brosschot, Gerin & Thayer, 2006; Danhof-Pont et al., 2011). Despite the lack of mediation effects for autonomy and relatedness, both of these variables exhibited significant and moderate sized correlations with physical complaints.

4.1 Applied Implications

The current findings highlighted the deleterious role of various sources of perceived job pressure which have been previously identified as relevant to physical education teachers (Taylor & Ntoumanis, 2007). In contrast to some literature which indicates that pressure can be a positive and motivating factor and is often essential in a job (e.g., Andrews & Farris, 1972), our findings suggest that job pressures are often experienced by teachers as detrimental to their psychological needs and health. Job characteristics, such as excessive workload and time pressure, have been consistently related to burnout (Burke & Greenglass, 1995; Kokkinos, 2007). In addition, the current findings extend the list of such pressures to include pressures from school authorities and colleagues to conform to certain teaching methods as well as the constant evaluation of teachers’ effectiveness based on student performance. These sources of stress may be particularly problematic among physical education teachers due to the fact that the subject is often undervalued (Saenz-Lopez et al., 2011). This negative attitude towards the subject can cause school management and colleagues to engage in behaviors, deliberately or otherwise, that actively thwart physical education teachers’ psychological needs. For example, colleagues that are actively dismissive of the subject and demeaning towards those that teach it could induce
feelings of rejection and isolation. Furthermore, a school principal may not be very attentive to
the work carried out by physical education teachers and this may lead to a lack of need
satisfaction, however management practices which directly undervalue and belittle the
contributions made by particular members of staff are likely to actively undermine psychological
needs and elicit malfunctioning and ill-health among those individuals subjected to them. This
greater insight into the social psychological mechanisms that underpin indices of maladaptive
and compromised functioning is important for the effective implementation of interventions that
support teachers’ health and well-being. Identifying and tackling work-related stressors should
help to reduce perceptions of coercion, ineffectiveness, and isolation or rejection, and thus
contribute to a decrease in teacher ill-being.

4.2 Limitations and Future Directions
Cross-sectional designs do not allow for an examination of reciprocal effects between variables.
Future research would do well to explore the manifestation of burnout symptoms and physical
ill-health from a longitudinal perspective. In addition, many researchers view burnout as a
process (Burke & Richardsen, 2000); it may be that the thwarting of each need plays a
particularly important role during different stages of the burnout syndrome. According to
Cherniss (1980), the process shows three stages, the first of which is characterized by an
imbalance between the demands of the job and the individual’s resources to meet these demands.
The thwarting of the needs for autonomy and competence are most likely to be associated with
the demands placed on the employee and their perceived inability to deal with these pressures at
the initial stage. The second stage is characterized by an immediate short-lived emotional
response to the ill-balanced situation, in which anxiety, stress and subsequent fatigue and
exhaustion manifest. Again, feeling incapable may be associated with anxiety, stress and
exhaustion. In the third stage of the burnout process a number of behavioural and attitudinal
changes occur, such as withdrawal from colleagues and students, and also from the job in general (e.g., Taris, Le Blanc, Schaufeli & Schreurs, 2005). Thus the thwarting of the need for relatedness is likely to play a key role during this final stage. Examining the role of each psychological need during the manifestation of teacher burnout over time may, therefore, provide a profitable avenue for future research and help inform stage-appropriate interventions. Moreover, the current sample was limited to Spanish physical education teachers who may be particularly at risk due, in part, to the low status frequently afforded to the subject (Saenz-Lopez et al., 2011). It is, therefore, vital that future research also examines the relations between job pressure, psychological need thwarting, and ill-being among teachers from a range of other disciplines and cultures.

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


Author et al. (2011b). Details removed for peer review.

Author et al. (2011a). Details removed for peer review.


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C. Arce, & G. Seoane (Eds.), *Book of abstracts of the V European Congress of Methodology* (pp. 180-181). Santiago de Compostela: University of Santiago de Compostela Publications.


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

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<th>Variable</th>
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<th>2</th>
<th>3</th>
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<td>1.89</td>
<td>1.24</td>
<td>.90</td>
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<td>3. Competence</td>
<td>1 - 7</td>
<td>2.30</td>
<td>1.38</td>
<td>.85</td>
<td>.52*</td>
<td>.60*</td>
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<tr>
<td>4. Relatedness</td>
<td>1 - 7</td>
<td>1.82</td>
<td>1.10</td>
<td>.82</td>
<td>.49*</td>
<td>.62*</td>
<td>.58*</td>
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<td>5. Burnout</td>
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<td>0.98</td>
<td>.89</td>
<td>.47*</td>
<td>.61*</td>
<td>.58*</td>
<td>.53*</td>
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<td>7. Somatic complaints</td>
<td>1 - 5</td>
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<td>0.66</td>
<td>.87</td>
<td>.28*</td>
<td>.40*</td>
<td>.46*</td>
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* p < 0.01.
Table 2. *Indirect Effects of Job Pressure on Burnout and Somatic Complaints via Psychological Need Thwarting*

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<td>Relatedness (95% CI)</td>
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<tr>
<td>Job pressure</td>
<td>Burnout</td>
<td>.61* (.53 to .70)</td>
<td>.34* (.19 to .50)</td>
<td>.15* (.04 to .25)</td>
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<tr>
<td></td>
<td>Somatic complaints</td>
<td>.40* (.27 to .53)</td>
<td>.11 (-.09 to .32)</td>
<td>.23* (.11 to .35)</td>
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*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 Com plaints = .33.