Teachers' Psychological Functioning in the Workplace: Exploring the Roles of Contextual Beliefs, Need Satisfaction, and Personal Characteristics

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Abstract

The purpose of the current study was to provide a greater depth of knowledge about teachers' psychological functioning at work—including the contextual, basic psychological need satisfaction, and personal factors relevant to this. We examined the extent to which perceived autonomy support predicts basic psychological need satisfaction and, in turn, whether need satisfaction predicts teachers' perceptions of well-being, motivation, job satisfaction, and organizational commitment. Participants were 485 Canadian school teachers (76% female) who completed an online questionnaire. After confirming the measurement model with factor analysis, the hypothesized model was tested using structural equation modeling. Findings indicated that perceived autonomy support positively predicted need satisfaction, and in turn need satisfaction predicted the work-related perceptions. Of particular importance were the differing roles played by the basic psychological needs in predicting each of the work-related perceptions. Additional analyses revealed that well-being and motivation played key mediating roles in how need satisfaction was associated with job satisfaction (but less so with commitment), and that teachers' personal characteristics played minor moderating roles in influencing how teachers' workplace beliefs and perceptions were associated. Together, the study's findings enable a greater depth of understanding about teachers' psychological functioning at work, which is important for healthy teachers and effective teaching and learning.

Keywords: well-being, motivation, job satisfaction, organizational commitment, self-determination theory

Teachers' Psychological Functioning in the Workplace: Exploring the Roles of Contextual Beliefs, Perceptions of Work, and Personal Characteristics

Teachers' work-related perceptions are central to their psychological functioning in the workplace (e.g., Huppert & So, 2013). Four work-related perceptions linked to teachers' psychological functioning are well-being, motivation, job satisfaction, and organizational commitment. Each has been connected to effective instructional practices in the classroom (e.g., Holzberger, Philipp, & Kunter, 2014; Kunter et al., 2013), teachers' energy and enthusiasm in teaching (e.g., Holzberger et al., 2014; Klassen & Tze, 2014), and students' motivation and achievement (e.g., Collie & Martin, 2015a; McLean & Connor, 2015). However, despite a good deal of research on these perceptions, there remain notable gaps in the evidence base. For example, the role of teachers' contextual beliefs (such as perceived autonomy support) in predicting satisfaction of their basic psychological needs (competence, relatedness, autonomy) has received limited attention in this literature. It is also largely unclear whether and how the basic psychological needs uniquely predict teachers' work-related perceptions. Indeed, given the centrality of well-being and motivation in teachers' experiences at work (e.g., Klusmann et al., 2008), it is also important to understand their roles in predicting job satisfaction and organizational commitment—including their potentially mediating roles in linking need satisfaction with these two perceptions. Alongside these processes, teachers' personal characteristics (e.g., age, teaching experience, and school level) are known to be influential and thus are important to accommodate in research. Attending to each of these research issues, we investigated a set of pathways (Figure 1) with a view to better understanding the factors and processes relevant to teachers' psychological functioning in the workplace. We did so from a self-determination theory (Deci & Ryan, 2012) perspective.

Self-determination Theory and Teachers

SDT is a useful theory for examining the beliefs that individuals have about their environment. It has been used extensively to guide research about students' experiences in the classroom and among employees in business settings (e.g., De Meyer et al., 2014; Gagné, Chemolli, Forest, & Koestner, 2008; Gillet, Gagné, Sauvagére, & Fouquereau, 2013; Haerens, Aelterman, Vansteenkiste, Soenens, & Van Petegem, 2015; Turner, Christensen, Kackar-Cam, Trucano, & Fulmer, 2014). Much less research has utilized SDT to examine teachers' perceptions of work (Collie & Martin, 2015b; Roth, 2014); however, we suggest that research specifically focusing on teachers' perceptions is important given that teaching is distinct from other professions in several ways. Teachers establish connections with their "clients" (i.e., students) that may be longer term and more involved than in other professions (Klassen, Perry, & Frenzel, 2012). In addition, teachers are often isolated from their colleagues for much of the working day (Barnabé & Burns, 1994)—thus, their perceptions of relatedness with colleagues may be quite different from other professions. Moreover, teachers require levels of autonomy that are higher than many other professions given that teaching requires regularly adjusting and adapting practices to best support the needs of students and manage the often changing demands that occur during a school day. Further still, teachers tend to experience higher levels of stress than workers in other professions (Kyriacou, 2011), which may impact their well-being, motivation, job satisfaction, and work commitment differently. Thus, given the unique nature of teachers' work, investigations that attempt to understand teachers' specific experiences are important. SDT provides a relevant framework for guiding such research.

A core idea of SDT is that individual functioning is influenced by the extent to which the context is perceived to be autonomy-supportive—that is, where an authority figure supports

individuals' interests, is respectful of their perspective, and promotes choice (Deci & Ryan, 2008). Autonomy supportive environments lay a foundation for need satisfaction of autonomy (i.e., the perception that we are the origin or source of our behavior and that we have a choice in the types of actions we undertake), competence (i.e., the perception that we are effective in our actions and interactions), and relatedness (i.e., the need to feel connected to important others and the community; Deci & Ryan, 2002, 2012). When teachers perceive their school principal to be autonomy supportive, they are more likely to report satisfaction of autonomy, competence, and relatedness (e.g., Klassen et al., 2012). Moving forward, there is a need for more research examining the significance of perceived autonomy support on teachers' basic psychological need satisfaction to add corroboration to the emerging literature on this topic.

Need Satisfaction and Teachers' Work-related Perceptions

As noted above, emerging research supports the idea that perceived autonomy support is central for teachers' need satisfaction (e.g., Klassen et al., 2012). Prior research has also shown that need satisfaction has a positive bearing on teachers' engagement in, enjoyment of, and happiness at work (Fernet, Austin, Trépanier, & Dussault, 2013; Klassen et al., 2012; Lee & Nie, 2014; Tadić, Bakker, & Oerlemans, 2013), that it may help to reduce feelings of burnout, anger, and anxiety (Fernet et al., 2013; Klassen et al., 2012), and that it lays a foundation for effective teaching and learning (Holzberger et al., 2014; Taylor, Ntoumanis, & Standage, 2008). In addition, researchers have also begun to demonstrate that need satisfaction is important for job satisfaction and commitment (Lee & Nie, 2014).

Thus, prior work provides emerging evidence that need satisfaction is important for adaptive work-related perceptions among teachers. Additional research on this topic is now necessary to further develop this knowledge—such as determining whether need satisfaction is

associated with additional work-related perceptions. Research is also needed so that the unique roles played by the basic psychological needs in predicting teachers' work-related perceptions can be identified. Such knowledge is important for nuancing understanding on the impact of need satisfaction in teachers' functioning at work.

Salient Work-Related Perceptions Among Teachers

Teachers' work-related perceptions are important for adaptive functioning at work—and beyond. In the current study, we examined the four overarching work-related perceptions with an array of relevant constructs. Two types of well-being were investigated: general and teacher well-being. *General well-being* involves an assessment of well-being relating to life as a whole (e.g., Diener et al., 2010; Huppert & So, 2013). In line with recent developments in the literature (e.g., Diener et al., 2010), general well-being is defined as human flourishing—or more precisely as "open, engaged, and healthy functioning" (Ryan & Deci, 2011, p.47). *Teacher well-being* is also known as work-related well-being and refers to individuals' positive evaluations of and healthy functioning in the workplace (Van Horn, Taris, Schaufeli, & Schreurs, 2004). Several types of motivation that fall under the broader constructs of autonomous and controlled motivation were also examined (for a review of these types of motivation see Deci & Ryan, 2012). *Autonomous motivation* involves undertaking behaviors with a sense of self-endorsement, volition, and choice, whereas *controlled motivation* involves undertaking behaviors and activities due to pressures or demands that are perceived to be externally controlled (e.g., punishment or reward, shame or guilt; Deci & Ryan, 2008, 2012). We examined autonomous motivation by

way of identified regulation[1], and controlled motivation by way of introjected and external regulation.

Job satisfaction refers to feelings of contentment in relation to work (Schleicher, Hansen, & Fox, 2011). Among teachers, job satisfaction involves satisfaction with teaching tasks, colleagues and administrators, and accomplishments at work (Caprara, Barbaranelli, Steca, & Malone, 2006). *Organizational commitment* is defined as "identification with, involvement in, and emotional attachment to the organization" (Allen & Meyer, 1996, p. 253). For teachers, organizational commitment can manifest as emotional attachment, a sense of belonging, and pride (Vandenberghe & Bentein, 2009) in relation to the school and its community.

Taken together, we assessed an array of constructs that are aligned with the four overarching work-related perceptions. Although a solid foundation of knowledge about several of these constructs exists (e.g., job satisfaction; Caprara et al., 2006; Klassen, Usher, & Bong, 2010), further research is necessary with respect to the others. Moreover, there is a need for research that examines the unique ways in which teachers' work-related perceptions simultaneously interrelate with one another—which may help guide future research on how teachers' perceptions interact to influence their instructional practices in the classroom.

The Central Roles of Well-being and Motivation

Deepening knowledge of teachers' psychological functioning at work also requires considering different ways in which teachers' work-related perceptions may be associated with one another. Longitudinal research conducted among teachers and employees in various professions indicates that well-being and motivation are significantly associated with subsequent

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[1] Prior work has examined intrinsic regulation as another form of autonomous motivation; however, measurement issues (multicollinearity) were encountered in preliminary analyses with this construct and so it was excluded from the study.

job satisfaction and organizational commitment (e.g., Bowling, Eschleman, & Wang, 2010; Gagné et al., 2008; Wolpin, Burke, & Greenglass, 1991). This likely occurs because well-being and motivation help employees to feel positive about their work and value it—both of which are important for job satisfaction and commitment (e.g., Gagné et al., 2008). Despite this knowledge, researchers have yet to examine whether well-being and motivation play joint or unique roles in teachers' job satisfaction and organizational commitment. A necessity of developing such knowledge involves research that examines the four work-related perceptions simultaneously. Such an approach may provide knowledge relevant to intervention efforts seeking to improve teachers' psychological functioning at work.

Given the central roles played by well-being and motivation in teachers' perceptions of job satisfaction and commitment (e.g., Collie, Shapka, & Perry, 2012), it is also possible that well-being and motivation may be implicated in how need satisfaction is associated with job satisfaction and commitment—that is, as mediators. The extent to which this is the case remains unknown. Thus, there is a need for research that formally investigates the mediating roles of well-being and motivation. This type of examination is important because it will yield knowledge about the centrality of well-being and motivation in teachers' perceptions of work and more in-depth conceptual knowledge of job satisfaction and commitment.

Relevant Teacher Characteristics

Given that teachers' personal characteristics impact how they perceive their work environment (e.g., Wang et al., 2015), it is important that such characteristics are considered in efforts aiming to deepen understanding about teachers' beliefs and perceptions about work. As previous research has shown, teachers' age and experience in the profession influence their psychological functioning at work (e.g., Gloria, Faulk, & Steinhardt, 2013; Lee & Nie, 2014;

Tadić et al., 2013; Wang, Hall, & Rahimi, 2015). For example, general well-being tends to be higher among older and more experienced teachers (Gloria et al., 2013), and job satisfaction is generally greater among more experienced teachers (Lee & Nie, 2014). In addition, working at the elementary level appears to be more conducive to well-being than working at the middle or secondary school level (Wang et al., 2015). Thus, teachers' characteristics can have salient associations with their psychological functioning at work. However, the extent to which and in what ways teachers' personal characteristics moderate how their work-related beliefs and perceptions are associated has remained largely unexamined. Such research is necessary for promoting a more focused understanding of how different groups of teachers perceive their work and may be relevant to intervention—that is, understanding the extent to which personal characteristics should be taken into account when designing and evaluating efforts to improve teachers' psychological functioning at work.

Overview of the Current Study

The purpose of the current study was to provide a greater depth of knowledge about teachers' psychological functioning at work—including the contextual, basic psychological need satisfaction, and personal factors relevant to this. Figure 1 shows the hypothesized model that was examined. The first aim was to corroborate prior research on the extent to which perceived autonomy support is beneficial for teachers' need satisfaction of autonomy, competence, and relatedness with both colleagues and students. The second aim was to identify the unique roles played by the basic psychological needs in predicting the various work-related perceptions. It was anticipated that autonomy, competence, and relatedness need satisfaction would have a positive bearing on general well-being, teacher well-being, identified regulation, job satisfaction, and organizational commitment. In contrast, it was hypothesized that need satisfaction would be

associated with lower levels of introjected and external regulation. The third aim was to identify the unique nature of any associations that well-being and motivation have with job satisfaction and organizational commitment. It was anticipated that teachers reporting high levels of general well-being, teacher well-being, and identified regulation might also experience high levels of job satisfaction and commitment. The reverse was expected for teachers reporting high introjected or external regulation.

The study's fourth aim involved examining whether well-being and motivation play mediating roles in linking need satisfaction with job satisfaction and commitment. In particular, we were interested in determining the extent to which well-being and motivation act as the only means or as significant alternative means by which need satisfaction is associated with job satisfaction and commitment. Given limited prior research in this area, no specific hypotheses were made. Finally, the extent to which associations among teachers' work-related beliefs and perceptions may be moderated by teachers' personal characteristics was investigated. We examined the influence of teachers' age, teaching experience, and the school level in which they work. Once again, no specific hypotheses were made given the limited knowledge in this area. Taking the study's aims together, we seek to lay important groundwork for a more in-depth understanding of teachers' psychological functioning at work—including how this is influenced by contextual, basic psychological need satisfaction, and personal factors.

Methods

Participants and Procedures

Participants were 485 teachers (76% female) from British Columbia, Canada. The average age of participants was 44 ($SD = 11$) years and the average years of teaching experience was 15 ($SD = 10$) years. Most of the participants were born in Canada (89%) and were European

Canadians (93%). The majority of participants taught at the elementary school level (50%), with the remainder teaching at the secondary school level (32%), middle school level (11%) or at more than one level (7%). Most participants were classroom teachers (83%). Other positions included working as support teachers (e.g., resource teachers, special education teachers, or counselors, 12%), teacher librarians (3%), and substitute teachers (2%). Administrators (e.g., principals) and distance educators made up an additional 1% of the sample combined. All participants spent part of their working week teaching and so are classified as teachers in the results. Teachers reported working in urban and suburban (85%), small town (9%), and rural (6%) settings.

Data for this study are part of a broader research project that involved development and validation of the measure used to assess teacher well-being (see Collie, 2014; Collie, Shapka, Perry, & Martin, 2015a) and a person-centered examination of teachers' beliefs about social-emotional learning (Collie, Shapka, Perry, & Martin, 2015b). Data were collected through four district-level teachers' associations. The teachers' associations forwarded details of the study to teachers who then completed an online questionnaire. The nature of recruitment meant that we were unable to calculate response rates. However, we employed several steps that have been used successfully in the past to evaluate the representativeness of the sample (e.g., Collie et al., 2012; Mertler, 2002). Specifically, demographics from the sample were compared with the population of school districts involved in the study. This revealed that the number of females (76% in the sample; 71% in the population), average age (44 years in the sample, 45 in the population), and years of experience (15 years in the sample; 13 years in the population) were very similar across the sample and population (Ministry of Education, 2012). These data make us fairly confident that the sample is demographically representative. In addition, the fact that

teachers' average scores on scales used in the current study are comparable with those from other

studies among similar populations provides further support for the representativeness of the

sample and the findings. For example, using the same scale Klassen and colleagues (2012)

reported an average perceived autonomy support value that is equivalent to 5.08 (*SD* = 1.29),

which is not statistically different (*t* [892] = -.53, *ns*) from our mean of 5.01 (*SD* = 1.46).

Similarities also existed for other constructs (e.g., need satisfaction; Klassen et al., 2012).

Measures

The online questionnaire included measures of perceived autonomy support, need

satisfaction, general well-being, teacher well-being, motivation at work, job satisfaction, and

organizational commitment. Table 1 shows the reliability, mean, standard deviation, and

observed range for each scale. Teachers were also asked to supply demographic information

including sex, age, ethnic background, country of birth, teaching experience, school setting, and

roles and responsibilities, including school level and teaching position (e.g., generalist, special

education).

Perceived autonomy support. Klassen and colleagues' (2012) adapted version of the

Work Climate Questionnaire (WCQ; Baard, Deci & Ryan, 2004) was used to measure

perceptions of principals' autonomy support. The six items (e.g., "I feel understood by my

principal") were measured on a scale from *Strongly Disagree* (1) to *Strongly Agree* (7). Klassen

and colleagues (2012) provided evidence of good factor structure and high internal consistency

for the adapted measure. In the current study, the Cronbach's alpha was .96.

Need satisfaction. The Work-related Basic Need Satisfaction scale (Van den Broeck,

Vansteenkiste, De Witte, Soenens, & Lens, 2010) was used to measure need satisfaction for

autonomy, competence, and relatedness with colleagues. The scale consists of 18 statements

(e.g., "I really master my tasks at my job"). Four additional items from Klassen et al. (2012) were included to measure relatedness with students (e.g., "I am very committed to my students"). All items were measured on a scale from *Strongly Disagree* (1) to *Strongly Agree* (7). This scale has shown sound psychometric properties in previous research (e.g., De Cooman, Stynen, Van den Broeck, Sels, De Witte, 2013; Klassen et al., 2012). Alphas ranging from .84 to .87 were found in the current study for these scales.

Well-being. The Flourishing Scale (Diener et al., 2010) was used to assess general well-being. The eight items (e.g., "I am engaged and interested in my daily activities") were measured on a scale ranging from *Strongly Disagree* (1) to *Strongly Agree* (7). Evidence of validity has been found in previous research for this scale (good factor structure, measurement invariance, adequate reliability; e.g., Bakker & Sanz-Vergel, 2013; Diener et al., 2010). In the current study, the alpha was .83.

To measure teacher well-being, we used the Teacher Well-Being Scale (Collie et al., 2015a). The 16-item measure assesses teacher well-being by asking teachers to rate their well-being in relation to three subscales focusing on different aspects of their teaching work (workload, organizational, and student interaction; e.g., "Marking work," "Support offered by school leadership," "Student motivation"). The three subscales were combined into one higher-order factor of teacher well-being for the main analyses in the current study. Responses were scored on a scale from *Negatively* (1) to *Positively* (7). The psychometric properties of this measure have been supported by examinations demonstrating good factor structure and measurement invariance (see Collie et al., 2015a for further details). In the current study, the alpha was .87 for the scale.

Motivation. The Motivation at Work Scale (Gagné et al., 2010) was used to assess teachers' motivation. Three items each were used to measure identified regulation (e.g., "Because this job fits my personal values"), introjected regulation (e.g., "Because my reputation depends on it"), and external regulation (e.g., "I do this job for the pay check"). Participants rated items on a scale from *Not At All* (1) to *Exactly* (7). Gagné and colleagues (2010) found that this measure had adequate reliability, a good factor structure, and related as expected to hypothesized antecedents and outcomes (Gagné et al., 2010). Further evidence of validity has also been provided in other studies (e.g., De Cooman et al, 2013; Gillet et al., 2013). The alphas in the current study ranged from .74 to .84 for the three subscales.

Job satisfaction. Four items were used to measure job satisfaction (Caprara, Barbaranelli, Borgogni, & Steca, 2003). The items (e.g., "I am satisfied with my job") were measured on a scale ranging from *Never* (1) to *Almost Always* (7). Sound evidence of validity and reliability for the scale has been provided in several previous studies (e.g., Caprara et al., 2003; Klassen et al., 2010) and an adequate alpha was also found in the current study ($\alpha = .90$).

Organizational commitment. An adapted version of the Vandenberghe and Bentein (2009) six-item scale was used to measure organizational commitment. The original scale was adapted by replacing the word *organization* with *school* or *school community*. This measure consists of statements about the workplace (e.g., "I am proud to belong to this school community") and participants responded on a scale from *Strongly Disagree* (1) to *Strongly Agree* (7). Evidence of validity has been found in previous research for the original scale (e.g., adequate reliability, good factor structure; Vandenberghe et al., 2007; Vandenberghe & Bentein, 2009). In the current study, an opportunity arose to examine the psychometric properties of the adapted scale. The Cronbach's alpha was .87 in the current study.

Data Analysis

M*plus* Version 7.3 (L. K. Muthén & B. O. Muthén, 2014) with the robust weighted least squares (WLSMV) estimator was used to conduct the analyses. We used "school of employment" as the cluster variable with the "complex" option in M*plus* (L. K. Muthén & B. O. Muthén, 2014) to account for the hierarchical nature of the data. Whereas in related studies (e.g., Collie et al., 2015a, 2015b), we have opted not to cluster teachers within schools given more intraindividual foci, in the current study clustering was employed given the stronger focus on contextually-related constructs. For this reason, the current study's sample only included teachers who provided details about their school of employment. Root mean square error of approximation (RMSEA) values of less than .06 and comparative fit index (CFI) values of greater than .95 were interpreted as good fit (Hu & Bentler, 1999). RMSEA values of less than .10 and CFI values of greater than .90 were interpreted as adequate fit (Hu & Bentler, 1999). The chi-square model fit test and the normed chi-square model fit test (χ^2/df) are also reported. Missing data for this study ranged from 0-6% for all the variables. Multiple imputation was conducted for missing values on the predictor variables using Bayesian estimation through M*plus*. Methods robust to missing data were utilized to account for missing data on the outcome variables.

Prior to addressing the substantive aims of this study, preliminary analyses were conducted to provide measurement support. This involved running exploratory factor analysis (EFA; using geomin oblique rotation) and confirmatory factor analysis (CFA) with all constructs involved in the study. Each factor analysis was run on a randomly selected half of the dataset. For the first substantive analysis, structural equation modeling (SEM) was conducted on the full dataset to examine the extent to which perceived autonomy support predicted basic

psychological need satisfaction and whether basic psychological need satisfaction predicted the work-related perceptions. This analysis also involved examining associations among the work-related perceptions.

In the second analysis, we examined the extent to which well-being and motivation played the only means (full mediation) or significant alternative means (partial mediation) by which need satisfaction was associated with job satisfaction and organizational commitment. First, an alternative model featuring full mediation via well-being and motivation was run. The "DIFFTEST" option in M*plus* (L. K. Muthén & B. O. Muthén, 2014) was used to run chi-square difference testing and compare the fit of the alternative and hypothesized model. A non-significant difference in fit would support a fully mediated relationship (on grounds of parsimony). Second, indirect effects analysis was conducted on the hypothesized model using bootstrapped standard errors (1000 draws). Significant indirect effects would suggest partial mediation.

The final analysis looked at whether associations among the constructs were moderated by teachers' age (< 44 years vs. ≥ 44 years of age), teaching experience (< 15 years vs. ≥ 15 years of experience) and school level (elementary vs. middle and secondary teachers). To examine whether paths in the hypothesized model differed across these subgroups, we ran SEM for each subgroup and then compared the standardized beta coefficients across the subgroups. Two criteria were adopted for evaluating differences. Paths were considered significantly different across group when (a) the path was significant in one group but not in the other group, and (b) when the two paths were significantly different in strength from one another. Given the number of tested effects, a Bonferroni correction was applied.

Results

Preliminary Analyses

In order to provide measurement support before proceeding with the main analyses, data from all scales were subjected to factor analysis. The EFA necessitated removal of several items (leaving between 3 and 6 items per scale) and yielded good fit, χ^2 (1021) = 1213.10, $p < .001$, χ^2/df = 1.19, RMSEA = .028, and CFI = .99. The CFA also yielded good fit, χ^2 (1641) = 2377.07, $p < .001$, χ^2/df = 1.45, RMSEA = .043, and CFI = .96. Table 1 shows the factor loading means and ranges from the CFA. The latent variable correlations among the factors using the whole dataset are shown in Table 2. Combined, the factor analysis results indicate sound measurement support for proceeding with the SEM.

Associations Among Autonomy Support, Need Satisfaction, and Work-Related Perceptions

The first analysis involved examining the extent to which teachers' perceived autonomy support predicted need satisfaction and, in turn, whether need satisfaction predicted teachers' work-related perceptions. Among the work-related perceptions, we also examined the extent to which well-being and motivation predicted job satisfaction and commitment. In the SEM, non-significant paths starting with the lowest standardized coefficients were deleted for reasons of parsimony one at a time until only significant paths remained in the model. The fit indices suggested good fit of the final model: χ^2 (1667) = 3049.19, $p < .001$, χ^2/df = 1.83, RMSEA = .041, and CFI = .96. Figure 2 shows the model with beta coefficients that were statistically significant at $p < .05$. Standardized beta coefficients for the model are summarized in Table 3 along with the variance explained for the factors. Significant associations are described in turn below.

Our initial aim involved examining the extent to which perceived autonomy support is significant for teachers' need satisfaction. Results indicated that as perceptions of principals' autonomy support increased, so did teachers' sense of autonomy (β = .61, p < .001), competence (β = .15, p < .001), relatedness with colleagues (β = .43, p < .001), and relatedness with students (β = .16, p = .001). Thus, as expected autonomy support was important for need satisfaction.

The second aim of the current study involved determining whether need satisfaction predicts well-being and motivation. The results indicated that when teachers felt a sense of autonomy (β = .19, p < .001), competence (β = .43, p < .001), relatedness with colleagues (β = .23, p < .001), and relatedness with students (β = .17, p < .001), they also reported general well-being. Autonomy (β = .66, p < .001) and relatedness with colleagues (β = .22, p < .001) were also important for teacher well-being. Moving onto the associations between need satisfaction and the different types of motivation, the results showed that as teachers' sense of autonomy (β = .32, p < .001), competence (β = .13, p = .01), and relatedness with students (β = .31, p < .001) increased, so did their identified regulation. In addition, when teachers felt a sense of relatedness with students, they tended to report lower external regulation (β = -.36, p < .001). Contrary to expectations, none of the basic psychological needs were significantly related to introjected regulation.

The extent to which need satisfaction, well-being, and motivation have a bearing on job satisfaction and organizational commitment was examined next. The results indicated that as teachers' competence (β = .37, p < .001), teacher well-being (β = .45, p < .001), and identified regulation increased (β = .26, p < .001), so did their satisfaction with work. In contrast, when teachers were externally regulated in their motivation they tended to report lower job satisfaction (β = -.12, p < .001). Turning to organizational commitment, the results showed that autonomy (β

= .13, p = .004), relatedness with colleagues (β = .50, p < .001), relatedness with students (β = .22, p < .001), and identified regulation (β = .21, p < .001) positively predicted organizational commitment.

Summary of findings from the first analysis. The results of the first analysis speak to our research aims by indicating that perceived autonomy support was important for teachers' beliefs about need satisfaction, that need satisfaction was associated in various ways with the work-related perceptions, and that well-being and motivation played significant roles in predicting job satisfaction and commitment. With respect to the basic psychological needs, autonomy and relatedness with students played similarly strong roles in predicting identified regulation, whereas relatedness with students was the only significant (negative) predictor of external regulation. Competence was the strongest predictor of general well-being, autonomy was the strongest predictor of teacher well-being, and relatedness with colleagues was the strongest predictor of commitment. It is noteworthy that teacher well-being (rather than any of the basic psychological needs) was the strongest predictor of job satisfaction. With respect to other associations among the work-related perceptions, identified regulation was positively associated with job satisfaction and commitment.

Examining Well-being and Motivation as Mediators

In order to examine the potential mediating roles of well-being and motivation, an alternative model was tested where the two constructs were positioned as the only means by which the basic psychological needs were associated with job satisfaction and commitment. By comparing the chi-square test results from this alternative model (χ^2 [1671] = 3565.92, p < .001, χ^2/df = 2.13, RMSEA = .048, and CFI = .95) with our hypothesized model (χ^2 [1667] = 3049.19, p < .001, χ^2/df = 1.83, RMSEA = .041, and CFI = .96), it was determined that the hypothesized

model provided a better fit to the data: $\chi^2 (4) = 309.61$, $p < .001$. The RMSEA and CFI values also supported this conclusion. Of central relevance to our research aims, this suggests that well-being and motivation do not fully mediate the association that need satisfaction has with job satisfaction and commitment.

The extent to which well-being and motivation may be partial mediators was examined next by testing indirect effects in the hypothesized model. This revealed significant effects from several of the basic psychological needs to job satisfaction via teacher well-being (autonomy $\rightarrow$ teacher well-being $\rightarrow$ job satisfaction, $\beta = .27$, $p < .001$; relatedness with colleagues $\rightarrow$ teacher well-being $\rightarrow$ job satisfaction, $\beta = .10$, $p = .001$), as well as via identified regulation (autonomy $\rightarrow$ identified regulation $\rightarrow$ job satisfaction, $\beta = . 09$, $p < .001$; competence $\rightarrow$ identified regulation $\rightarrow$ job satisfaction, $\beta = .03$, $p = .046$; relatedness with students $\rightarrow$ identified regulation $\rightarrow$ job satisfaction, $\beta = .06$, $p = .003$). Moreover, significant indirect effects were observed from several of the basic psychological needs to commitment via identified regulation (autonomy $\rightarrow$ identified regulation $\rightarrow$ commitment , $\beta = .07$, $p = .001$; relatedness with students $\rightarrow$ identified regulation $\rightarrow$ commitment, $\beta = .05$, $p = .002$), but not via teacher well-being. Together, these results indicate that although teacher well-being and identified regulation do not fully mediate the associations that need satisfaction has with job satisfaction and commitment, they do act as partial mediators. Of note, teacher well-being and identified regulation appeared to be particularly important mediators for job satisfaction.

Investigating the Moderating Roles of Teachers' Personal Characteristics

In the final analysis, we sought to understand whether associations among constructs in the hypothesized model were moderated by age, teaching experience, and school level. For age, adequate fit was yielded for the models involving teachers aged less than 44 years (χ^2 [1648] =

2194.45, $p < .001$, $\chi^2/df = 1.33$, RMSEA = .036, and CFI = .97) and 44 years or older (χ^2 [1648]

= 2561.51, $p < .001$, $\chi^2/df = 1.55$, RMSEA = .045, and CFI = .95). This suggests that the models

appropriately described associations among the constructs for the younger and older teachers.

Using the two criteria noted in Methods, only two significant differences were evident across the

two models. Competence negatively predicted teacher well-being among the younger teachers (β

= -.20, $p < .01$), but not among the older teachers ($\beta = .01$, *ns*). Relatedness with students

positively predicted teacher well-being among the younger teachers ($\beta = .32$, $p < .001$), but not

among the older teachers ($\beta = -.11$, *ns*). These two significant effects suggest minor differences

(given the potential for 38 significant effects) in how the constructs were associated in the two

models.

Adequate fit was also found for the models involving less experienced teachers (< 15

years of experience; χ^2 [1648] = 2296.84, $p < .001$, $\chi^2/df = 1.40$, RMSEA = .040, and CFI = .96)

and more experienced teachers ($\geq$ 15 years of experience; χ^2 [1648] = 2444.94, $p < .001$, $\chi^2/df =$

1.48, RMSEA = .044, and CFI = .96). Beta coefficient comparisons revealed three significant

differences. Relatedness with students negatively predicted external regulation among more

experienced teachers ($\beta = -.44\ p < .001$), but not among less experienced teachers ($\beta = -.13$, *ns*).

Relatedness with students positively predicted teacher well-being among less experienced

teachers ($\beta = .\ 29$, $p < .001$), but not among more experienced teachers ($\beta = -.04$, *ns*). Moreover,

general well-being predicted job satisfaction among more experienced teachers ($\beta = .\ 32$, $p <$

.001), but not among less experienced teachers ($\beta = .07$, *ns*). Once again, these findings suggest

that the hypothesized model is largely an appropriate representation of how teachers' perceptions

of work were interrelated with only minor differences across the two groups of teachers.

Finally, adequate fit was found for the models involving elementary teachers (χ^2 [1648] = 2269.62, $p < .001$, χ^2/df = 1.38, RMSEA = .037, and CFI = .97) and middle/secondary teachers (χ^2 [1648] = 2268.04, $p < .001$, χ^2/df = 1.70, RMSEA = .042, and CFI = .95). In terms of significant differences, perceived autonomy support predicted a sense of relatedness with students among elementary teachers ($\beta = .37$, $p < .001$), but not among middle/secondary teachers ($\beta = .09$, *ns*). Relatedness with colleagues negatively predicted external regulation among middle/secondary teachers ($\beta = -.19$, $p = .04$), but not among elementary teachers ($\beta = .06$, *ns*). Finally, relatedness with students was positively associated with teacher well-being among elementary teachers ($\beta = .27$, $p < .001$), but not among middle/secondary teachers ($\beta = .01$, *ns*). Once again, relatively minor differences were evident across the two subgroups. Taking the results altogether, however, it is noteworthy that when differences did occur, these often centered on relatedness with students.

Discussion

The findings of the current study provide knowledge that helps to extend understanding of teachers' psychological functioning at work. When teachers believe that their work environment is autonomy supportive, they are more likely to feel that their basic psychological needs are being met. In turn, the basic psychological needs lay differing foundations for teachers' adaptive work-related perceptions. The findings also indicated that well-being and motivation were important mediators in the relationship between need satisfaction and job satisfaction, but less important between need satisfaction and commitment. Furthermore, teachers' personal characteristics played relatively minor roles in determining how teachers' beliefs and perceptions were associated. Together, the study's findings yield knowledge that is conducive to deepening

understanding of teachers' psychological functioning at work and the roles of teachers' contextual beliefs, need satisfaction, and personal characteristics in this.

Autonomy Support, Need Satisfaction, and Teachers' Work-Related Perceptions

Teachers' beliefs about autonomy support and need satisfaction played significant roles in the study. As noted above, beliefs about autonomy support were important for teachers' basic psychological need satisfaction, which is a finding that helps to corroborate the emerging research base (e.g., Klassen et al., 2012). In addition, all of the basic psychological needs played important, but varying roles with respect to the work-related perceptions. Autonomy and relatedness with students appeared to have the broadest influence. For autonomy, perhaps this is because when teachers feel their behaviors at work are self-determined, this promotes a sense of ownership over the workload, enables teachers to utilize instructional practices or strategies that they deem suitable or necessary, and helps teachers to feel that they can respond to the regularly changing classroom- or school-level demands in a way that is based upon their own volition—all of which are important for teachers' work-related perceptions (e.g., Collie et al., 2012; Fernet et al., 2013). Turning to relatedness with students, the central role played by this need is not surprising given that teachers spend the bulk of their time with students during the school day and cite students as a major motivation for entering and staying in the profession (e.g., Watt & Richardson, 2007).

Together, these findings suggest that the basic psychological needs matter in different ways for teachers' adaptive psychological functioning at work. Moreover, by examining the constructs simultaneously, we are able to gain understanding of the unique associations among the constructs. In particular, the salience of autonomy and relatedness with students raises important questions about the broader expectations and pressures that are placed upon teachers

and potential unintended consequences of these. For instance, there is a need to examine whether the recent focus on accountability in schools may undermine teachers' perceptions of autonomy and relatedness—given that standardized testing often means that teachers are given (or perceive they have) less control over what and how they teach, and given that a focus on testing make take away time from relationship building. Such research will help to further advance knowledge of teachers' need satisfaction and may inform understanding of the practical ramifications of differing levels of need satisfaction among teachers.

The Central Roles of Teacher Well-being and Identified Regulation

The results indicated that teacher well-being and identified regulation played significant indirect means by which need satisfaction was associated with job satisfaction. Indeed, competence was the only need directly associated with job satisfaction. Significant associations from the other basic psychological needs occurred indirectly via teacher well-being or identified regulation. Of note, the association from autonomy to job satisfaction via teacher well-being was by far the strongest indirect relationship indicating that an accompanying sense of work-related well-being may be particularly important for enabling teachers who are high in autonomy to experience job satisfaction. Turning to commitment, autonomy, relatedness with colleagues, and relatedness with students were directly associated with commitment. Moreover, any significant indirect relationships (autonomy and relatedness with students predicted commitment via identified regulation) occurred in the presence of direct relationships between the needs and commitment. Thus, in contrast to job satisfaction, identified regulation played a less substantial mediational role between need satisfaction and commitment, and well-being did not play a mediating role at all.

Taken together, the findings indicate that need satisfaction is directly associated with commitment, whereas it appears to be implicated in teachers' job satisfaction largely via well-being and motivation. A novel contribution of this finding is that it hints that for teachers to experience job satisfaction it may be important that need satisfaction is accompanied by well-being and motivation. Perhaps this is because it is well-being and motivation—alongside, but in addition to need satisfaction—that help work to be a satisfying experience. Another significant contribution is the suggestion of an alignment involving beliefs and perceptions concerning the working environment (viz. need satisfaction and commitment) and a different alignment involving beliefs and perceptions concerning the work itself (viz. teacher well-being, identified regulation, and job satisfaction). Thus, there may be value in examining teachers' perceptions and beliefs along these lines in future research (e.g., see Collie & Martin, 2015a).

Differences Across Age, Teaching Experience, and School Level

Although prior research has shown that teachers' personal characteristics are associated with their beliefs and perceptions about work (e.g., Wang et al., 2015), little is known about whether these characteristics influence how teachers' beliefs and perceptions are interrelated. The findings of the current study yield knowledge that is relevant to this. In particular, the findings indicated that age, teaching experience, and school level played relatively minor roles in how the constructs were associated. It is important to note, however, that when differences occurred relatedness with students was the construct most often implicated in these. Perhaps this is because teachers may interact with students differently as they age (e.g., perhaps due to a widening "generational gap") or because teachers with more experience may move into leadership roles as they gain experience where their focus or time with students may change. Similarly, systematic differences at the elementary and middle/secondary levels may be

implicated in the findings—for example, elementary teachers often work with one group of students, whereas middle/secondary teachers may work with several different classes of students.

An important implication of the differences across groups with respect to relatedness with students is that researchers may want to consider the influence of teachers' personal characteristics when examining this basic psychological need in future research to ensure that findings are representative of different groups of teachers. In addition, given the increasing interest in interventions designed to improve teachers' work-related perceptions such as well-being (e.g., Roeser et al., 2013; Sharrocks, 2014), an important area of future research is to examine whether such interventions are also broadly applicable across different groups of teachers. There is also a need for research that examines other characteristics such as gender or teaching position to see if they play more substantial moderating roles in how teachers' beliefs and perceptions are interrelated.

Associations with Introjected Regulation

A final point that bears mentioning concerns the fact that introjected regulation was not associated with any of the constructs examined in the hypothesized model. This is important given that in prior research teachers' motivation has overwhelmingly been operationalized with other, more adaptive constructs (e.g., self-efficacy for teaching; Collie et al., 2012). As such, prior work has not considered less self-determined types of motivation and their association with teachers' perceptions of well-being, job satisfaction, and commitment. The current findings align with Vansteenkiste and Ryan's (2013) recent theorizing by suggesting that introjected regulation may function quite differently from other operationalizations of motivation and be unrelated with other adaptive beliefs and perceptions about work. Indeed, emerging research among students suggests that need frustration (i.e., pressure, inferiority, and loneliness) may relate more clearly

with introjected regulation than need satisfaction (e.g., Haerens et al., 2015). The findings of the current study are the first to hint that something similar may be occurring among teachers. The extent to which this is the case is an important area of future research.

Limitations and Future Directions

This study has enabled a greater depth of understanding into teachers' psychological functioning at work, which is important for healthy teachers, and effective teaching and learning. In considering and contextualizing its major findings, there are some limitations worth noting and which provide some direction for future research. The first is that we were not able to test causal relationships. Directional relationships included in the hypothesized model were based on theory and prior research. The findings showed that the model was consistent with the data suggesting the plausibility of the directional relationships. Thus, the current study provides information that may be helpful in guiding future longitudinal research. Second, given that we were not able to assess accurate response rates, there is the possibility that participants were unique in some way compared with the population from which they were drawn. Self-selection bias is another relevant concern that may impact the representativeness of the findings. Attempts to capture accurate response rates in future research are important for addressing these limitations. Notwithstanding this, steps were taken in the current study (i.e., comparing sample demographics with population demographics, comparing average scores with other studies) that build confidence that the sample was representative.

As is the case with all self-report research, there is also the risk of single-source bias. Although the nature of the constructs (i.e., based on perceptions) means that self-report is not an inappropriate method, testing the model with several 'objective' measures (e.g., observed autonomy support in the school, physiological symptoms for well-being) is a fruitful avenue of

future research. Notwithstanding this, the findings do offer important evidence on how teachers' beliefs and work-related perceptions interrelate. Moreover, the findings lay important groundwork for further developing knowledge in this area.

Conclusion

The purpose of the current study was to provide a greater depth of knowledge about teachers' psychological functioning at work. The findings provide important corroboration to the emerging literature by confirming that perceived autonomy support is important for teachers' basic psychological need satisfaction. In addition, the findings extend knowledge of the unique roles played by the basic psychological needs in predicting teachers' work-related perceptions. These findings suggest that teachers' beliefs about need satisfaction matter in different ways for teachers' adaptive functioning at work. Important new knowledge about the mediating roles of well-being and motivation was also revealed suggesting that these two constructs are centrally associated with teachers' job satisfaction, but less so with teachers' commitment. Finally, the findings extend understanding of the impact of teachers' characteristics on their work-related beliefs and perceptions by indicating that these play relatively minor roles—except perhaps with respect to relatedness with students. Taken together, the study's findings add to the existing literature by providing a greater depth of understanding about teachers' psychological functioning at work, and how this is influenced by contextual beliefs, need satisfaction, and personal characteristics.

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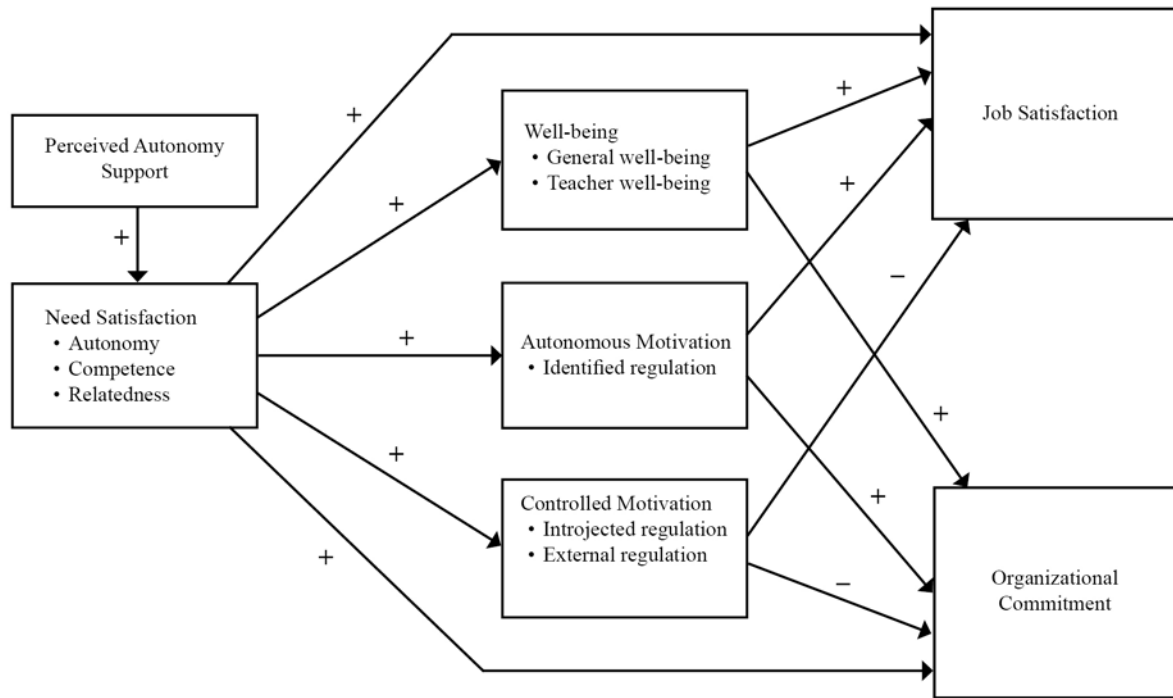
Figure 1. The hypothesized model.

Table 1

Reliability Indexes, Means, and Standard Deviations of All Variables

Variable	α	*M*	*SD*	Observed range	CFA loadings *M* (Range)
Perceived autonomy support	.96	5.01	1.46	1.00-7.00	.92 (.86 - .96)
Autonomy	.84	4.64	1.21	1.00-7.00	.74 (.63 - .88)
Competence	.87	5.71	1.01	1.17-7.00	.83 (.70 - .92)
Relatedness with colleagues	.85	5.15	1.30	1.00-7.00	.79 (.68 - .85)
Relatedness with students	.87	6.53	0.60	2.25-7.00	.91 (.86 - .96)
General well-being	.83	6.06	0.76	1.83-7.00	.78 (.71 - .85)
Teacher well-being	.87	4.03	0.84	1.43–6.57	.74 (.57 - .89)
Identified regulation	.84	5.12	1.16	1.00-7.00	.84 (.78 - .89)
Introjected regulation	.83	2.77	1.45	1.00-7.00	.81 (.74 - .89)
External regulation	.74	2.78	1.21	1.00-7.00	.77 (.66 - .94)
Job satisfaction	.90	5.32	0.90	1.00-7.00	.90 (.89 - .92)
Org. commitment	.87	5.54	1.29	1.33-7.00	.85 (.73 - .92)

Note. These values were calculated only from the items that were retained after the exploratory factor analyses. All constructs were measured on a 1 to 7 scale. Org. commitment = organizational commitment.

Table 2

Correlations of Latent Variables from the Confirmatory Factor Analysis

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.
1. Perceived autonomy support											
2. Autonomy	.55										
3. Competence	.15	.42									
4. Relatedness with colleagues	.38	.48	.25								
5. Relatedness with students	.18	.27	.43	.28							
6. General well-being	.31	.50	.64	.46	.47						
7. Teacher well-being	.57	.64	.34	.45	.26	.49					
8. Identified regulation	.19	.50	.39	.32	.46	.52	.43				
9. Introjected regulation	-.07	-.10	-.06	-.09	.05	-.09	-.08	.19			
10. External regulation	-.01	-.08	-.14	-.11	-.37	-.21	-.01	-.06	.37		
11. Job satisfaction	.35	.64	.64	.44	.42	.65	.64	.60	-.04	-.17	
12. Organizational commitment	.43	.46	.37	.65	.49	.56	.49	.47	.11	-.18	.54

Note. Correlations with an absolute value equal to or greater than $r = .11$ are significant at $p < .05$, those with an absolute value equal to or greater than $r = .12$ are significant at $p < .01$, and those with an absolute value equal to or greater than $r = .15$ are significant at $p = .001$. All other correlations are not significant.
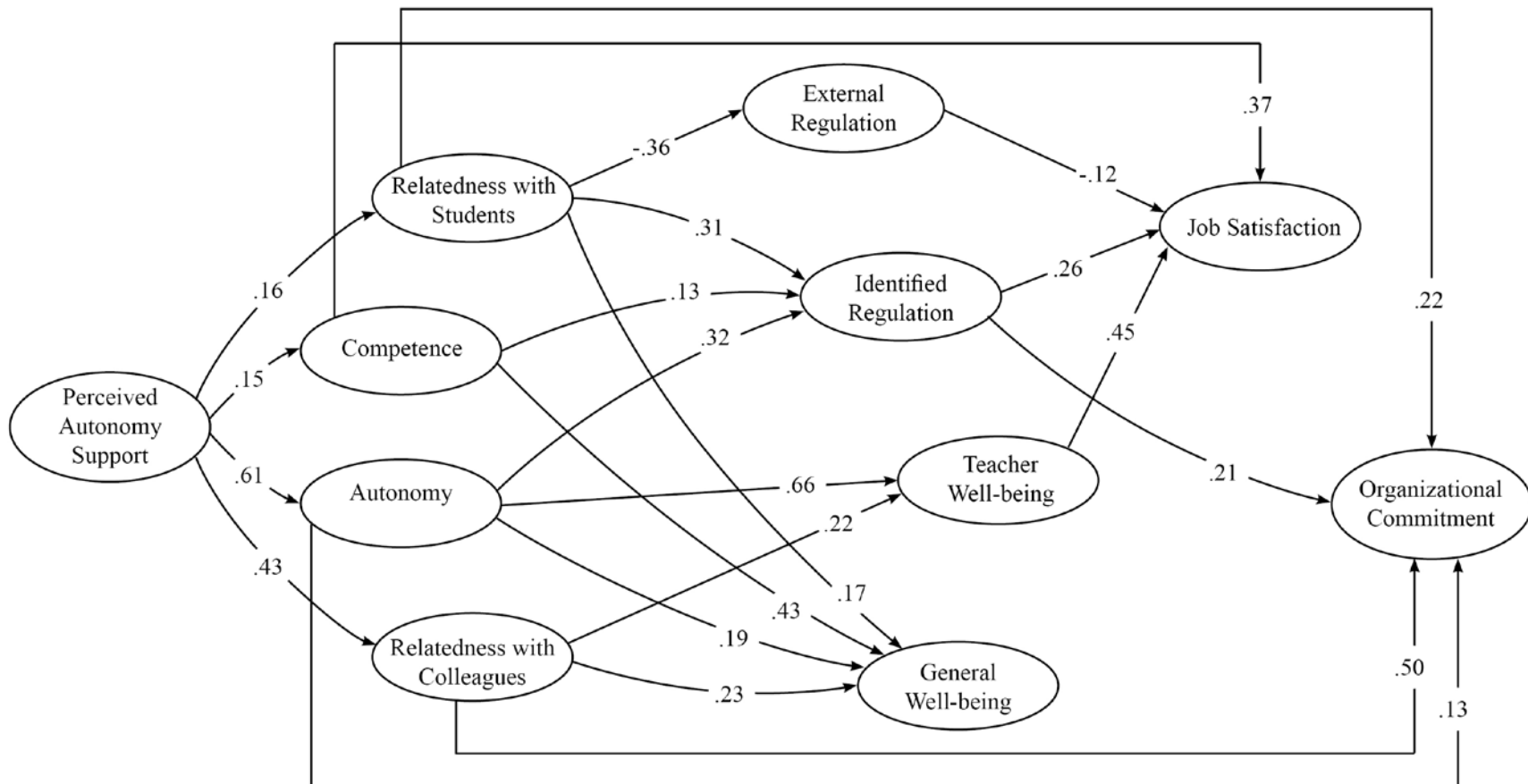
Figure 2. Structural equation model of perceived autonomy support, need satisfaction, well-being, motivation, job satisfaction, and organizational commitment. Only significant paths are shown. All coefficients are significant (*p* < .05). Standardized coefficients are reported.

Table 3

Standardized Beta Coefficients for the Predictor Variables on Each Outcome Variable

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	Explained Variance
1. PAS											
2. Autonomy	.61***										38%
3. Competence	.15***										2%
4. Rel. with colleagues	.43***										19%
5. Rel. with students	.16**										3%
6. General WB		.19***	.43***	.23***	.17***						57%
7. Teacher WB		.66***	—	.22***	—						61%
8. Identified regulation		.32***	.13*	—	.31***						34%
9. Introjected regulation		—	—	—	—						—
10. External regulation		—	—	—	-.36***						13%
11. Job satisfaction		—	.37***	—	—	—	.45**	.26***	—	-.12***	73%
12. Org. commitment		.13**	—	.50***	.22***	—	—	.21***	—	—	62%

Note. Dashes represent paths that were not significant and excluded from the final model. PAS = perceived autonomy support. Rel. with colleagues = relatedness with colleagues. Rel. with students = relatedness with students. General WB = general well-being. Teacher WB = teacher well-being. Org. commitment = organizational commitment.

*p < .05, ** p < .01, *** p < .001.