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MOTIVATION AND SOCIAL PROCESSES

Teachers' Psychological Needs Link Social Pressure with Personal Adjustment and Motivating Teaching Style

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ABSTRACT

Grounded in self-determination theory, this study examined the explanatory role of teachers' need-based experiences in the association between teachers' perceived social pressure (i.e., from the principal, colleagues, and students) and their personal adjustment and motivating teaching style. In total, 482 secondary school teachers (*M* age = 39.9 years) participated in this questionnaire-based study. Teacher need satisfaction was primarily related to adaptive work adjustment (i.e., job satisfaction) and a motivating teaching style (i.e., provided autonomy support and structure), while need frustration was primarily related to maladjustment (i.e., emotional exhaustion) and a demotivating teaching style (i.e., provided control and chaos). Need-based experiences played either a partial or fully mediating role in the relation between different sources of social pressure and all but one outcome (i.e., chaos). Pressure from students yielded the strongest relation to teacher outcomes, suggesting that the need for targeting this source in intervention research and daily school life. Overall, the present findings highlight the unifying role of need-based experiences as a critical mechanism underlying the relation between different sources of pressure and both teachers' personal adjustment and their motivating teaching style.

Due to multiple societal (e.g., globalization), pedagogical (e.g., lifelong learning), economical (e.g., knowledge economy), and technological (e.g., internet) transitions in the past decades, the teaching profession has been ongoingly changing (Eacute & Esteve, 2000; Flores, 2016). While some teachers perceive these transitions as an opportunity for growth and further skill development, others consider this continuous change as threatening and stressful (Fussangel & Dizinger, 2014). In addition to these potential work stressors at the macro-level, pressures may also stem from within the school environment itself, including student misbehavior and a lack of support from the school administrators (Aldrup et al., 2018; Van Droogenbroeck et al., 2014). The various pressures that teachers face may not only relate to teachers' personal adjustment on the job but also to the way they interact with their students, as reflected in their adopted motivating teaching style (Roth, 2014).

Self-determination theory (SDT; Ryan & Deci, 2017; Vansteenkiste et al., 2020) provides a valuable theoretical framework to examine whether and why experienced social pressure relates to teachers' work-related functioning. According to Basic Psychological Need Theory (BPNT), one of SDT's six mini-theories, teachers will thrive most when they have their basic psychological

needs for autonomy (i.e., experiencing a sense of volition and psychological freedom), competence (i.e., experiencing a sense of mastery and effectiveness) and relatedness (i.e., experiencing a sense of connection and mutual care) fulfilled (Vansteenkiste et al., 2019).

Although the nurturing role of need satisfaction has been confirmed in various student populations and among employees (Haerens et al., 2015; Van den Broeck et al., 2016), research in the teacher population is currently relatively scarce (Roth, 2014). Moreover, teachers' need-based experiences may not only relate to their personal adjustment at work (i.e., their sense of exhaustion and job satisfaction) but it may also radiate to the way they interact with their students. That is, the fulfillment and frustration of their basic psychological needs may predict teachers' adoption of either a more motivating (i.e., supportive of students' basic psychological needs) or a more demotivating (i.e., need-thwarting) teaching style (Reeve, 2009), an issue that has received limited attention so far (cf. Korthagen & Evelein, 2016). Based on a recently developed assessment of teachers' motivating and demotivating teaching styles (Aelterman et al., 2019; Vermote et al., 2020), the present study sought to investigate whether teachers' experienced need satisfaction and frustration play an explanatory role in the relation between perceived social pressure and personal adjustment and teachers' motivating style at work.

Teachers' Personal Adjustment: Job Satisfaction and Burnout

Teachers' job satisfaction represents the enjoyment and contentment caused by the appreciation for their job (Locke, 1976). As a positive work outcome, job satisfaction has been extensively studied as teachers' satisfaction with the job predicts their commitment and their intention to leave the profession (Skaalvik & Skaalvik, 2011). Although most research suggests that teachers tend to be satisfied with their job (Skaalvik & Skaalvik, 2015), studies observe large variation in teachers' job satisfaction as well (Collie et al., 2012; Crossman & Harris, 2006). Moreover, teachers report considerable levels of job stress (Collie et al., 2012; Geving, 2007), with teacher burnout being identified as a serious concern (Hakanen et al., 2006). Teacher burnout can be described as a condition characterized by emotional exhaustion (i.e., feeling exhausted and fatigued by work), depersonalization (i.e., feeling cynical or apathetic toward the work or the people at work) and the perception of reduced performance (i.e., feeling less effective in the job; Maslach et al., 1996). Teacher burnout predicts various undesirable outcomes, both for teachers themselves (e.g., absenteeism, reduced enthusiasm, intentions to turn-over; Benita et al., 2019; Hakanen et al., 2006) and the students these teachers interact with (e.g., decreased motivation; Shen et al., 2015).

From the BPNT-perspective, it is argued that need-based experiences play a key role in the development and maintenance of burnout and job (dis)satisfaction (Ryan & Deci, 2017). Direct evidence for this claim comes from studies demonstrating that employees who experience more psychological need satisfaction report less emotional exhaustion, stress and job turnover, while being more satisfied with their job (Van den Broeck et al., 2008). Indeed, a review of Van den Broeck et al. (2016) in the work context concluded that the satisfaction of the need for autonomy, relatedness, and competence was related to less burnout and more job satisfaction. Such findings were also observed among teachers, with teacher need satisfaction being negatively related to distress and burnout symptoms, while being positively related to engagement, satisfaction, and happiness at work (Skaalvik & Skaalvik, 2009, 2011).

Over the past few years, it has become increasingly clear that not only the satisfaction of individuals' needs deserves attention, but also their very frustration. This is because, conceptually, need frustration cannot simply be equated with the absence of need fulfillment as individuals needs get actively thwarted in the case of need frustration (Bartholomew et al., 2011; Vansteenkiste & Ryan, 2013). To illustrate, while teachers may experience low connection with their colleagues (low relatedness satisfaction), they may not necessarily feel excluded and isolated (relatedness frustration). Need frustration then manifests through experiences of pressure and

conflict (autonomy), failure and inadequacy (competence), and loneliness and exclusion (related-ness). The study of need frustration appeared a fruitful enterprise because the predictive power of individuals' need-based experiences was considerably enhanced by additionally mapping individuals' need-frustrating experiences (Vansteenkiste & Ryan, 2013). While need satisfaction appears especially predictive of the so-called bright pathway involving increasing growth, well-being, and adaptation, experiences of need frustration are involved in a separate dark pathway involving maladaptive functioning, ill-being, and even psychopathology (Haerens et al., 2015). Congruent with this dual pathway model, need frustration among unit leaders in health care services related positively to stress at work, which in turn related to emotional exhaustion, turnover intentions, and absenteeism (Olafsen et al., 2017). Although Bartholomew et al. (2014) reported similar evidence for the role of need frustration in the prediction of physical education teachers' symptoms of burn-out, the present study sought to examine this issue more thoroughly in a large heterogeneous sample of secondary school teachers.

Teachers' Interpersonal Functioning: A Motivating Teaching Style

Not only do need-based experiences relate to individuals' personal adjustment, they also affect how individuals interact with others. That is, experiences of need satisfaction provide energy and are vitalizing, thereby allowing individuals to be psychologically available for others and to pursue personal goals (Ryan & Deci, 2017; Van der Kaap-Deeder et al., 2019). In contrast, experiences of need frustration would lower resilience to cope with stressors and setbacks and activate a more self-centered approach through the elicitation of stress (Van der Kaap-Deeder et al., 2019; Weinstein & Ryan, 2011), with teachers for instance adopting a more depersonalizing attitude toward their students (Soenens et al., 2012). Because teachers spend most of their work time with their students, the question is whether need-based experiences also color their interaction patterns with them, for instance, through the adoption of a motivating or demotivating teaching style.

While there is a long tradition in SDT to study teachers' provision of autonomy support, control and structure in relative isolation (Jang et al., 2010), it is only recently that these various teaching styles have been studied in a more integrative fashion. Specifically, a circumplex model has been developed that comprises a broad variety of both motivating (i.e., need-supportive) as well as demotivating (i.e., need-thwarting) practices, with autonomy support and structure being reflective of these motivating practices (Aelterman et al., 2019; Vermote et al., 2020). When being autonomy-supportive, teachers adopt a curious and receptive attitude toward students, thereby making use of both participative teaching practices, such as providing choice and inviting input and attuning teaching practices, such as validating learners' perspective, aligning learning tasks with their interests, and offering meaningful rationales (Aelterman et al., 2019; Patall et al., 2010; Reeve, 2009). A structuring style involves teaching practices that can be more clarifying in nature, such as communicating clear expectations and guidelines, or that are more guiding toward increasing skill-development, such as adjusting instructions to students' skill levels, giving positive informational feedback during task completion, and providing help when needed (Jang et al., 2010). Numerous studies have demonstrated that student perceived autonomy support and structure are highly compatible and both foster students' need satisfaction and are conducive to students' self-regulation, engagement, well-being, and achievement (e.g., Hospel & Galand, 2016; Jang et al., 2010).

Indicative of demotivating practices is teachers' reliance on control and chaos. When controlling, teachers minimize or ignore the opinion of students in favor of prioritizing their own perspective, such that students feel pressured to think, act or feel in teacher-prescribed ways (Reeve, 2009). To exert pressure, teachers can make use of demanding practices, such as the use of forceful and controlling language, threats of punishment or seducing learners with extrinsic rewards. Alternatively, they can also use more intrusive, domineering practices, such as the use of guilt-

induction, shaming, or personal attack (Aelterman et al., 2019). Finally, when being chaotic, teachers fail to successfully adjust their instruction to the developmental pace and growth potential of students and they even actively interfere with students' competence development. A such, a chaotic style involves an awaiting approach that is experienced as too open or even confusing to students, who desire clearer guidance, and an abandoning approach, where teachers fail to intervene when action is called for and have given up on their students (Aelterman et al., 2019; Stroet et al., 2015). While a controlling teaching style, and especially the more domineering practices, have been found to predict student disengagement, amotivation, and decreased self-regulation (Bartholomew et al., 2018; Putwain et al., 2017), a chaotic teaching style, and especially the abandoning approach, relates to lower persistence, poor teacher evaluations, and more student defiance (Aelterman et al., 2019).

In light of the robust effects associated with a motivating and demotivating teaching style (Reeve, 2009), a more recent generation of studies has investigated possible antecedents of teachers' teaching style. These studies (e.g., Reeve, 2009) point toward a variety of contextual pressures and affordances that, respectively, thwart and fulfill teachers' own needs for autonomy, competence, and relatedness, thereby depleting or fueling teachers' energy level which may yield a carry-over effect to their teaching behavior. Herein, we suggest that when teachers' psychological needs are fulfilled, they will more likely adopt an autonomy-supportive and structuring style toward their students (i.e., bright pathway), while experiences of need frustration will be predominantly predictive of adopting a controlling and chaotic teaching style (i.e., dark pathway). Supportive of this reasoning, both cross-sectional (Costa et al., 2019), longitudinal (De Haan et al., 2013) and diary (Mabbe et al., 2018) studies in the parenting domain have shown that parents' need-based experiences are related to an autonomy-supportive or more controlling parenting style. In the educational context, research with physical education teachers indicated that need satisfaction is related to the use of autonomy-supportive practices, such as taking students' perspective and giving a meaningful rationale and more structuring practices, such as providing help and guidance (Taylor et al., 2008). The present study aimed to move beyond past work that focused on a more limited set of teaching dimensions by conducting a comprehensive investigation of how experiences of both need satisfaction and need frustration relate to the motivating and demotivating teaching styles, as identified by Aelterman et al. (2019).

The Role of Different Sources of Social Pressure

Given the pivotal role need-based experiences might play for both teachers' personal adjustment and their interpersonal motivating teaching style, it is imperative to identify factors that could predict teachers' need-based experiences. One line of research stresses the importance of the overall school climate (Collie et al., 2012). More specifically, studies have been conducted on interpersonal work-related factors, including social pressure originating from teachers' daily interactions with their school administrators, colleagues, and students (Van Droogenbroeck et al., 2014).

School principals represent a first source of social pressure, as they can overtly or in more subtle ways dictate how teachers must act both in- and outside the classroom. Some principals demand from their teachers that students meet certain (performance) standards, or invasively observe their teachers to detect and correct mistakes (Bogler, 2001; Reeve, 2009). But principals may also pressure teachers by being uninvolved or even uninterested in the teachers' activities or by only intervening when problems endure such that teachers feel left to solve their problems without support (Bogler, 2001; Skogstad et al., 2007).

Apart from an overly pressuring principal, a lack of support of and opportunities to interact with colleagues constitute examples of a second source of social pressure. Specifically, because the contact and communication with fellow-teachers is minimal during class time (Dorman, 2003), teachers may feel detached from their colleagues (Bakkenes et al., 1999). On the other hand,

some teachers may also feel pressured by their colleagues, for example to adopt a similar teaching style or to use a similar lesson plan (Leroy et al., 2007; Pelletier et al., 2002).

Finally, students may form a source of pressure as well. That is, disengaged or underperforming students may elicit worry and concern among teachers (Geving, 2007). Pressure may even be more directly experienced by teachers when students display disrespectful behavior (Pelletier et al., 2002), for instance when students act in a hostile way (e.g., verbal abuse or property offenses, Espelage et al., 2013) or when they engage in more subtle disruptive behavior, such as being noisy (Otero-López et al., 2009).

Previous research indicates that a pressuring school environment comes with personal costs, such as teacher burnout and job dissatisfaction (Collie et al., 2012; Hakanen et al., 2006). Also, the more teachers feel pressured, the less they make use of an autonomy-supportive teaching style and the more they rely on a controlling teaching style (Van den Berghe et al., 2016). Specifically, with regards to the sources of social pressure, several researchers have shown that their relationship with students relates strongly to both teachers' adjustment and interpersonal teaching style (Pelletier et al., 2002; Van Droogenbroeck et al., 2014). Specifically covert (e.g., name-calling) and overt (e.g., using threats) forms of disruptive behavior were found to be highly prevalent and related to teachers' personal adjustment and teaching (Espelage et al., 2013; Wilson et al., 2011). Despite the growing evidence on the direct effects of social pressure on teachers' functioning, far less attention has been paid to the underlying mechanisms accounting for this relation, an issue investigated herein through the lens of need-based experiences.

The Present Study

Grounded in BPNT, the purpose of the present study was to shed light on the unifying role of teachers' need-based dynamics. This presumed integrative role was pursued through two different aims. The first aim was to examine whether teachers' need-based experiences would relate to both their personal adjustment at work, as indexed by emotional exhaustion and job satisfaction, and their self-reported teaching style, thereby proposing that the same mechanism underlies both the personal and interpersonal functioning of teachers. Based on BPNT (Vansteenkiste & Ryan, 2013) and prior research (Haerens et al., 2015), we expected that teachers who experienced more need satisfaction would report less emotional exhaustion and more job satisfaction, while an opposite pattern was expected for need frustration (Hypothesis 1a). Further, we hypothesized that teachers whose psychological needs were fulfilled would report to adopt a more need-supportive (i.e., autonomy support and structure) and a less need-thwarting (i.e., control and chaos) teaching style (Hypothesis 1 b). Overall, congruent with the dual pathway model, we expected experiences of need satisfaction to be especially involved in predicting adaptive outcomes (i.e., job satisfaction and motivating teaching styles; the bright pathway) and experiences of need frustration to be especially involved in predicting maladaptive outcomes (i.e., emotional exhaustion and demotivating teaching styles; the dark pathway).

The second aim involved examining whether need-based experiences play an explanatory (i.e., mediating) role in the relation between teachers' perceived social pressures and these diverse adaptive teacher outcomes. Specifically, in line with previous research (Aldrup et al., 2018), we first expected that perceived social pressure would be related to more maladaptive (i.e., emotional exhaustion, control and chaos) and less adaptive teacher functioning (i.e. job satisfaction, autonomy support and structure), while being related to more need frustration and less need satisfaction (Hypothesis 2). Then, we hypothesized that need-based experiences would account for the relation between social pressure and teachers' adjustment (Hypothesis 3a) and motivating teaching style (Hypothesis 3 b).

Method

Participants and procedure

Between October 2016 and January 2017, a total of 482 Belgian secondary school teachers were invited to participate in an anonymous online survey[1], of which 96.3% of the teachers were recruited from eight different public schools ($19 < n < 111$ per school) located in smaller cities throughout the Dutch speaking part of the country. The remaining 3.7% taught also at eight other public schools. The majority of the sample was female (61.4%) and had a bachelor's degree (60.2%). The distribution of teachers across the different educational tracks was as follows: academic track (39.7%), technical track (25.9%), vocational track (21.3%), and a combination of the above (13.2%). Participants' mean age was 39.9 years ($SD = 10.2$), ranging from 21 to 65 years. Their teaching experience varied from 0 to 39 years with a mean of 14.7 years ($SD = 9.5$). In terms of the distribution across different grades, 21.8% of the participants taught in the 7th and 8th grade, 13.3% in the 9th and 10th grade and 28.5% in the 11th and 12th grade, and 36.4% of the participants taught in a combination of the above grades. Participants were invited by mail to participate in an online survey, either as part of a lecture about motivating teaching given in that school or as part of a large study on the schools' motivational climate. In both cases, data collection took place prior to providing information about motivating teaching, thereby reducing social desirability bias. Before participating in the online survey, an informed consent was obtained, emphasizing the voluntary and confidential participation to the study. The study was conducted according to the ethical rules presented in the General Ethical Protocol of the Faculty of Psychology and Educational Sciences at Ghent University.

Measures

Need experiences

A slightly adjusted version of the Basic Psychological Need Satisfaction Need Frustration Scale (BPNSNF; Chen et al., 2015) was administered to assess teachers' need satisfaction and need frustration experienced at school. The construct and predictive validity of the scale has been confirmed across different languages and countries (Chen et al., 2015), among different age groups (Van der Kaap-Deeder et al., 2021), and at different levels of generality, that is, at the general, domain-specific (e.g., sports, Haerens et al., 2015) and situational (i.e., when engaging in a specific task, Aelterman et al., 2016) level. The scale was adapted to the teaching context by slightly rephrasing some statements and by adding the stem "at school." For each need (i.e., autonomy, relatedness, competence), four items were used to measure need satisfaction (e.g., "At school, I have confidence that I can do things right"; competence satisfaction) and four items to measure need frustration (e.g., "At school, I feel insecure about my abilities"; competence frustration). Items were rated on a 5-point Likert scale ranging from 1 (totally not true) to 5 (totally true). The overall internal consistency for need satisfaction (12 items, $\alpha = 0.79$) and need frustration (12 items, $\alpha = 0.78$) were adequate.

Emotional exhaustion

A subscale of the Maslach Burnout Inventory – Educators Survey (MBI-ES; Kokkinos, 2006) was used to assess emotional exhaustion. This scale contains nine items (e.g., "The last two to three months, I feel emotionally exhausted at the end of a working day") to be rated on a 5-point Likert scale ranging from 1 (totally not the case) to 5 (totally the case). The scale had an excellent internal consistency ($\alpha = 0.90$).

Job satisfaction

To measure job satisfaction of teachers, the Satisfaction with Life Scale (SLS; Diener et al., 1985) was adapted to the work context. This approach is similar as the one from Ho and Au (2006) who constructed the Teaching Satisfaction Scale to measure satisfaction with teaching specifically. Using five items (α = 0.86, e.g., "I am satisfied with my current job"), teachers were asked to indicate how much they agreed with each of the statements on a 5-point Likert scale ranging from 1 (totally do not agree) to 5 (totally agree).

Teaching style

To assess teachers' teaching style, we made use of the Situations-In-School Questionnaire-Education (SISQ-E), which has recently been developed by Aelterman et al. (2019). This vignette-based self-report questionnaire provides 15 authentic teaching situations, balanced between pro-active (e.g., "You are thinking about classroom rules. So, you …") and reactive situations (e.g., "One or more students need remediation because they repeatedly failed for your subject. You …") and between situations that concern students' codes of conduct (e.g., "A couple of students have been rude and disruptive. To cope, you …") or the taught learning content (e.g., "It is time for students to practice what they have learned. You …"). For each situation (e.g., "The class period begins. You …"), four different responses were provided that depict an autonomy-supportive (e.g., "are interested to know what the students know about the learning topic"), structuring (e.g., "provide a clear, step-by-step schedule and overview for the class period"), controlling (e.g., "insist firmly that students must learn what they are taught. Your duty is to teach, their duty is to learn") or chaotic (e.g., "don't plan too much. Instead, you take things as they come") reaction. On a 7-point Likert scale, ranging from 1 (does not describe me at all) to 7 (does describe me extremely well), teachers were asked to indicate to what extent each of the responses described their own teaching behavior. The original research paper of Aelterman et al. (2019) shows good psychometric properties for the scale, and, in the present sample, good internal consistencies for all teaching styles were observed, varying between 0.81 (i.e., structure) and 0.85 (i.e., control).

Perceived pressure in school

To assess the degree to which teachers experienced pressure from their principal, colleagues, and students, we used the Constraints at Work scale (Pelletier et al., 2002) as a source of inspiration to formulate a more extensive set of items. We distinguish between pressure coming from the principal (six items, e.g., "In this school, the principal does not understand the problems teachers encounter in their work"), from colleagues (six items, e.g., "In this school, there is little under-standing among teachers"), and from students (six items, e.g., "In this school, my students treat me indifferent and unfriendly"). Teachers were asked to indicate to what extent these statements were true since the beginning of the school year, ranging from 1 (totally not true) to 5 (totally true). The internal consistency was acceptable for all subscales, with coefficients of 0.69, 0.70, 0.72 for pressure from the principle, colleagues, and students, respectively.

Results

Preliminary analyses

Descriptive statistics and bivariate correlations among the measured variables were calculated and can be found in Table 1. Subsequently, we ran a multivariate analysis of covariance to examine whether there were significant differences in all assessed teacher outcomes depending on both school-based characteristics, such as educational track and grade, and teachers' personal

Table 1. Descriptives of and correlations between perceived social pressure, need-based experiences and teachers' personal adjustment and motivating teaching style.

	M (SD)	1	2	3	4	5	6	7	8	9	10	11
Perceived social pressure												
1. Pressure principal	2.27 (0.67)	–										
2. Pressure colleagues	2.08 (0.62)	0.36***	–									
3. Pressure students	2.03 (0.57)	0.25***	0.27***	–								
Need-based experiences												
4. Need satisfaction	3.91 (0.45)	−0.24***	−0.28***	−0.36***	–							
5. Need frustration	1.88 (0.49)	0.23***	0.39***	0.28***	−0.61***	–						
Personal adjustment												
6. Emotional exhaustion	2.20 (0.86)	0.33***	0.34***	0.41***	−0.35***	0.49***	–					
7. Job satisfaction	3.82 (0.76)	−0.14**	−0.16**	−0.15**	0.52***	−0.49***	−0.29***	–				
Motivating teaching style												
8. Autonomy support	4.89 (0.73)	−0.12*	−0.05	−0.26***	0.31***	−0.16**	−0.03	0.10	–			
9. Structure	5.53 (0.61)	−0.19***	−0.14**	−0.28***	0.35***	−0.19***	−0.06	0.17**	0.67***	–		
10. Control	3.27 (0.90)	0.15***	0.08	0.31***	−0.15***	0.23***	0.11*	−0.05	−0.32***	−.16**	–	
11. Chaos	2.37 (0.71)	0.20***	0.17**	0.22***	−0.23***	0.24***	0.17**	−0.07	−0.20***	−.38***	.36***	–

*p < 0.05,
**p < 0.01,
***p < 0.001
(two-tailed).

characteristics, such as sex, level of education, and years of teaching experience. Results indicated that there was no significant multivariate effect for teachers' level of education (Wilks's $\lambda = 0.95$, $F(22,670) = 0.84$, $p = 0.68$) and grade (Wilks's $\lambda = 0.91$, $F(33,988) = 0.96$, $p = 0.53$), whereas a significant multivariate effect for years of teaching experience (Wilks's $\lambda = 0.92$, $F(11,335) = 2.54$, $p < 0.01$), teachers' sex (Wilks's $\lambda = 0.85$, $F(11,335) = 5.49$, $p < 0.001$) and educational track (Wilks's $\lambda = 0.82$, $F(33, 988) = 2.12$, $p < 0.001$) was observed. Specifically, univariate tests showed that more experienced teachers perceived more pressure from their colleagues ($b = 0.01$, $F(1,345) = 5.82$, $p < 0.05$) and that they used more autonomy-supportive ($b = 0.02$, $F(1,345) = 15.35$, $p < 0.001$) and structuring ($b = 0.01$, $F(1,345) = 8.74$, $p < 0.01$) teaching practices. With regards to teachers' sex, male teachers experienced more pressure from the principal ($M_{male} = 2.37$, $SD = 0.07$; $M_{female} = 2.15$, $SD = 0.07$; $F(1,345) = 8$, $p < 0.01$) and their colleagues ($M_{male} = 2.21$, $SD = 0.06$; $M_{female} = 2.06$, $SD = 0.06$; $F(1,345) = 4.64$, $p < 0.05$), they used more controlling ($M_{male} = 3.54$, $SD = 0.09$; $M_{female} = 3.18$, $SD = 0.09$; $F(1,345) = 13.34$, $p < 0.001$) and more chaotic teaching practices ($M_{male} = 2.66$, $SD = 0.07$; $M_{female} = 2.26$, $SD = 0.07$; $F(1,345) = 26.59$, $p < 0.001$), while providing less structure compared to their female colleagues ($M_{male} = 5.41$, $SD = 0.06$; $M_{female} = 5.64$, $SD = 0.06$; $F(1,345) = 11.40$, $p < 0.01$). Lastly, significant univariate effects of educational track were observed, with teachers who teach in vocational track reporting to use more autonomy-supportive practices ($M = 5.16$, $SD = 0.10$) compared to teachers in the academic ($M = 4.77$, $SD = 0.08$) and technical track ($M = 4.81$, $SD = 0.09$; $F(3,345) = 4.09$, $p < 0.01$). Controlling teaching practices were more prevalent in teachers in technical ($M = 3.69$, $SD = 0.11$) compared to the other two tracks ($M_{academic} = 3.26$, $SD = 0.10$; $M_{vocational} = 3.33$, $SD = 0.12$; $F(3,345) = 5.50$, $p < 0.01$). Given these results, years of teaching experience, teachers' sex and educational track are controlled for in the main analysis.

Main analyses

For the main analyses, structural equation modeling was performed using Mplus 8.5 (Muthén & Muthén, 1998–2017) with Robust Maximum Likelihood as estimator and the Satorra-Bentler Chi-Square Difference Test for model comparison, given observed non-normality in some of the outcomes. Although the collected data were hierarchical in nature with teachers being nested in schools, multilevel analysis was not performed due to the small number of clusters at Level 2 ($n = 8$ schools) and the relatively limited amount of variance in our study variables situated at the school level (i.e., the intra class correlation coefficients ranged between 0.01 and 0.17). To illustrate, for 9 out of 12 variables these coefficients were below 0.10 and for six variables even below 0.05, making multilevel analyses less appropriate (Preacher et al., 2011). Therefore, we conducted single level structural equation modeling while controlling for school as predictor (even if insignificant). All main study variables were latent factors each represented by three parcels and all teaching styles were modeled as higher order latent factors with two indicators each consisting of three parcels. We relied on the use of item parcels because it provides both psychometric and estimation advantages compared to the use of items (Little et al., 2002, 2013). In line with recommendations, an item-to-construct balance method was used to avoid bias (Little et al., 2002, 2013). Missing data were missing completely at random (MCAR) according to Little's (1988) MCAR test ($\chi^2(199) = 208.13$, $p = 0.31$) and, therefore, the use of the full information maximum likelihood (FIML; Enders, 2001) procedure was appropriate to handle these missing data. Model fit was assessed based on the combined cutoff criteria provided by Hu and Bentler (1999): CFI > 0.90, RMSEA < 0.06 and SRMR < 0.08 and a step-by-step backward deletion approach was used to remove insignificant paths to obtain more parsimonious models (Kline, 2016). The remaining parameters were not affected significantly.

First, the estimated measurement model comprising all study variables approached an acceptable fit: $\chi^2(898) = 1881.45$, CFI = 0.87, RMSEA = 0.05, SRMR = 0.06. However, after adding

three error-correlations between satisfaction and frustration within the separate needs (i.e., autonomy, competence, and relatedness), three error-correlations between parcels of each source of social pressure (i.e., principal, colleagues, students) and four error-correlations between adjacent or opposite facets of teaching styles, the fit of the revised measurement model, $\chi^2(888) = 1497.85$, CFI = 0.92, RMSEA = 0.04, SRMR = 0.06, improved considerably $\Delta\chi^2(10) = 401.60$, $p < 0.001$). These covariance paths were theoretically logical and substantiated and were included as it improves the reliability of the latent construct's scale (Brown, 2015). Factor loadings on the latent factors in this final measurement model were high (ranging from 0.44 to 0.93) and all highly significant ($p < 0.001$).

### Hypothesis 1: The Role of Need-Based Experiences

Focusing on teachers' personal adjustment, in the first two structural models, paths from need satisfaction and need frustration to either emotional exhaustion and job satisfaction (Model 1a) or to the interpersonal teaching styles (i.e., autonomy support, structure, control and chaos; Model 1b) were estimated. Results of Model 1a ($\chi^2(53) = 80.09$, CFI = 0.99, RMSEA = 0.03, SRMR = 0.04, $R^2 = 0.42$ for emotional exhaustion, $R^2 = 0.50$ for job satisfaction) indicated that experienced need satisfaction significantly predicted job satisfaction ($\beta = 0.38$, $p < 0.001$, 95% CI [0.21, 0.55]) but was unrelated to emotional exhaustion ($\beta = -0.02$, $p = 0.82$, 95% CI [−0.22, 0.17]), while need frustration was significantly related to both outcomes (emotional exhaustion, $\beta = 0.60$, $p < 0.001$, 95% CI [0.40, 0.81]; job satisfaction, $\beta = -0.38$, $p < 0.001$, 95% CI [−0.55, −0.21]). Experienced need satisfaction was negatively related to need frustration ($r = -0.68$, $p < 0.001$, 95% CI [−0.78, −0.58]), while the correlation between emotional exhaustion and job satisfaction became insignificant after adding need-based experiences ($r = 0.13$, $p = 0.19$, 95% CI [−0.07, 0.33]).

As for teachers' self-reported teaching styles, results of Model 1b ($\chi^2(484) = 895.22$, CFI = 0.91, RMSEA = 0.04, SRMR = 0.06, $R^2 = 0.17$ for autonomy support, $R^2 = 0.21$ for structure, $R^2 = 0.15$ for control and $R^2 = 0.06$ for chaos) showed that need satisfaction was positively related to both autonomy support ($\beta = 0.45$, $p < 0.001$, 95% CI [0.25, 0.64]) and structure ($\beta = 0.47$, $p < 0.001$, 95% CI [0.25, 0.70]), while being unrelated to control ($\beta = 0.07$, $p = 0.42$, 95% CI [−0.10, 0.24]) and chaos ($\beta = 0.00$, $p = 0.99$, 95% CI [−0.13, 0.14]). An opposite pattern emerged for need frustration, which related positively to control ($\beta = 0.29$, $p < 0.01$, 95% CI [0.11, 0.46]) and chaos ($\beta = 0.22$, $p < 0.05$, 95% CI [0.04, 0.39]), but was unrelated to autonomy support ($\beta = 0.11$, $p = 0.29$, 95% CI [−0.09, 0.30]) and structure ($\beta = 0.09$, $p = 0.41$, 95% CI [−0.13, 0.31]).

Hypothesis 2: The Role of Social Pressure in Explaining Teacher Outcomes

Three models were tested with social pressure as a predictor of teachers' adjustment, self-reported teaching style and need-based experiences (Model 2a–2c). With respect to teachers' personal adjustment, results of the direct effects Model 2a ($\chi^2(87) = 168.28$, CFI = 0.96, RMSEA = 0.05, SRMR = 0.05) showed that perceived social pressure from the principal was not significantly related to job satisfaction. Therefore, this path was removed from the final, more parsimonious model ($\chi^2(88) = 168.63$, CFI = 0.96, RMSEA = 0.05, SRMR = 0.05, $R^2 = 0.34$ for emotional exhaustion, $R^2 = 0.07$ for job satisfaction) that yielded a similar fit ($\Delta\chi^2(1) = 0.35$, $p = 0.55$; ΔCFI = 0). Results indicated that both pressure from the principal and the students was positively related to emotional exhaustion (principal: $\beta = 0.26$, $p < 0.01$, 95% CI [0.06, 0.46]; students: $\beta = 0.37$, $p < 0.001$, 95% CI [0.24, 0.49]) and that both pressure from the colleagues and the students were negatively related to job satisfaction (colleagues: $\beta = -0.16$, $p < 0.05$, 95% CI [−0.30, −0.02]; students: $\beta = -0.16$, $p < 0.05$, 95% CI [−0.29, −0.03]).

With regards to teachers' self-reported teaching style, results of direct effects Model 2b approached an acceptable fit ($\chi^2(546) = 1009.84$, CFI = 0.90, RMSEA = 0.04, SRMR = 0.06). After removing insignificant paths from pressure from colleagues to all teaching styles and from
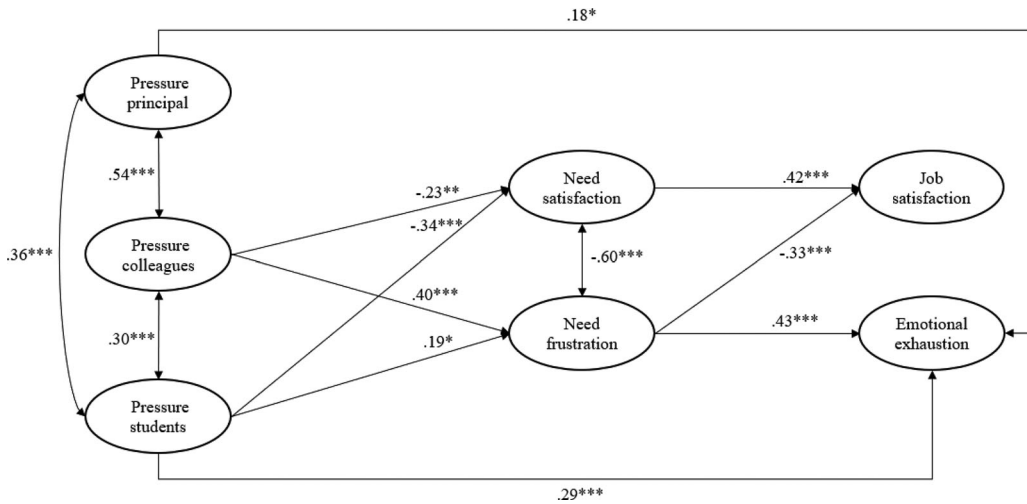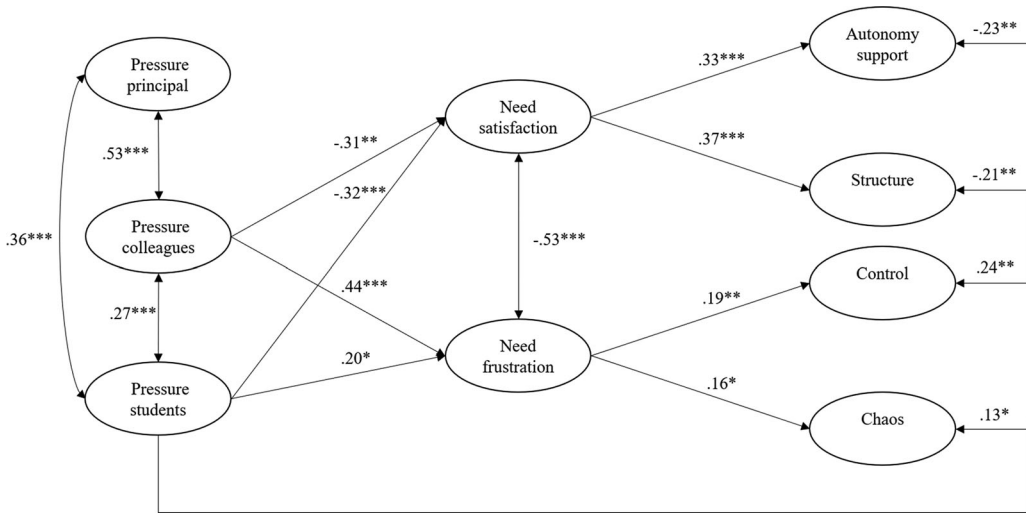
Figure 1. Graphical representation of the mediation model for different sources of social pressure and teachers' personal adjustment. $\chi^2(188) = 405.08$, CFI $=.93$. *$p < 0.05$; **$p < 0.01$; ***$p < 0.001$.

pressure from the principal to all but one (i.e., structure) teaching style, a more parsimonious model was fitted. In addition, the non-significant correlation between teacher control and structure was removed. This final model ($\chi^2(554) = 1015.33$, CFI $= 0.90$, RMSEA $= 0.04$, SRMR $= 0.06$, $R^2 = 0.17$ for autonomy support, $R^2 = 0.22$ for structure, $R^2 = 0.20$ for control and $R^2 = 0.11$ for chaos) yielded a comparable model fit ($\Delta\chi^2 (8) = 5.49$, $p = 0.70$; ΔCFI $= 0$) and revealed significant negative relations between perceived pressure from the students and both autonomy support ($\beta = -0.40$, $p < 0.001$, 95% CI $[-0.52, -0.27]$) and structure ($\beta = -0.35$, $p < 0.001$, 95% CI $[-0.48, -0.22]$), while positive associations were found with control ($\beta = 0.32$, $p < 0.001$, 95% CI $[0.20, 0.45]$) and chaos ($\beta = 0.27$, $p < 0.001$, 95% CI $[0.13, 0.40]$). Perceived pressure from the principal was associated with a less structuring teaching style ($\beta = -0.11$, $p < 0.05$, 95% CI $[-0.22, -0.00]$).

Before examining the mediating role of teachers' need-based experiences, we examined the relation between the distinguished pressures and need satisfaction and frustration in Model 2c. This model approached an adequate fit ($\chi^2(84) = 231.73$, CFI $= 0.91$, RMSEA $= 0.06$, SRMR $= 0.06$). As the results showed that pressure from the principal was not related to need satisfaction nor frustration, these paths were removed resulting in a more parsimonious model ($\chi^2(86) = 231.61$, CFI $= 0.91$, RMSEA $= 0.06$, SRMR $= 0.06$) that yielded a comparable model fit ($\Delta\chi^2 (2) = 0.43$, $p = 0.81$; ΔCFI $= 0$). In this final model, pressure from both the colleagues and the students were related to less need satisfaction (colleagues: $\beta = -0.27$, $p < 0.01$, 95% CI $[-0.46, -0.09]$; students: $\beta = -0.38$, $p < 0.001$, 95% CI $[-0.51, -.024]$) and more experienced need frustration (colleagues: $\beta = 0.43$, $p < 0.001$, 95% CI $[0.24, 0.63]$; students: $\beta = 0.21$, $p < 0.05$, 95% CI $[0.04, 0.38]$).

Hypothesis 3: The Mediating Role of Need-based Experiences

In two mediational models, we tested whether the relation between the different sources of perceived social pressures and teachers' indicators of adjustment and self-reported teaching style were mediated by experiences of need satisfaction and need frustration (Model 3a and 3b) using the Model Indirect procedure (Muthén et al., 2017) using 5000 bootstrap samples. Considering teachers adjustment, a full mediation model (Model 3a) including the different sources of pressure and need-based experiences fitted well with the data ($\chi^2(180) = 396.28$, CFI $= 0.93$, RMSEA $= 0.05$, SRMR $= 0.06$). However, to obtain a more parsimonious model, non-significant paths were removed, of which the results are presented in Figure 1. The fit of this model did not differ from the full model ($\Delta\chi^2 (8) = 9.79$ $p = 0.28$; ΔCFI $= 0$) and was good ($\chi^2(188) = 405.08$, CFI $=$

Figure 2. Graphical representation of the mediation model for different sources of social pressure and teachers' motivating teaching style. $\chi^2(774) = 1402.89$, CFI $=.90$. $*p < 0.05$; $**p < 0.01$; $***p < 0.001$.

0.93, RMSEA $= 0.05$, SRMR $= 0.06$, $R^2 = 0.50$ for emotional exhaustion, $R^2 = 0.52$ for job satisfaction). The results show that the direct relation between social pressure and exhaustion was only significant for pressure from the principal ($\beta = 0.18$, $p < 0.05$, 95% CI [0.01, 0.33]) and the students ($\beta = 0.29$, $p < 0.001$, 95% CI [0.17, 0.42]), while the indirect relation through need frustration was only significant for pressure from the colleagues ($\beta = 0.17$, $p < 0.001$, 95% CI [0.10, 0.27]) and the students ($\beta = 0.08$, $p < 0.05$, 95% CI [0.01, 0.17]). For job satisfaction, the indirect relation through need satisfaction and need frustration was significant for both pressure for colleagues (need satisfaction: $\beta = -0.10$, $p < 0.05$, 95% CI [-0.19, -0.03], need frustration: $\beta = -0.13$, $p < 0.01$, 95% CI [-0.21, -0.06]) and students (need satisfaction: $\beta = -0.14$, $p < 0.001$, 95% CI [-0.23, -0.07], need frustration: $\beta = -0.06$, $p < 0.05$, 95% CI [-0.13, -0.01]), but not for principals. Also, no direct effects from any source of social pressure and job satisfaction were present.

Considering teachers' motivating teaching style (model 3b), the full mediation model yielded an acceptable fit ($\chi^2(756) = 1379.11$, CFI $= 0.89$, RMSEA $= 0.04$, SRMR $= 0.06$). Next, a more parsimonious model was built ($\chi^2(773) = 1393.89$, CFI $= 0.99$, RMSEA $= 0.04$, SRMR $= 0.06$, $R^2 = 0.25$ for autonomy support, $R^2 = 0.29$ for structure, $R^2 = 0.22$ for control and $R^2 = 0.13$ for chaos) that showed a similar fit to the data ($\Delta\chi^2 (17) = 14.7$, $p = 0.61$; ΔCFI $= 0$) and is shown in Figure 2. Only pressure from the students was directly linked to a less motivating (i.e. autonomy support: $\beta = -0.23$, $p < 0.01$, 95% CI [-0.37, -0.08] and structure: $\beta = -0.21$, $p < 0.01$, 95% CI [-0.35, -0.07]) and more demotivating (i.e. control: $\beta = 0.24$, $p < 0.01$, 95% CI [0.10, 0.38] and chaos: $\beta = 0.13$, $p < 0.05$, 95% CI [0.05, 0.26]) teaching style. As for autonomy support and structure, indirect relations through need satisfaction were significant for both pressure from the colleagues (autonomy support: $\beta = -0.10$, $p < 0.01$, 95% CI [-0.18, -0.03], structure: $\beta = -0.11$, $p < 0.01$, 95% CI [-0.20, -0.04]) and the students (autonomy support: $\beta = -0.11$, $p < 0.01$, 95% CI [-0.19, -0.05], structure: $\beta = -0.12$, $p < 0.01$, 95% CI [-0.22, -0.05]). For control, only pressure from colleagues was indirectly related to a more controlling teaching style through need frustration ($\beta = 0.09$, $p < 0.01$, 95% CI [0.03, 0.15]). No indirect relations were present for chaotic teaching[2].

Discussion

SDT (Ryan & Deci, 2017) considers the basic psychological needs for autonomy, competence, and relatedness to be essential nutriments for teachers' personal growth and well-being. Yet, the

benefits of need satisfaction and the costs of need frustration may also manifest interpersonally, with teachers making use of different teaching styles as a function of experienced need satisfaction (Korthagen & Evelein, 2016). Despite the manifold studies evidencing the beneficial and detrimental outcomes of, respectively, need satisfaction and need frustration (Reeve, 2009; Vansteenkiste & Ryan, 2013), there is a paucity of research in the educational domain that simultaneously addresses the role of need satisfaction and need frustration, representing the so-called bright and dark pathway, for both teachers' intra- and interpersonal functioning. Moreover, when investigating antecedents of teachers' interpersonal behavior, most studies have focused on only one or two motivating teaching styles (cf. Aelterman et al., 2019 for an exception). The present study then contributed to the current state of the art, by examining the role of teachers' basic psychological needs as a unifying mechanism that underlies both teachers' personal adjustment as well as their motivating interaction pattern with their students. Finally, the role of both pathways in the association between perceived social pressure originating from different sources (i.e., principal, colleagues, students) and these critical teacher outcomes was also considered.

The differential role of need satisfaction and need frustration

Rather than representing two sides of a single construct, experiences of need satisfaction and need frustration can better be studied as separate constructs in an integrated model. Indeed, the asymmetrical relation between both implies that the absence of need satisfaction does not necessarily imply the presence of need frustration (Vansteenkiste & Ryan, 2013). Need frustration, as manifested through experiences of loneliness, obligation, and failure, would especially be predictive of teachers' disrupted functioning, a hypothesis confirmed herein. Specifically, only experiences of need frustration were predictive of teachers' emotional exhaustion, while both experiences of need satisfaction and frustration were related to teachers' job satisfaction. Thus, teachers who feel that they have a say in how they organize their work, feel effective in their teaching, and feel connected with their students and colleagues are more likely to feel satisfied with their job. On the contrary, teachers who feel obliged to do things, doubt their own capabilities and feel isolated, report more signs of emotional exhaustion and less job satisfaction. This work goes beyond past studies on workers' psychological needs that have more narrowly focused on need satisfaction as such (Van den Broeck et al., 2016) and the findings are congruent with previous research conducted with teachers (Desrumaux et al., 2015), showing that experienced need satisfaction was related to more well-being and to less work-related stress.

Interestingly, not only teachers themselves but also their students may benefit from their teachers' need satisfaction. That is, the advantages associated with teachers' need-based experiences seem to radiate to their teaching styles. Congruent with the dual pathway model, teachers who experienced more need satisfaction indicated adopting a more autonomy-supportive and structuring teaching style while teachers who reported more need frustration reported being more controlling and chaotic in the classroom. The present findings align with those reported by Taylor et al. (2008), who reported that physical education teachers who experience greater need satisfaction indicate providing more support, trying to understand their students' perspective, and providing more rationales for learning assignments. Also, the distinct role of need satisfaction and need frustration meshes with prior work in the parenting domain as well, an effect shown both at the between-person (Costa et al., 2019) and within-person or day-to-day level (Mabbe et al., 2018). Future work may unravel the mechanisms underlying the effect of need-based experiences, Presumably, in case of need satisfaction, teachers feel more vital and energized, which may enhance their psychological availability toward others (Van der Kaap-Deeder et al., 2019). The stress-enhancing effect of need frustration may lead teachers to adopt a more self-centered approach, thereby taking distance from their students and even adopting a depersonalizing approach to them (Soenens et al., 2012; Van der Kaap-Deeder et al., 2019).

The role of different sources of social pressure

Besides examining the outcomes of need-based experiences, we also focused on the possible ante-cedent role of social pressure in teachers' need satisfaction and need frustration. In accordance with previous research linking pressure to need-based experiences (Bartholomew et al., 2014), we found that teachers who experienced a higher level of social pressure coming from their col-leagues or students experienced more need frustration and less need satisfaction. Thus, when teachers feel pressured instead of supported by important social sources, they not only experience less autonomy, relatedness, and competence satisfaction, but they actually feel actively frustrated in these needs.

We also examined the relation between perceived social pressure and teachers' functioning, thereby shedding light on the possible mediating role of the need-based experiences. With respect to teachers' personal adjustment, we found that teachers who experienced more social pressure from their colleagues and students reported to feel more emotionally exhausted, due to experienc-ing more need frustration in the teaching environment.

However, a strong direct relation between student pressure and emotional exhaustion remained present, while perceived pressure from the principal was directly related to emotional exhaustion only. There are several possible explanations for these results. First, it could be that teachers who perceive pressure from the principal and the students are less autonomously moti-vated for their job, a view that is supported by several researchers (Reeve, 2009). Teachers' moti-vation then could lead to more emotional exhaustion. Consistent with Eyal and Roth (2011) who demonstrated that the relation between principals' leadership style and burnout symptoms in teachers was mediated by teachers' work motivation, it could thus be that a so called 'motivational pathway' co-exists with an 'energetic pathway' through need-based experiences. The fact that we did not observe a direct link between pressure from colleagues and emotional exhaustion could be because colleagues (the "peer") may not have as much influence on teachers' motivation to teach, as students (the "customer") and principals ("the boss") do. Second, because burnout symptoms are said to come with a distorted perception (Brenninkmeijer et al., 2001), it could be that teachers who feel emotionally exhausted tend to perceive situations as more pres-suring. Because daily interactions with colleagues are limited (Dorman, 2003), this process may be less operative in the case of colleagues. To shed further light on this question, a multi-inform-ant design to validate this finding is desirable. A third, methodological explanation for these find-ings could be that when assessing teachers' need-based experiences in school, teachers mostly think about their needs in relation to their colleagues, thereby leading to higher correlations between pressure from colleagues and need-based experiences, diminishing the possibility to detect direct relations. Indeed, especially with need frustration, pressure from colleagues seems to be more strongly related then the other sources of pressure. Therefore, if we would address need-based experiences separately for all three sources, it is possible that no direct effects of pressure would remain significant.

Further, with respect to teachers' job satisfaction, results showed that teachers who perceived a higher level of social pressure from their colleagues or students felt less satisfied with work, a relation that was fully mediated by both need frustration and need satisfaction. No indirect or direct relations between pressure from the principal and job satisfaction was observed. These results are consistent with a number of studies that showed that need-based experiences play a mediating role in experienced pressure and psychological functioning (Bartholomew et al., 2014).

Regarding teachers' motivating teaching style, due to a more refined measurement of social pressure, we found that social pressure from the principal was neither directly nor indirectly related to the teaching style. In contrast, both pressure originating from colleagues and students was indirectly related to a less need-supportive and a more need-thwarting teaching style (i.e., more control) via, respectively, the experience of less need satisfaction and more need frustration. In line with the above proposed energetic pathway, teachers who experience pressure might

believe that need-supportive teaching practices require too much effort, leading them to use less effortful teaching practices. Besides these indirect effects, we also found interesting direct effects for pressure originating from the students, as it seems to be predominantly directly related to a less autonomy-supportive, a less structuring and a more controlling teaching style, while being slightly related to more chaos in the classroom.

Together with the observation that teachers who feel pressured by students experienced more emotional exhaustion, less job satisfaction and less need satisfaction, these findings suggest that the teacher-student interactions are crucial to understand both intra- and interpersonal dynamics in teachers (Van Droogenbroeck et al., 2014). Indeed, while both the principal and the colleagues can provide a more or less pressuring context in the school as a whole, in class, only students are present and can form a considerable source of pressure or support (Dorman, 2003). In line with this view, a study of Culkin (2016) with veteran elementary school teachers concluded that the main reason to leave the teaching profession was difficult student behavior and the lack of support from the administration to deal with this behavior successfully. Indeed, both qualitative (McMahon et al., 2017) and quantitative studies (Martinez et al., 2016) have shown that experiencing more disruptive student behavior coincides with a less supportive administration, possibly suggesting an interplay between the different sources of social pressure. Consistent with this view, all three sources of social pressure were modestly related ($0.25 < r < 0.36$) and yielded parallel correlates with most of the other measures. Yet, when competing for unique variance some of the observed correlates for principal pressure (i.e., relation with job satisfaction and need-based experiences) dropped to non-significance in the structural analyses.

Yet, apart from treating them as separate sources, it is also worth highlighting that these different sources can form a sequential chain of pressure. Specifically, a pressuring leadership style of the principal might create a school climate where pressure among colleagues and pressure from students to teachers have more room to unfold. That is, if pressure by principals is salient as a model of interacting with each other, teachers and students may copy this interaction pattern, with the various interpersonal relations between different actors thus loaded with conflict, stress, and pressure. Supportive of this reasoning, previous research in the context of inpatient treatment showed that staff members indirectly affected inpatients' need-based experiences through stimulating a more autonomy-supportive approach among fellow patients (Van der Kaap-Deeder et al., 2014).

Limitations and future directions

The present study has several limitations. First, given the single-informant and self-report nature of the data, it is possible that some of the observed associations got artificially inflated. Second, teachers may suffer from a social desirability bias with respect to their own teaching style. Past research has indeed confirmed that there are mean level differences between students and teachers, with teachers perceiving themselves as adopting a more motivating and less demotivating style compared to their students (Aelterman et al., 2019). Therefore, future research may include student reports and observational data to decrease both the likelihood of inflated structural relations due to shared measurement variance and response bias in teachers. Third, as a large part of the data was collected through convenience sampling, a selection bias could have occurred. That is, some schools with an unhealthy work climate or some individual teachers suffering from emotional exhaustion or dissatisfaction with the job may be underrepresented. Moreover, we did not have all information available about the school (e.g., average class sizes), the students (e.g., social economic status) and the teacher (e.g., racial background), possibly limiting the generalizability of what we found. In addition, although our analyses did not support multilevel analyses due to the low variance on the school level, future research could sample a larger number of schools to shed light on the role of overall school climate (Cohen et al., 2009) and school culture (Schoen &

Teddlie, 2008) as potential predictors of between-school differences. Inspired by the Ecological Systems Theory (Bronfenbrenner, 1992), it could be informative to include other proximal (e.g., demands from family members; Cinamon et al., 2007) and distal sources (e.g., government regulations; Deci & Ryan, 2016) of social pressure as well. Fourth, the cross-sectional design prevents us from drawing causal conclusions. Although this study has a strong theoretical foundation, future experimental research in which pressure is induced (Deci et al., 1982) is warranted to address the direction of the effects. Furthermore, longitudinal research addressing bidirectional relations between need-based experiences and both teachers' well-being and teaching style is indicated. To illustrate, it could be that a demotivating teaching style leads to competence frustration as a consequence of encountered student disengagement (Van den Berghe et al., 2016). This issue of bidirectionality could also be addressed via a moment-to-moment time series design as these dynamics may manifest fairly quickly and dynamically (Pennings et al., 2018).

Theoretical and practical implications

Although further validation is indicated, the findings of this study have several theoretical implications. First, given the differential relation of need satisfaction and need frustration and teacher outcomes, this study further underscores the distinction between a bright and dark pathway in teachers' need-based functioning. The separate assessment and treatment of need frustration in an integrated model allows one to explain a substantial and incremental portion of the variance in outcomes, especially those pertaining to teachers' suboptimal functioning, which is consistent with prior research (Bartholomew et al., 2011; Haerens et al., 2015) and theorizing (Vansteenkiste & Ryan, 2013). Second, this study highlights the role of three different sources of social pressure in teachers.

Since pressure originating from the students seems to have important direct relations with teachers' teaching style and feelings of exhaustion, at the practical level, it is recommended for educational stakeholders to diminish social pressure in the school environment both inside and outside the classroom. For teachers in specific, it is recommended to diminish student pressure and misconduct in a non-controlling way, as previous research has shown that controlling teaching behavior is associated with more, rather than less oppositional behavior (Flamant et al., 2021). In that regard, Assor et al. (2018) developed an intervention designed to cope with student misconduct in a non-controlling way and found that students of teachers in the intervention group showed a decrease in misbehavior over time. By preventing misbehavior to occur in the classroom, teachers could avoid that students put pressure on them. When confronted with pressure from students or a more general pressuring environment, teachers might do well to adopt a mindful attitude toward this experience, as previous research has shown that people who are mindful experience less need frustration when being confronted with a pressuring work environment (Olafsen et al., 2021; Schultz et al., 2015).

Further, school principals may want to create a need-supportive environment for teachers, given the positive relation between need satisfaction and teacher well-being and the use of motivating teaching style. Principals could offer teachers freedom and choice, fully acknowledging their perspective, and aligning with their interests to foster autonomy need satisfaction (Collie et al., 2018). Likewise, by providing help when needed and rescheduling and distributing tasks that fit with teachers' expertise and qualities, their need for competence could be supported (Korthagen & Evelein, 2016). Similarly, teachers' need for relatedness is nurtured when opportunities for informal and more formal networking are created and when teachers can develop more personal relationships with their students (Skaalvik & Skaalvik, 2011). Intervention work (Jungert et al., 2018) indicates that employees can be trained to adopt a more need-supportive approach to their colleagues, while Stone et al. (2009) present six actions organizations can take to nurture

need satisfaction in their employees, including creating an open dialogue by welcoming teachers' perspective on problems and communicating in a clear and transparent way and giving honest and positive feedback. At the same time, avoiding need-frustration in teachers seems even more imperative, given these experiences were found to be more damaging (Bartholomew et al., 2014). In this context, Stone et al. (2009) advise supervisors to refrain from tactics such as social comparison with colleagues and the use of rewards.

Conclusions

In order to create a healthy school environment for both teachers and students, the present study suggests that it is critical to develop a need-conducive school policy. When teachers experience greater satisfaction of their basic needs, they do not only benefit personally, but also their students do as they report using a more motivating teaching style in interaction with them. Apart from this bright pathway, the prevention of experiences of need frustration is critical in its own right as teachers whose basic needs are frustrated feel more exhausted and report adopting a more demotivating teaching style to their students. As pressure from either colleagues, students, or principals themselves comes with a cost, it can best be avoided. Especially the minimization of student pressure on teachers is important as this source of pressure was directly linked to a demotivating teaching style. By fostering teachers' basic psychological needs, school principals are able to kill two birds with one stone, thereby creating optimally motivating teaching conditions for students while providing a healthy work climate for their staff.

Note

1. The data of this sample are also partly published in a paper written by Aelterman et al. (i.e., sample 6, 2019).
2. In a series of supplementary hierarchical linear regression analyses, we examined if 961 teaching experience would moderate the effect of perceived social pressure on teachers' need-962 based experiences and motivating teaching style. Results show that out of the 18 examined 963 interaction effects between pressure and teaching experience, none was significant ($.07 < p < 964$ $.88$), indicating no moderating effect of teaching experience.

Disclosure statement

The authors declare that they have no conflict of interest.

Compliance of ethical standards

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