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4   **Teachers' Psychological Needs Link Social Pressure with Personal Adjustment and**

5   **Motivating Teaching Style**

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7   Branko Vermote, MSc[1]

8   Maarten Vansteenkiste, PhD[1]

9   Nathalie Aelterman, PhD[1]

10   Jolene van der Kaap-Deeder, PhD[1]

11   Wim Beyers, PhD[1]

12   [1] Department of Developmental, Social, and Personality Psychology, Ghent University,

13   Ghent, Belgium.

14

15   Corresponding author:

16   Branko Vermote, Faculty of Psychology, Department of Developmental, Social, and

17   Personality Psychology, Henri Dunantlaan 2, B-9000 Ghent, Belgium. E-mail:

18   Branko.Vermote@UGent.be,

19   Tel: +32 9 264 64 23.

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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 (Mage = 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 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.

Keywords: social pressure, basic psychological needs, emotional exhaustion, job satisfaction, teaching styles, self-determination theory

43   Due to multiple societal (e.g., globalization), pedagogical (e.g., lifelong learning),

44   economical (e.g., knowledge economy) and technological (e.g., internet) transitions in the past

45   decades, the teaching profession has been ongoingly changing (Esteve, 2000; Flores, 2016).

46   While some teachers perceive these transitions as an opportunity for growth and further skill

47   development, others consider this continuous change as threatening and stressful (Fussangel &

48   Dizinger, 2014). In addition to these potential work stressors at the macro-level, pressures may

49   also stem from within the school environment itself, including student misbehavior and a lack

50   of support from the school administrators (e.g., Aldrup et al., 2018; Van Droogenbroeck et al.,

51   2014). The various pressures that teachers face may not only relate to teachers' personal

52   adjustment on the job but also to the way they interact with their students, as reflected in their

53   adopted motivating teaching style (Roth, 2014).

54   Self-determination theory (SDT; Ryan & Deci, 2017; Vansteenkiste et al., 2020)

55   provides a valuable theoretical framework to examine whether and why experienced social

56   pressure relates to teachers' work-related functioning. According to Basic Psychological Need

57   Theory (BPNT), one of SDT's six mini-theories, teachers will thrive most when they have their

58   basic psychological needs for autonomy (i.e., experiencing a sense of volition and

59   psychological freedom), competence (i.e., experiencing a sense of mastery and effectiveness)

60   and relatedness (i.e., experiencing a sense of connection and mutual care) fulfilled

61   (Vansteenkiste et al., 2019).

62   Although the nurturing role of need satisfaction has been confirmed in various student

63   populations and among employees (Haerens et al., 2015; Van den Broeck et al., 2016), research

64   in the teacher population is currently relatively scarce (e.g., Roth, 2014). Moreover, teachers'

65   need-based experiences may not only relate to their personal adjustment at work (i.e., their

66   sense of exhaustion and job satisfaction) but it may also radiate to the way they interact with

67   their students. That is, the fulfillment and frustration of their basic psychological needs may

68   predict teachers' adoption of either a more motivating (i.e., supportive of students' basic

69   psychological needs) or a more demotivating (i.e., need-thwarting) teaching style (Reeve,

70   2009), an issue that has received limited attention so far (cf. Korthagen & Evelein, 2016). Based

71   on a recently developed assessment of teachers' motivating and demotivating teaching styles

72   (Aelterman et al., 2019; Vermote et al., 2020), the present study sought to investigate whether

73   teachers' experienced need satisfaction and frustration play an explanatory role in the relation

74   between perceived social pressure and personal adjustment and teachers' motivating style at

75   work.

Teachers' Personal Adjustment: Job Satisfaction and Burnout

77   Teachers' job satisfaction represents the enjoyment and contentment caused by the

78   appreciation for their job (Locke, 1976). As a positive work outcome, job satisfaction has been

79   extensively studied as teachers' satisfaction with the job predicts their commitment and their

80   intention to leave the profession (e.g., Skaalvik & Skaalvik, 2011). Although most research

81   suggests that teachers tend to be satisfied with their job (e.g., Skaalvik & Skaalvik, 2015),

82   studies observe large variation in teachers' job satisfaction as well (e.g., Crossman & Harris,

83   2006; Collie et al., 2012). Moreover, teachers report considerable levels of job stress (e.g.,

84   Geving, 2007; Collie et al., 2012), with teacher burnout being identified as a serious concern

85   (Hakanen et al., 2006). Teacher burnout can be described as a condition characterized by

86   emotional exhaustion (i.e., feeling exhausted and fatigued by work), depersonalization (i.e.,

87   feeling cynical or apathetic towards the work or the people at work) and the perception of

88   reduced performance (i.e., feeling less effective in the job; Maslach et al., 1996). Teacher

89   burnout predicts various undesirable outcomes, both for teachers themselves (e.g., absenteeism,

90   reduced enthusiasm, intentions to turn-over; Benita et al., 2019; Hakanen et al., 2006) and the

91   students these teachers interact with (e.g., decreased motivation; Shen et al., 2015).

92   From the BPNT-perspective, it is argued that need-based experiences play a key role in

93   the development and maintenance of burnout and job (dis)satisfaction (Ryan & Deci, 2017).

94   Direct evidence for this claim comes from studies demonstrating that employees who

95   experience more psychological need satisfaction report less emotional exhaustion, stress and

96   job turnover, while being more satisfied with their job (Van den Broeck et al., 2008). Indeed, a

97   review of Van den Broeck et al. (2016) in the work context concluded that the satisfaction of

98   the need for autonomy, relatedness, and competence was related to less burnout and more job

99   satisfaction. Such findings were also observed among teachers, with teacher need satisfaction

100   being negatively related to distress and burnout symptoms, while being positively related to

101   engagement, satisfaction, and happiness at work (Skaalvik & Skaalvik, 2009, 2011).

102   Over the past few years, it has become increasingly clear that not only the satisfaction

103   of individuals' needs deserves attention, but also their very frustration. This is because,

104   conceptually, need frustration cannot simply be equated with the absence of need fulfillment as

105   individuals needs get actively thwarted in the case of need frustration (Bartholomew et al.,

106   2011; Vansteenkiste & Ryan, 2013). To illustrate, while teachers may experience low

107   connection with their colleagues (low relatedness satisfaction), they may not necessarily feel

108   excluded and isolated (relatedness frustration). Need frustration then manifests through

109   experiences of pressure and conflict (autonomy), failure and inadequacy (competence), and

110   loneliness and exclusion (relatedness). The study of need frustration appeared a fruitful

111   enterprise because the predictive power of individuals' need-based experiences was

112   considerably enhanced by additionally mapping individuals' need-frustrating experiences

113   (Vansteenkiste & Ryan, 2013). While need satisfaction appears especially predictive of the so-

114   called bright pathway involving increasing growth, well-being, and adaptation, experiences of

115   need frustration are involved in a separate dark pathway involving maladaptive functioning, ill-

116   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 (Weinstein & Ryan, 2011; Van der Kaap-Deeder et al., 2019), with teachers for instance adopting a more depersonalizing attitude towards 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

142   towards students, thereby making use of both participative teaching practices, such as providing

143   choice and inviting input and attuning teaching practices, such as validating learners'

144   perspective, aligning learning tasks with their interests, and offering meaningful rationales

145   (Aelterman et al., 2019; Patall et al., 2010; Reeve, 2009). A structuring style involves teaching

146   practices that can be more clarifying in nature, such as communicating clear expectations and

147   guidelines, or that are more guiding towards increasing skill-development, such as adjusting

148   instructions to students' skill levels, giving positive informational feedback during task

149   completion, and providing help when needed (Jang et al., 2010). Numerous studies have

150   demonstrated that student perceived autonomy support and structure are highly compatible and

151   both foster students' need satisfaction and are conducive to students' self-regulation,

152   engagement, well-being, and achievement (e.g., Hospel & Galand, 2016; Jang et al., 2010).

153   Indicative of demotivating practices is teachers' reliance on control and chaos. When

154   controlling, teachers minimize or ignore the opinion of students in favor of prioritizing their

155   own perspective, such that students feel pressured to think, act or feel in teacher-prescribed

156   ways (Reeve, 2009). To exert pressure, teachers can make use of demanding practices, such as

157   the use of forceful and controlling language, threats of punishment or seducing learners with

158   extrinsic rewards. Alternatively, they can also use more intrusive, domineering practices, such

159   as the use of guilt-induction, shaming, or personal attack (Aelterman et al., 2019). Finally, when

160   being chaotic, teachers fail to successfully adjust their instruction to the developmental pace

161   and growth potential of students and they even actively interfere with students' competence

162   development. A such, a chaotic style involves an awaiting approach that is experienced as too

163   open or even confusing to students, who desire clearer guidance, and an abandoning approach,

164   where teachers fail to intervene when action is called for and have given up on their students

165   (Aelterman et al., 2019; Stroet et al., 2015). While a controlling teaching style, and especially

166   the more domineering practices, have been found to predict student disengagement,

167   amotivation, and decreased self-regulation (Bartholomew et al., 2018; Putwain et al., 2017), a

168   chaotic teaching style, and especially the abandoning approach, relates to lower persistence,

169   poor teacher evaluations, and more student defiance (Aelterman et al., 2019).

170   In light of the robust effects associated with a motivating and demotivating teaching

171   style (Reeve, 2009), a more recent generation of studies has investigated possible antecedents

172   of teachers' teaching style. These studies (e.g., Reeve, 2009) point towards a variety of

173   contextual pressures and affordances that, respectively, thwart and fulfill teachers' own needs

174   for autonomy, competence, and relatedness, thereby depleting or fueling teachers' energy level

175   which may yield a carry-over effect to their teaching behavior. Herein, we suggest that when

176   teachers' psychological needs are fulfilled, they will more likely adopt an autonomy-supportive

177   and structuring style towards their students (i.e., bright pathway), while experiences of need

178   frustration will be predominantly predictive of adopting a controlling and chaotic teaching style

179   (i.e., dark pathway). Supportive of this reasoning, both cross-sectional (Costa et al., 2019),

180   longitudinal (De Haan et al., 2013) and diary (e.g., Mabbe et al., 2018) studies in the parenting

181   domain have shown that parents' need-based experiences are related to an autonomy-supportive

182   or more controlling parenting style. In the educational context, research with physical education

183   teachers indicated that need satisfaction is related to the use of autonomy-supportive practices,

184   such as taking students' perspective and giving a meaningful rationale and more structuring

185   practices, such as providing help and guidance (Taylor et al., 2008). The present study aimed

186   to move beyond past work that focused on a more limited set of teaching dimensions by

187   conducting a comprehensive investigation of how experiences of both need satisfaction and

188   need frustration relate to the motivating and demotivating teaching styles, as identified by

189   Aelterman et al. (2019).

The Role of Different Sources of Social Pressure

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191   Given the pivotal role need-based experiences might play for both teachers' personal

192 adjustment and their interpersonal motivating teaching style, it is imperative to identify factors

193 that could predict teachers' need-based experiences. One line of research stresses the

194 importance of the overall school climate (Collie et al., 2012). More specifically, studies have

195 been conducted on interpersonal work-related factors, including social pressure originating

196 from teachers' daily interactions with their school administrators, colleagues, and students (Van

197 Droogenbroeck et al., 2014).

198   School principals represent a first source of social pressure, as they can overtly or in

199 more subtle ways dictate how teachers must act both in- and outside the classroom. Some

200 principals demand from their teachers that students meet certain (performance) standards, or

201 invasively observe their teachers to detect and correct mistakes (Bogler, 2001; Reeve, 2009).

202 But principals may also pressure teachers by being uninvolved or even uninterested in the

203 teachers' activities or by only intervening when problems endure such that teachers feel left to

204 solve their problems without support (Bogler, 2001; Skogstad et al., 2007).

205   Apart from an overly pressuring principal, a lack of support of and opportunities to

206 interact with colleagues constitute examples of a second source of social pressure. Specifically,

207 because the contact and communication with fellow-teachers is minimal during class time

208 (Dorman, 2003), teachers may feel detached from their colleagues (Bakkenes et al., 1999). On

209 the other hand, some teachers may also feel pressured by their colleagues, for example to adopt

210 a similar teaching style or to use a similar lesson plan (e.g., Pelletier et al., 2002; Leroy et al.,

211 2007).

212   Finally, students may form a source of pressure as well. That is, disengaged or

213 underperforming students may elicit worry and concern among teachers (Geving, 2007).

214 Pressure may even be more directly experienced by teachers when students display

215 disrespectful behavior (Pelletier et al., 2002), for instance when students act in a hostile way

216 (e.g., verbal abuse or property offences, Espelage et al., 2013) or when they engage in more

217 subtle disruptive behavior, such as being noisy (Otero-López et al., 2009).

218 Previous research indicates that a pressuring school environment comes with personal

219 costs, such as teacher burnout and job dissatisfaction (Collie et al., 2012; Hakanen et al., 2006).

220 Also, the more teachers feel pressured, the less they make use of an autonomy-supportive

221 teaching style and the more they rely on a controlling teaching style (Van den Berghe et al.,

222 2016). Specifically, with regards to the sources of social pressure, several researchers have

223 shown that their relationship with students relates strongly to both teachers' adjustment and

224 interpersonal teaching style (e.g., Pelletier, 2002; Van Droogenbroeck et al., 2014). Specifically

225 covert (e.g., name-calling) and overt (e.g., using threats) forms of disruptive behavior were

226 found to be highly prevalent and related to teachers' personal adjustment and teaching

227 (Espelage et al., 2013; Wilson et al., 2011). Despite the growing evidence on the direct effects

228 of social pressure on teachers' functioning, far less attention has been paid to the underlying

229 mechanisms accounting for this relation, an issue investigated herein through the lens of need-

230 based experiences.

231 **The Present Study**

232 Grounded in BPNT, the purpose of the present study was to shed light on the unifying

233 role of teachers' need-based dynamics. This presumed integrative role was pursued through

234 two different aims. The first aim was to examine whether teachers' need-based experiences

235 would relate to both their personal adjustment at work, as indexed by emotional exhaustion and

236 job satisfaction, and their self-reported teaching style, thereby proposing that the same

237 mechanism underlies both the personal and interpersonal functioning of teachers. Based on

238 BPNT (Vansteenkiste & Ryan, 2013) and prior research (e.g., Haerens et al., 2015), we

239 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 1b). 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 (e.g., 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 3b).

Method

Participants and Procedure

Between October 2016 and January 2017, a total of 482 [details removed for peer review] 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 [details removed for peer review] speaking part of the country. The remaining 3.7% taught also at eight other public schools. The majority

265   of the sample was female (61.4%) and had a bachelor's degree (60.2%). The distribution of

266   teachers across the different educational tracks was as follows: academic track (39.7%),

267   technical track (25.9%), vocational track (21.3%) and a combination of the above (13.2%).

268   Participants' mean age was 39.9 years ($SD = 10.2$), ranging from 21 to 65 years. Their teaching

269   experience varied from 0 to 39 years with a mean of 14.7 years ($SD = 9.5$). In terms of the

270   distribution across different grades, 21.8% of the participants taught in the 7th and 8th grade,

271   13.3% in the 9th and 10th grade and 28.5% in the 11th and 12th grade, and 36.4% of the

272   participants taught in a combination of the above grades. Participants were invited by mail to

273   participate in an online survey, either as part of a lecture about motivating teaching given in

274   that school or as part of a large study on the schools' motivational climate. In both cases, data

275   collection took place prior to providing information about motivating teaching, thereby

276   reducing social desirability bias. Before participating in the online survey, an informed consent

277   was obtained, emphasizing the voluntary and confidential participation to the study. The study

278   was conducted according to the ethical rules presented in the General Ethical Protocol of the

279   Faculty of Psychology and Educational Sciences at [details removed for peer review].

280   **Measures**

281   ***Need Experiences.***

282   A slightly adjusted version of the Basic Psychological Need Satisfaction Need Frustration Scale

283   (BPNSNF; Chen et al., 2015) was administered to assess teachers' need satisfaction and need

284   frustration experienced at school. The construct and predictive validity of the scale has been

285   confirmed across different languages and countries (e.g., Chen et al., 2015), among different

286   age groups (e.g., Van der Kaap-Deeder et al., 2021), and at different levels of generality, that

287   is, at the general, domain-specific (e.g., sports, Haerens et al., 2015) and situational (i.e., when

288   engaging in a specific task, Aelterman et al., 2016) level. The scale was adapted to the teaching

289   context by slightly rephrasing some statements and by adding the stem 'at school'. For each

290 need (i.e., autonomy, relatedness, competence), four items were used to measure need

291 satisfaction (e.g., "At school, I have confidence that I can do things right"; competence

292 satisfaction) and four items to measure need frustration (e.g., "At school, I feel insecure about

293 my abilities"; competence frustration). Items were rated on a 5-point Likert scale ranging from

294 1 (totally not true) to 5 (totally true). The overall internal consistency for need satisfaction (12

295 items, α = .79) and need frustration (12 items, α = .78) were adequate.

296 ***Emotional Exhaustion***.

297   A subscale of the Maslach Burnout Inventory - Educators Survey (MBI-ES; Kokkinos,

298 2006) was used to assess emotional exhaustion. This scale contains 9 items (e.g., "The last two

299 to three months, I feel emotionally exhausted at the end of a working day") to be rated on a 5-

300 point Likert scale ranging from 1 (*totally not the case*) to 5 (*totally the case*). The scale had an

301 excellent internal consistency (α = .90).

302 ***Job Satisfaction.***

303   To measure job satisfaction of teachers, the Satisfaction with Life Scale (SLS; Diener

304 et al., 1985) was adapted to the work context. This approach is similar as the one from Ho and

305 Au (2006) who constructed the Teaching Satisfaction Scale to measure satisfaction with

306 teaching specifically. Using five items (α = .86, e.g., "I am satisfied with my current job"),

307 teachers were asked to indicate how much they agreed with each of the statements on a 5-point

308 Likert scale ranging from 1 (totally do not agree) to 5 (totally agree).

309 ***Teaching Style.***

310   To assess teachers' teaching style, we made use of the [details removed for peer review],

311 which has recently been developed by Aelterman et al. (2019). This vignette-based self-report

312 questionnaire provides 15 authentic teaching situations, balanced between proactive (e.g., "You

313 are thinking about classroom rules. So, you…") and reactive situations (e.g., "One or more

314 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 .81 (i.e., structure)

and .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 (6 items, e.g., "In this school, the principal does not

understand the problems teachers encounter in their work"), from colleagues (6 items, e.g., "In

this school, there is little understanding among teachers"), and from students (6 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,

339   with coefficients of .69, .70, .72 for pressure from the principle, colleagues, and students,

340   respectively.

<div align="center">

Results

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Preliminary Analyses

343   Descriptive statistics and bivariate correlations among the measured variables were

344   calculated and can be found in Table 1. Subsequently, we ran a multivariate analysis of

345   covariance to examine whether there were significant differences in all assessed teacher

346   outcomes depending on both school-based characteristics, such as educational track and grade,

347   and teachers' personal characteristics, such as sex, level of education, and years of teaching

348   experience. Results indicated that there was no significant multivariate effect for teachers' level

349   of education (Wilks's λ = 0.95, $F(22,670)$ = 0.84, p = .68) and grade (Wilks's λ = 0.91,

350    $F(33,988)$ = 0.96, p = .53), whereas a significant multivariate effect for years of teaching

351   experience (Wilks's λ = 0.92, $F(11,335)$ = 2.54, p < .01), teachers' sex (Wilks's λ = 0.85,

352    $F(11,335)$ = 5.49, p < .001) and educational track (Wilks's λ = .82, $F(33, 988)$ = 2.12, p < .001)

353   was observed. Specifically, univariate tests showed that more experienced teachers perceived

354   more pressure from their colleagues (b = .01, $F(1,345)$ = 5.82, p < .05) and that they used more

355   autonomy-supportive (b = .02, $F(1,345)$ = 15.35, p < .001) and structuring (b = .01, $F(1,345)$

356   = 8.74, p < .01) teaching practices. With regards to teachers' sex, male teachers experienced

357   more pressure from the principal (M_{male} = 2.37, SD = .07; M_{female} = 2.15, SD = .07; $F(1,345)$ =

358   8, p < .01) and their colleagues (M_{male} = 2.21, SD = .06; M_{female} = 2.06, SD = .06; $F(1,345)$ =

359   4.64, p < .05), they used more controlling (M_{male} = 3.54, SD = .09; M_{female} = 3.18, SD = .09;

360    $F(1,345)$ = 13.34, p < .001) and more chaotic teaching practices (M_{male} = 2.66, SD = .07; M_{female}

361   = 2.26, SD = .07; $F(1,345)$ = 26.59, p < .001), while providing less structure compared to their

362   female colleagues (M_{male} = 5.41, SD = .06; M_{female} = 5.64, SD = .06; $F(1,345)$ = 11.40, p < .01).

363   Lastly, significant univariate effects of educational track were observed, with teachers who

364   teach in vocational track reporting to use more autonomy-supportive practices ($M = 5.16$, $SD =$

365   .10) compared to teachers in the academic ($M = 4.77$, $SD = .08$) and technical track ($M = 4.81$,

366    $SD = .09$; $F(3,345) = 4.09$, $p < .01$). Controlling teaching practices were more prevalent in

367   teachers in technical ($M = 3.69$, $SD = .11$) compared to the other two tracks ($M_{academic} = 3.26$,

368    $SD = .10$; $M_{vocational} = 3.33$, $SD = .12$; $F(3,345) = 5.50$, $p < .01$). Given these results, years of

369   teaching experience, teachers' sex and educational track are controlled for in the main analysis.

370   **Main Analyses**

371   For the main analyses, structural equation modeling was performed using Mplus 8.5

372   (Muthén & Muthén, 2017) with Robust Maximum Likelihood as estimator and the Satorra-

373   Bentler Chi-Square Difference Test for model comparison, given observed non-normality in

374   some of the outcomes. Although the collected data were hierarchical in nature with teachers

375   being nested in schools, multilevel analysis was not performed due to the small number of

376   clusters at Level 2 ($n = 8$ schools) and the relatively limited amount of variance in our study

377   variables situated at the school level (i.e., the intra class correlation coefficients ranged between

378   .01 and .17). To illustrate, for 9 out of 12 variables these coefficients were below .10 and for 6

379   variables even below .05, making multilevel analyses less appropriate (Preacher et al., 2011).

380   Therefore, we conducted single level structural equation modeling while controlling for school

381   as predictor (even if insignificant). All main study variables were latent factors each represented

382   by three parcels and all teaching styles were modeled as higher order latent factors with two

383   indicators each consisting of three parcels. We relied on the use of item parcels because it

384   provides both psychometric and estimation advantages compared to the use of items (Little et

385   al., 2002, 2013). In line with recommendations, an item-to-construct balance method was used

386   to avoid bias (Little et al., 2002, 2013). Missing data were missing completely at random

387   (MCAR) according to Little's (1988) MCAR test ($\chi^2(199) = 208.13$, $p = .31$) and, therefore, the

388   use of the full information maximum likelihood (FIML; Enders, 2001) procedure was

389 appropriate to handle these missing data. Model fit was assessed based on the combined cut-

390 off criteria provided by Hu and Bentler (1999): CFI > .90, RMSEA < .06 and SRMR < .08 and

391 a step-by-step backward deletion approach was used to remove insignificant paths to obtain

392 more parsimonious models (Kline, 2016). The remaining parameters were not affected

393 significantly.

394 First, the estimated measurement model comprising all study variables approached an

395 acceptable fit: $\chi^2(898) = 1881.45$, CFI = .87, RMSEA = .05, SRMR = .06. However, after

396 adding three error-correlations between satisfaction and frustration within the separate needs

397 (i.e., autonomy, competence, and relatedness), three error-correlations between parcels of each

398 source of social pressure (i.e., principal, colleagues, students) and four error-correlations

399 between adjacent or opposite facets of teaching styles, the fit of the revised measurement model,

400 $\chi^2(888) = 1497.85$, CFI = .92, RMSEA = .04, SRMR = .06, improved considerably $\Delta\chi^2(10) =$

401 401.60, $p < .001$). These covariance paths were theoretically logical and substantiated and were

402 included as it improves the reliability of the latent construct's scale (Brown, 2015). Factor

403 loadings on the latent factors in this final measurement model were high (ranging from .44 to

404 .93) and all highly significant ($p < .001$).

405 ***Hypothesis 1: The Role of Need-Based Experiences***

406 Focusing on teachers' personal adjustment, in the first two structural models, paths from

407 need satisfaction and need frustration to either emotional exhaustion and job satisfaction

408 (Model 1a) or to the interpersonal teaching styles (i.e., autonomy support, structure, control and

409 chaos; Model 1b) were estimated. Results of Model 1a ($\chi^2(53) = 80.09$, CFI = .99, RMSEA =

410 .03, SRMR = .04, $R^2 = .42$ for emotional exhaustion, $R^2 = .50$ for job satisfaction) indicated that

411 experienced need satisfaction significantly predicted job satisfaction ($\beta = .38$, $p < .001$, 95% CI

412 [.21, .55]) but was unrelated to emotional exhaustion ($\beta = -.02$, $p = .82$, 95% CI [-.22, .17]),

413 while need frustration was significantly related to both outcomes (emotional exhaustion, $\beta =$

414   .60, $p < .001$, 95% CI [.40, .81]; job satisfaction, $\beta = -.38$, $p < .001$, 95% CI [-.55, -.21]).

415   Experienced need satisfaction was negatively related to need frustration ($r = -.68$, $p < .001$, 95%

416   CI [-.78, -.58]), while the correlation between emotional exhaustion and job satisfaction became

417   insignificant after adding need-based experiences ($r = .13$, $p = 19$, 95% CI [-.07, .33]).

418   As for teachers' self-reported teaching styles, results of Model 1b ($\chi^2(484) = 895.22$,

419   CFI = .91, RMSEA = .04, SRMR = .06, $R^2 = .17$ for autonomy support, $R^2 = .21$ for structure,

420    $R^2 = .15$ for control and $R^2 = .06$ for chaos) showed that need satisfaction was positively related

421   to both autonomy support ($\beta = .45$, $p < .001$, 95% CI [.25, .64]) and structure ($\beta = .47$, $p < .001$,

422   95% CI [.25, .70]), while being unrelated to control ($\beta = .07$, $p = .42$, 95% CI [-.10, .24]) and

423   chaos ($\beta = .00$, $p = .99$, 95% CI [-.13, .14]). An opposite pattern emerged for need frustration,

424   which related positively to control ($\beta = .29$, $p < .01$, 95% CI [.11, .46]) and chaos ($\beta = .22$, $p <$

425   .05, 95% CI [.04, .39]), but was unrelated to autonomy support ($\beta = .11$, $p = .29$, 95% CI [-.09,

426   .30]) and structure ($\beta = .09$, $p = .41$, 95% CI [-.13, .31]).

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

428   Three models were tested with social pressure as a predictor of teachers' adjustment,

429   self-reported teaching style and need-based experiences (Model 2a – 2c). With respect to

430   teachers' personal adjustment, results of the direct effects Model 2a ($\chi^2(87) = 168.28$, CFI =

431   .96, RMSEA = .05, SRMR = .05) showed that perceived social pressure from the principal was

432   not significantly related to job satisfaction. Therefore, this path was removed from the final,

433   more parsimonious model ($\chi^2(88) = 168.63$, CFI = .96, RMSEA = .05, SRMR = .05, $R^2 = .34$

434   for emotional exhaustion, $R^2 = .07$ for job satisfaction) that yielded a similar fit ($\Delta\chi^2 (1) = 0.35$,

435    $p = .55$; ΔCFI = 0). Results indicated that both pressure from the principal and the students was

436   positively related to emotional exhaustion (principal: $\beta = .26$, $p < .01$, 95% CI [.06, .46];

437   students: $\beta = .37$, $p < .001$, 95% CI [.24, .49]) and that both pressure from the colleagues and

438   the students were negatively related to job satisfaction (colleagues: β = -.16, $p < .05$, 95% CI [-

439   .30, -.02]; students: β = -.16, $p < .05$, 95% CI [-.29, -.03]).

440   With regards to teachers' self-reported teaching style, results of direct effects Model 2b

441   approached an acceptable fit (χ^2(546) = 1009.84, CFI = .90, RMSEA = .04, SRMR = .06). After

442   removing insignificant paths from pressure from colleagues to all teaching styles and from

443   pressure from the principal to all but one (i.e., structure) teaching style, a more parsimonious

444   model was fitted. In addition, the non-significant correlation between teacher control and

445   structure was removed. This final model (χ^2(554) = 1015.33, CFI = .90, RMSEA = .04, SRMR

446   = .06, R^2 = .17 for autonomy support, R^2 = .22 for structure, R^2 = .20 for control and R^2 = .11

447   for chaos) yielded a comparable model fit ($\Delta\chi^2$ (8) = 5.49, p = .70; ΔCFI = 0) and revealed

448   significant negative relations between perceived pressure from the students and both autonomy

449   support (β = -.40, $p < .001$, 95% CI [-.52, -.27]) and structure (β = -.35, $p < .001$, 95% CI [-.48,

450   -.22]), while positive associations were found with control (β = .32, $p < .001$, 95% CI [.20, .45])

451   and chaos (β = .27, $p < .001$, 95% CI [.13, .40]). Perceived pressure from the principal was

452   associated with a less structuring teaching style (β = -.11, $p < .05$, 95% CI [-.22, -.00]).

453   Before examining the mediating role of teachers' need-based experiences, we examined

454   the relation between the distinguished pressures and need satisfaction and frustration in Model

455   2c. This model approached an adequate fit (χ^2(84) = 231.73, CFI = .91, RMSEA = .06, SRMR

456   = .06). As the results showed that pressure from the principal was not related to need satisfaction

457   nor frustration, these paths were removed resulting in a more parsimonious model (χ^2(86) =

458   231.61, CFI = .91, RMSEA = .06, SRMR = .06) that yielded a comparable model fit ($\Delta\chi^2$ (2) =

459   0.43, p = .81; ΔCFI = 0). In this final model, pressure from both the colleagues and the students

460   were related to less need satisfaction (colleagues: β = -.27, $p < .01$, 95% CI [-.46, -.09]; students:

461   β = -.38, $p < .001$, 95% CI [-.51, -.24]) and more experienced need frustration (colleagues: β =

462   .43, $p < .001$, 95% CI [.24, .63]; students: β = .21, $p < .05$, 95% CI [.04, .38]).

463 ***Hypothesis 3: The Mediating Role of Need-based Experiences***

464   In two mediational models, we tested whether the relation between the different sources

465   of perceived social pressures and teachers' indicators of adjustment and self-reported teaching

466   style were mediated by experiences of need satisfaction and need frustration (Model 3a and 3b)

467   using the Model Indirect procedure (Muthén et al., 2017) using 5000 bootstrap samples.

468   Considering teachers adjustment, a full mediation model (Model 3a) including the different

469   sources of pressure and need-based experiences fitted well with the data ($\chi^2(180) = 396.28$, CFI

470   = .93, RMSEA = .05, SRMR = .06). However, to obtain a more parsimonious model, non-

471   significant paths were removed, of which the results are presented in Figure 1. The fit of this

472   model did not differ from the full model ($\Delta\chi^2$ (8) = 9.79 p = .28; ΔCFI = 0) and was good

473   ($\chi^2(188) = 405.08$, CFI = .93, RMSEA = .05, SRMR = .06, R^2 = .50 for emotional exhaustion,

474   R^2 = .52 for job satisfaction). The results show that the direct relation between social pressure

475   and exhaustion was only significant for pressure from the principal (β = .18, p < .05, 95% CI

476   [.01, .33]) and the students (β = .29, p < .001, 95% CI [.17, .42]), while the indirect relation

477   through need frustration was only significant for pressure from the colleagues (β = .17, p <

478   .001, 95% CI [.10, .27]) and the students (β = .08, p < .05, 95% CI [.01, .17]). For job

479   satisfaction, the indirect relation through need satisfaction and need frustration was significant

480   for both pressure for colleagues (need satisfaction: β = -.10, p < .05, 95% CI [-.19, -.03], need

481   frustration: β = -.13, p < .01, 95% CI [-.21, -.06]) and students (need satisfaction: β = -.14, p <

482   .001, 95% CI [-.23, -.07], need frustration: β = -.06, p < .05, 95% CI [-.13, -.01]), but not for

483   principals. Also, no direct effects from any source of social pressure and job satisfaction were

484   present.

485   Considering teachers' motivating teaching style (model 3b), the full mediation model

486   yielded an acceptable fit ($\chi^2(756) = 1379.11$, CFI = .89, RMSEA = .04, SRMR = .06). Next, a

487   more parsimonious model was built ($\chi^2(773) = 1393.89$, CFI = .99, RMSEA = .04, SRMR =

488   .06, R^2 = .25 for autonomy support, R^2 = .29 for structure, R^2 = .22 for control and R^2 = .13 for

489   chaos) that showed a similar fit to the data ($\Delta\chi^2$ (17) = 14.7, p = .61; ΔCFI = 0) and is shown in

490   Figure 2. Only pressure from the students was directly linked to a less motivating (i.e. autonomy

491   support: β = -.23, p < .01, 95% CI [-.37, -.08] and structure: β = -.21, p < .01, 95% CI [-.35, -

492   .07]) and more demotivating (i.e. control: β = .24, p < .01, 95% CI [.10, .38] and chaos: β = .13,

493   p < .05, 95% CI [.05, .26]) teaching style. As for autonomy support and structure, indirect

494   relations through need satisfaction were significant for both pressure from the colleagues

495   (autonomy support: β = -.10, p < .01, 95% CI [-.18, -.03], structure: β = -.11, p < .01, 95% CI

496   [-.20, -.04]) and the students (autonomy support: β = -.11, p < .01, 95% CI [-.19, -.05], structure:

497   β = -.12, p < .01, 95% CI [-.22, -.05]). For control, only pressure from colleagues was indirectly

498   related to a more controlling teaching style through need frustration (β = .09, p < .01, 95% CI

499   [.03, .15]). No indirect relations were present for chaotic teaching[2].

Discussion

501   SDT (Ryan & Deci, 2017) considers the basic psychological needs for autonomy,

502   competence, and relatedness to be essential nutriments for teachers' personal growth and well-

503   being. Yet, the benefits of need satisfaction and the costs of need frustration may also manifest

504   interpersonally, with teachers making use of different teaching styles as a function of

505   experienced need satisfaction (Korthagen & Evelein, 2016). Despite the manifold studies

506   evidencing the beneficial and detrimental outcomes of, respectively, need satisfaction and need

507   frustration (e.g., Vansteenkiste & Ryan, 2013; Reeve, 2009), there is a paucity of research in

508   the educational domain that simultaneously addresses the role of need satisfaction and need

509   frustration, representing the so-called bright and dark pathway, for both teachers' intra- and

510   interpersonal functioning. Moreover, when investigating antecedents of teachers' interpersonal

511   behavior, most studies have focused on only one or two motivating teaching styles (cf.

512   Aelterman et al., 2019 for an exception). The present study then contributed to the current state

513 of the art, by examining the role of teachers' basic psychological needs as a unifying mechanism

514 that underlies both teachers' personal adjustment as well as their motivating interaction pattern

515 with their students. Finally, the role of both pathways in the association between perceived

516 social pressure originating from different sources (i.e., principal, colleagues, students) and these

517 critical teacher outcomes was also considered.

518 **The Differential Role of Need Satisfaction and Need Frustration**

519 Rather than representing two sides of a single construct, experiences of need satisfaction

520 and need frustration can better be studied as separate constructs in an integrated model. Indeed,

521 the asymmetrical relation between both implies that the absence of need satisfaction does not

522 necessarily imply the presence of need frustration (Vansteenkiste & Ryan,, 2013). Need

523 frustration, as manifested through experiences of loneliness, obligation, and failure, would

524 especially be predictive of teachers' disrupted functioning, a hypothesis confirmed herein.

525 Specifically, only experiences of need frustration were predictive of teachers' emotional

526 exhaustion, while both experiences of need satisfaction and frustration were related to teachers'

527 job satisfaction. Thus, teachers who feel that they have a say in how they organize their work,

528 feel effective in their teaching, and feel connected with their students and colleagues are more

529 likely to feel satisfied with their job. On the contrary, teachers who feel obliged to do things,

530 doubt their own capabilities and feel isolated, report more signs of emotional exhaustion and

531 less job satisfaction. This work goes beyond past studies on workers' psychological needs that

532 have more narrowly focused on need satisfaction as such (Van den Broeck et al., 2016) and the

533 findings are congruent with previous research conducted with teachers (Desrumaux et al.,

534 2015), showing that experienced need satisfaction was related to more well-being and to less

535 work-related stress.

536 Interestingly, not only teachers themselves but also their students may benefit from their

537 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 towards 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 antecedent 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 colleagues 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 experiencing 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 motivated for their job, a view that is supported by several researchers (e.g., Reeve, 2009). Teachers' motivation then could lead to more emotional exhaustion. Consistent with Eyal and Roth (2010) 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 pressuring. 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-informant design to validate this finding is desirable. A third, methodological explanation for these findings 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-

588 based experiences, diminishing the possibility to detect direct relations. Indeed, especially with

589 need frustration, pressure from colleagues seems to be more strongly related then the other

590 sources of pressure. Therefore, if we would address need-based experiences separately for all

591 three sources, it is possible that no direct effects of pressure would remain significant.

592   Further, with respect to teachers' job satisfaction, results showed that teachers who

593 perceived a higher level of social pressure from their colleagues or students felt less satisfied

594 with work, a relation that was fully mediated by both need frustration and need satisfaction. No

595 indirect or direct relations between pressure from the principal and job satisfaction was

596 observed. These results are consistent with a number of studies that showed that need-based

597 experiences play a mediating role in experienced pressure and psychological functioning (e.g.,

598 Bartholomew et al., 2014).

599   Regarding teachers' motivating teaching style, due to a more refined measurement of

600 social pressure, we found that social pressure from the principal was neither directly nor

601 indirectly related to the teaching style. In contrast, both pressure originating from colleagues

602 and students was indirectly related to a less need-supportive and a more need-thwarting

603 teaching style (i.e., more control) via, respectively, the experience of less need satisfaction and

604 more need frustration. In line with the above proposed energetic pathway, teachers who

605 experience pressure might believe that need-supportive teaching practices require too much

606 effort, leading them to use less effortful teaching practices. Besides these indirect effects, we

607 also found interesting direct effects for pressure originating from the students, as it seems to be

608 predominantly directly related to a less autonomy-supportive, a less structuring and a more

609 controlling teaching style, while being slightly related to more chaos in the classroom.

610   Together with the observation that teachers who feel pressured by students experienced

611 more emotional exhaustion, less job satisfaction and less need satisfaction, these findings

612 suggest that the teacher-student interactions are crucial to understand both intra- and

613   interpersonal dynamics in teachers (Van Droogenbroeck et al., 2014). Indeed, while both the

614   principal and the colleagues can provide a more or less pressuring context in the school as a

615   whole, in class, only students are present and can form a considerable source of pressure or

616   support (Dormann, 2003). In line with this view, a study of Culkin (2016) with veteran

617   elementary school teachers concluded that the main reason to leave the teaching profession was

618   difficult student behavior and the lack of support from the administration to deal with this

619   behavior successfully. Indeed, both qualitative (e.g., McMahon et al., 2017) and quantitative

620   studies (e.g., Martinez et al., 2016) have shown that experiencing more disruptive student

621   behavior coincides with a less supportive administration, possibly suggesting an interplay

622   between the different sources of social pressure. Consistent with this view, all three sources of

623   social pressure were modestly related ($.25 < r < .36$) and yielded parallel correlates with most

624   of the other measures. Yet, when competing for unique variance some of the observed correlates

625   for principal pressure (i.e., relation with job satisfaction and need-based experiences) dropped

626   to non-significance in the structural analyses.

627   Yet, apart from treating them as separate sources, it is also worth highlighting that these

628   different sources can form a sequential chain of pressure. Specifically, a pressuring leadership

629   style of the principal might create a school climate where pressure among colleagues and

630   pressure from students to teachers have more room to unfold. That is, if pressure by principals

631   is salient as a model of interacting with each other, teachers and students may copy this

632   interaction pattern, with the various interpersonal relations between different actors thus loaded

633   with conflict, stress, and pressure. Supportive of this reasoning, previous research in the context

634   of inpatient treatment showed that staff members indirectly affected inpatients' need-based

635   experiences through stimulating a more autonomy-supportive approach among fellow patients

636   (Van der Kaap-Deeder et al., 2014).

637 **Limitations and Future Directions**

638   The present study has several limitations. First, given the single-informant and self-

639 report nature of the data, it is possible that some of the observed associations got artificially

640 inflated. Second, teachers may suffer from a social desirability bias with respect to their own

641 teaching style. Past research has indeed confirmed that there are mean level differences between

642 students and teachers, with teachers perceiving themselves as adopting a more motivating and

643 less demotivating style compared to their students (Aelterman et al., 2019). Therefore, future

644 research may include student reports and observational data to decrease both the likelihood of

645 inflated structural relations due to shared measurement variance and response bias in teachers.

646 Third, as a large part of the data was collected through convenience sampling, a selection bias

647 could have occurred. That is, some schools with an unhealthy work climate or some individual

648 teachers suffering from emotional exhaustion or dissatisfaction with the job may be

649 underrepresented. Moreover, we did not have all information available about the school (e.g.,

650 average class sizes), the students (e.g., social economic status) and the teacher (e.g., racial

651 background), possibly limiting the generalizability of what we found. In addition, although our

652 analyses did not support multilevel analyses due to the low variance on the school level, future

653 research could sample a larger number of schools to shed light on the role of overall school

654 climate (Cohen et al., 2009) and school culture (Schoen & Teddlie, 2008) as potential predictors

655 of between-school differences. Inspired by the Ecological Systems Theory (Bronfenbrenner,

656 1992), it could be informative to include other proximal (e.g., demands from family members;

657 Cinamon et al., 2007) and distal sources (e.g., government regulations; Deci & Ryan, 2016) of

658 social pressure as well. Fourth, the cross-sectional design prevents us from drawing causal

659 conclusions. Although this study has a strong theoretical foundation, future experimental

660 research in which pressure is induced (e.g., Deci et al., 1982) is warranted to address the

661 direction of the effects. Furthermore, longitudinal research addressing bidirectional relations

662   between need-based experiences and both teachers' well-being and teaching style is indicated.

663   To illustrate, it could be that a demotivating teaching style leads to competence frustration as a

664   consequence of encountered student disengagement (e.g., Van Den Berghe et al., 2016). This

665   issue of bidirectionality could also be addressed via a moment-to-moment time series design as

666   these dynamics may manifest fairly quickly and dynamically (e.g., Pennings et al., 2018).

Theoretical and Practical Implications

668   Although further validation is indicated, the findings of this study have several

669   theoretical implications. First, given the differential relation of need satisfaction and need

670   frustration and teacher outcomes, this study further underscores the distinction between a bright

671   and dark pathway in teachers' need-based functioning. The separate assessment and treatment

672   of need frustration in an integrated model allows one to explain a substantial and incremental

673   portion of the variance in outcomes, especially those pertaining to teachers' suboptimal

674   functioning, which is consistent with prior research (Bartholomew et al., 2011; Haerens et al.,

675   2015) and theorizing (Vansteenkiste & Ryan et al., 2013). Second, this study highlights the role

676   of three different sources of social pressure in teachers.

677   Since pressure originating from the students seems to have important direct relations

678   with teachers' teaching style and feelings of exhaustion, at the practical level, it is

679   recommended for educational stakeholders to diminish social pressure in the school

680   environment both inside and outside the classroom. For teachers in specific, it is recommended

681   to diminish student pressure and misconduct in a non-controlling way, as previous research has

682   shown that controlling teaching behavior is associated with more, rather than less oppositional

683   behavior (Flamant et al., in submission). In that regard, Assor et al., (2018) developed an

684   intervention designed to cope with student misconduct in a non-controlling way and found that

685   students of teachers in the intervention group showed a decrease in misbehavior over time. By

686   preventing misbehavior to occur in the classroom, teachers could avoid that students put

687 pressure on them. When confronted with pressure from students or a more general pressuring

688 environment, teachers might do well to adopt a mindful attitude towards this experience, as

689 previous research has shown that people who are mindful experience less need frustration when

690 being confronted with a pressuring work environment (Olafsen et al., 2021; Schultz et al.,

691 2015).

692   Further, school principals may want to create a need-supportive environment for

693 teachers, given the positive relation between need satisfaction and teacher well-being and the

694 use of motivating teaching style. Principals could offer teachers freedom and choice, fully

695 acknowledging their perspective, and aligning with their interests to foster autonomy need

696 satisfaction (Collie et al., 2018). Likewise, by providing help when needed and rescheduling

697 and distributing tasks that fit with teachers' expertise and qualities, their need for competence

698 could be supported (Korthagen & Evelein, 2016). Similarly, teachers' need for relatedness is

699 nurtured when opportunities for informal and more formal networking are created and when

700 teachers can develop more personal relationships with their students (Skaalvik & Skaalvik,

701 2011). Intervention work (Jungert et al., 2018) indicates that employees can be trained to adopt

702 a more need-supportive approach to their colleagues, while Stone et al. (2009) present six

703 actions organizations can take to nurture need satisfaction in their employees, including creating

704 an open dialogue by welcoming teachers' perspective on problems and communicating in a

705 clear and transparent way and giving honest and positive feedback. At the same time, avoiding

706 need-frustration in teachers seems even more imperative, given these experiences were found

707 to be more damaging (e.g., Bartholomew et al., 2014). In this context, Stone et al. (2009) advise

708 supervisors to refrain from tactics such as social comparison with colleagues and the use of

709 rewards.

Conclusion

710   In order to create a healthy school environment for both teachers and students, the

711

712 present study suggests that it is critical to develop a need-conducive school policy. When

713 teachers experience greater satisfaction of their basic needs, they do not only benefit personally,

714 but also their students do as they report using a more motivating teaching style in interaction

715 with them. Apart from this bright pathway, the prevention of experiences of need frustration is

716 critical in its own right as teachers whose basic needs are frustrated feel more exhausted and

717 report adopting a more demotivating teaching style to their students. As pressure from either

718 colleagues, students, or principals themselves comes with a cost, it can best be avoided.

719 Especially the minimization of student pressure on teachers is important as this source of

720 pressure was directly linked sto a demotivating teaching style. By fostering teachers' basic

721 psychological needs, school principals are able to kill two birds with one stone, thereby creating

722 optimally motivating teaching conditions for students while providing a healthy work climate

723 for their staff.

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1025
1026   **Footnotes**

1027   [1] The data of this sample are also partly published in a paper written by Aelterman et al.

1028   (i.e., sample 6, 2019).

1029   [2] In a series of supplementary hierarchical linear regression analyses, we examined if

1030   teaching experience would moderate the effect of perceived social pressure on teachers' need-

1031   based experiences and motivating teaching style. Results show that out of the 18 examined

1032   interaction effects between pressure and teaching experience, none was significant ($.07 < p <$

1033 $.88$), indicating no moderating effect of teaching experience.

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)	.36***	-									
3. Pressure students	2.03 (0.57)	.25***	.27***	-								
Need-based experiences												
4. Need satisfaction	3.91 (0.45)	-.24***	-.28***	-.36***	-							
5. Need frustration	1.88 (0.49)	.23***	.39***	.28***	-.61***	-						
Personal adjustment												
6. Emotional exhaustion	2.20 (0.86)	.33***	.34***	.41***	-.35***	.49***	-					
7. Job satisfaction	3.82 (0.76)	-.14**	-.16**	-.15**	.52***	-.49***	-.29***	-				
Motivating teaching style												
8. Autonomy support	4.89 (0.73)	-.12*	-.05	-.26***	.31***	-.16**	-.03	.10	-			
9. Structure	5.53 (0.61)	-.19***	-.14**	-.28***	.35***	-.19***	-.06	.17**	.67***	-		
10. Control	3.27 (0.90)	.15**	.08	.31***	-.15**	.23***	.11*	-.05	-.32***	-.16**	-	
11. Chaos	2.37 (0.71)	.20***	.17**	.22***	-.23***	.24***	.17**	-.07	-.20***	-.38***	.36***	-

*p < .05, **p < .01, ***p < .001 (two-tailed).
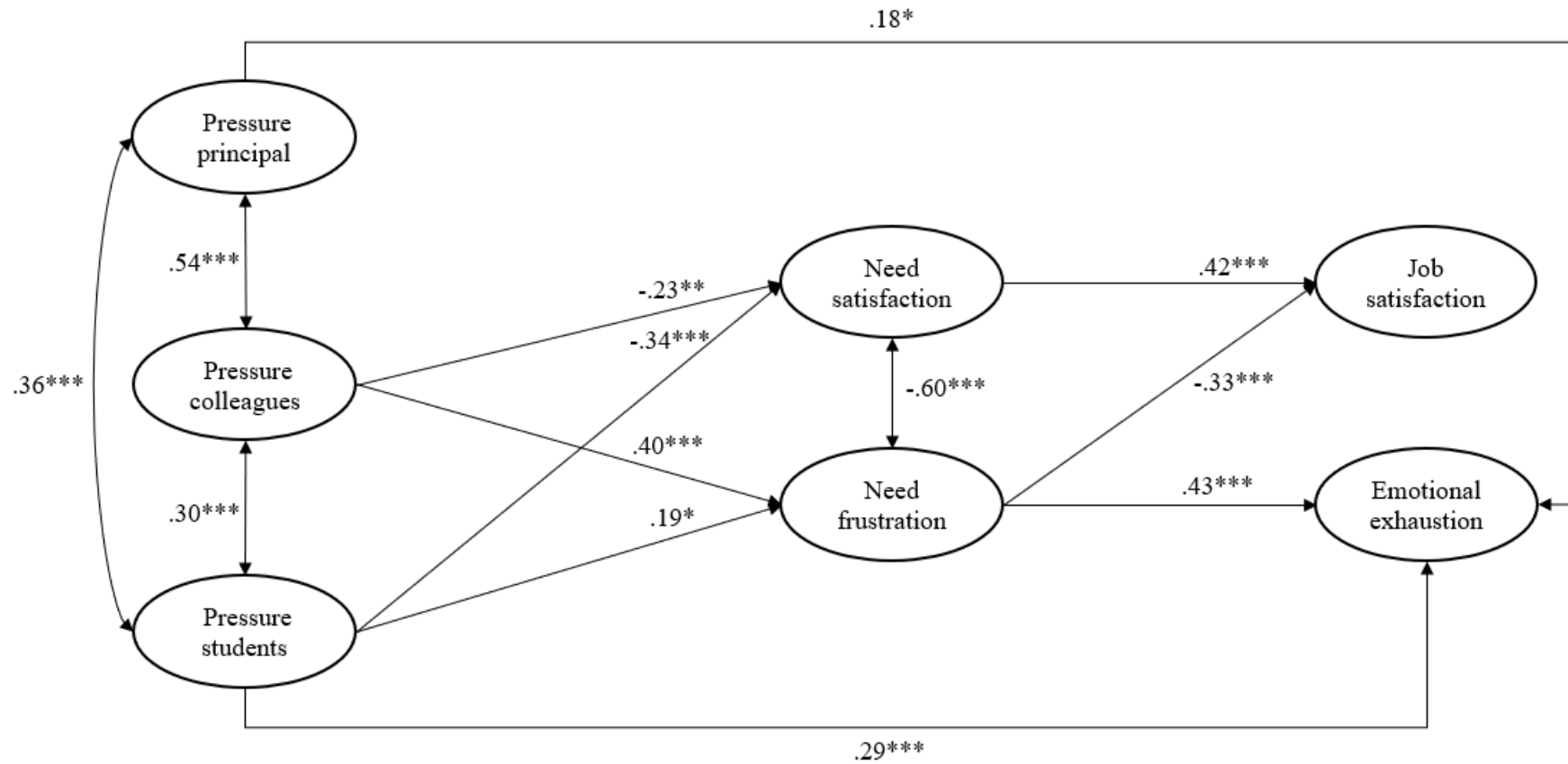
Figure 1. Graphical representation of the mediation model for different sources of social pressure and teachers' personal adjustment. $\chi^2(188) = 405.08$, CFI = .93.

$*p < .05; **p < .01; ***p < .001$.
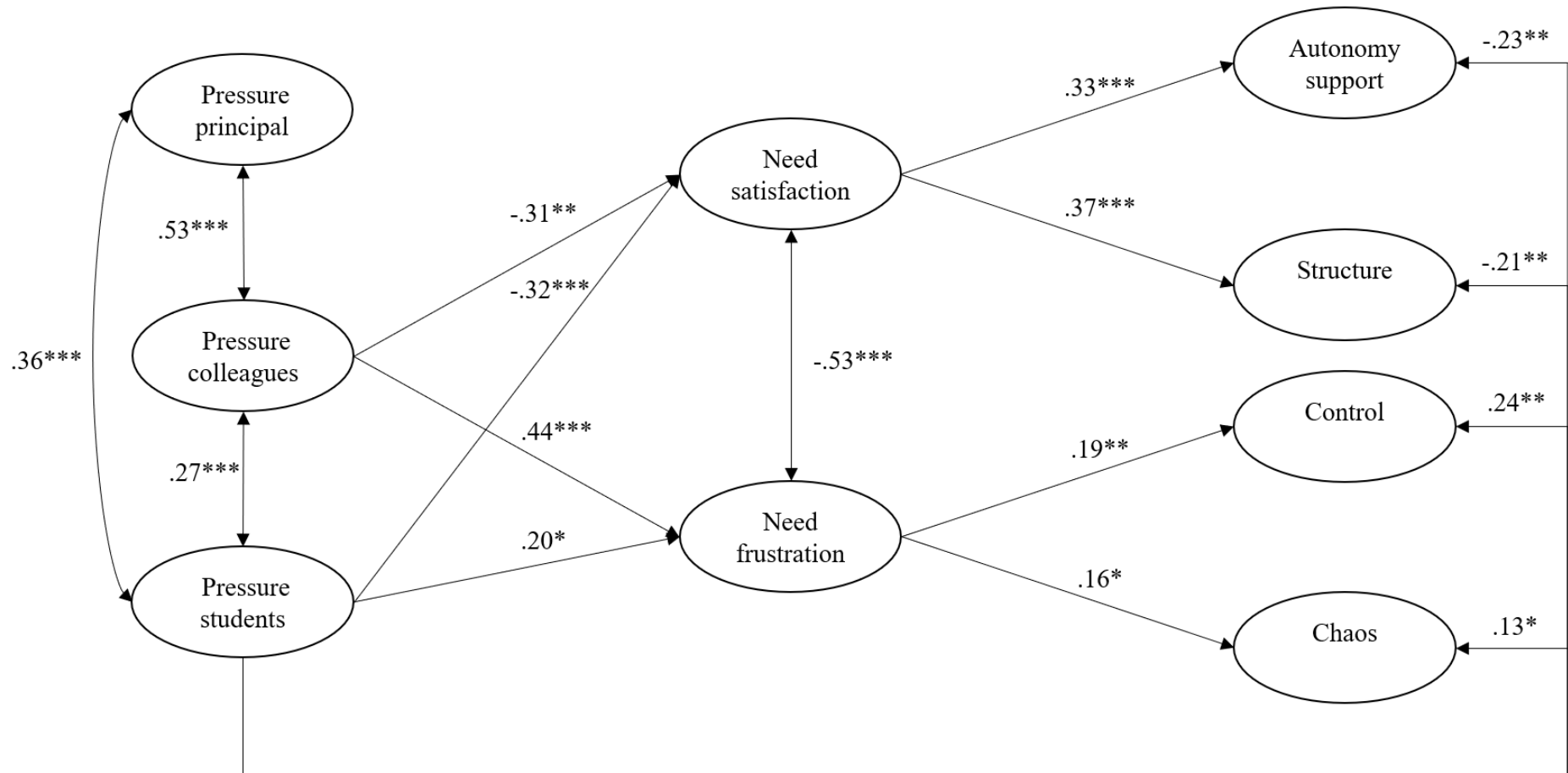
Figure 2. Graphical representation of the mediation model for different sources of social pressure and teachers' motivating teaching style. ($\chi^2(774)$

= 1402.89, CFI = .90.

*p < .05; **p < .01; ***p < .001.