Psychologically Controlling Teaching: Examining Outcomes, Antecedents, and Mediators

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Psychologically controlling teaching (PCT) refers to the use of intrusive behaviors that pressure students to act, think, and feel in particular ways. The goal of the present research was to examine the dynamics involved in PCT. Study 1 examined self-regulated learning and achievement outcomes of PCT, whereas Study 2 examined antecedents (i.e., individual and environmental pressures). In Study 1, we found that PCT was related negatively to students’ use of self-regulation strategies, which, in turn, was positively related to academic achievement. Students’ relative autonomy for studying played an intervening role in these associations. Findings of Study 2 revealed that both pressure from above (i.e., a pressuring school environment) and pressure from within (i.e., teachers’ low relative autonomy for teaching) were related to PCT, whereas pressure from below (i.e., students’ low relative autonomy for studying) was not. These associations could be accounted for by depersonalization, one component of teacher burnout. The discussion focuses on how PCT represents one aspect of the “dark side” of teaching, which is understudied in educational psychology.

Keywords: psychological control, teaching style, motivation, self-determination

“Most of you scored poorly on the last test, and in the last few days, you have been behaving like little children. I am disappointed in this class.” Such a statement is indicative for teachers’ use of psychological control. Psychologically controlling teaching (PCT) refers to the use of intrusive and sometimes subtle behaviors that pressure students to act, think, and feel in particular ways. Common to these intrusive behaviors (including guilt induction, shaming, and expression of disappointment) is that they convey a conditionally approving attitude from teachers toward students. In this article, we introduce PCT in the teaching literature, drawing on Barber’s work in the parenting literature (Barber, 1996; Barber & Harmon, 2002) and self-determination theory (SDT; Deci & Ryan, 2000; Vansteenkiste, Niemiec, & Soenens, 2010).

Psychological Control: From Parenting to Teaching

Historically, the concept of parental psychological control was discovered in a rather inductive, bottom-up fashion. Through large-scale factor analyses, early scholars in the domain of parenting identified a number of highly correlated parenting strategies such as guilt induction, shaming, and love withdrawal and referred to this set of strategies as psychological control (Schaefer, 1965). During the past two decades, the concept of parental psychological control has been examined intensively (Barber & Harmon, 2002; Soenens & Vansteenkiste, 2010). Also, scholars have attempted to provide a more precise and encompassing definition of psychological control. Parental psychological control has been defined by Barber (1996, p. 3297) as

...a rather insidious type of control that potentially inhibits or intrudes upon psychological development through manipulation and exploitation of the parent–child bond (e.g., love-withdrawal and guilt induction), negative, affect-laden expressions and criticisms (e.g., disappointment and shame), and excessive personal control (e.g., possessiveness, protectiveness).

Parental psychological control essentially involves a conditionally approving attitude toward children, where parents withdraw love and appeal to feelings of guilt and shame when children fail to succeed at parentally valued tasks (Assor, Roth, & Deci, 2004; Barber & Xia, in press). Numerous studies have shown that psychologically controlling parenting is related to maladaptive developmental outcomes in children and adolescents and to internalizing problems in particular (Soenens, Luyckx, Vansteenkiste, Duriez, & Goossens, 2008). In the academic domain, psycholog-
tical control has been found to relate to maladaptive learning strategies (Vansteenkiste, Zhou, Lens, & Soenens, 2005) and to low academic achievement (Aunola & Nurmi, 2004).

It has been argued that the use of psychological control is not unique to parents and that other socialization figures, including teachers, might also engage in psychological control (Barber & Olsen, 1997). Specifically, psychologically controlling teaching (PCT) would be apparent when teachers use their own opinion and values as an exclusive frame of reference and ignore their students’ perspective. Using intrusive tactics such as guilt induction, shaming, and expression of disappointment, teachers would try to motivate learners to comply with their frame of reference. Similar to psychologically controlling parents’ display of conditional regard, psychologically controlling teachers would show reduced concern and involvement when students fail to reach teacher-imposed standards. Although teachers may sometimes use these intrusive behaviors in a deliberate and intentional fashion, such as when they want to prompt attention in the class, at other times they may engage in these behaviors impulsively, for instance, when they experience distress or pressure themselves. The overall aim of the current research is to examine how PCT relates to features of students’ and teachers’ functioning. To better understand how PCT relates to other teaching dimensions and how it relates to motivational dynamics in both students and teachers, we draw from self-determination theory.

Self-Determination Theory

Basic Psychological Needs

Self-determination theory (SDT; Deci & Ryan, 2000) is a broad theory on motivation and personality development that has been applied intensively in educational psychology (Niemiec & Ryan, 2009; Reeve, 2009; Vansteenkiste, Lens & Deci, 2006). At the heart of SDT is the formulation of three basic psychological needs, that is, the needs for autonomy (i.e., experiencing a sense of volitional and psychological freedom), competence (i.e., experiencing personal effectiveness), and relatedness (i.e., experiencing closeness and mutuality in interpersonal relationships). When satisfied, these needs would provide energy and foster well-being, adjustment, and high-quality motivation. In contrast, thwarted needs would deplete individuals’ energy and vitality and would undermine their well-being and motivation.

Teachers’ Interpersonal Style

One important factor involved in processes of need satisfaction and need frustration is the interpersonal style used by socialization figures, including teachers. Parallel to the distinction between the three needs, SDT distinguishes between three dimensions of teaching style that would affect students’ need satisfaction and subsequent motivation and adjustment (Grolnick, Deci, & Ryan, 1997; Reeve, 2009). First, involvement pertains to teachers’ engagement in a warm and supportive style of communication and to teachers’ capacity to respond adequately to students’ distress. Involvement is contrasted with a cold, distant, and aloof teacher orientation. Second, structure refers to the provision of clear instructions in the classroom and the communication of realistic goals and expectations for behavior and learning. Structure also involves giving positive feedback and providing adequate help during the learning process. Structure is contrasted with a chaotic class climate. Third, and essential to the topic of this research, autonomy support refers to teachers’ promotion of volitional functioning and teachers’ fostering of a sense of initiative and interest in students. Key autonomy-supportive practices include taking the students’ frame of reference, demonstrating intrinsic interest in the learning material, providing choices and opportunities for initiative, and communicating a meaningful rationale when choice is limited (Assor & Kaplan, 2001; Deci, Eghrari, Patrick, & Leone, 1994).

In SDT, autonomy support is contrasted with a controlling interpersonal style, that is, a style where teachers ignore the students’ perspective and pressure the students to think, act, or feel in particular ways (Deci et al., 1994; Grolnick, 2003; Reeve, 2009). According to SDT, a controlling style can be expressed in at least two different ways, that is, as internally or externally controlling (Ryan, 1982; Soenens & Vansteenkiste, 2010). Internally controlling teaching refers to triggering internally pressuring forces in learners by appealing to students’ feelings of guilt, shame, anxiety, and self-worth. Activating those internal pressures often happens in a covert and subtle way. Externally controlling teaching refers to activating a sense of external obligation in students by using rather overtly controlling strategies, such as punishments, pressuring rewards, and explicitly controlling language, like “you must” (Vansteenkiste, Simons, Lens, Soenens, & Matos, 2005).

When framed from the SDT perspective, PCT clearly represents an autonomy-suppressing and controlling teaching strategy. It is relatively less clear, however, whether PCT is fully equivalent to the concept of an internally controlling style in particular (Soenens & Vansteenkiste, 2010). At the definitional level, PCT seems to be a somewhat broader construct than internally controlling teaching. According to Barber’s (1996) definition, psychological control involves an intrusive and manipulative parental orientation. In theory, such an orientation might be expressed in both internally controlling practices (such as guilt induction) and in relatively more externally controlling practices (such as explicit and harsh criticism). At the level of assessment, however, psychological control is typically operationalized in terms of mainly internally controlling practices such as guilt induction, shaming, and love withdrawal. As such, the measure of PCT largely fits SDT’s concept of internally controlling teaching.

In sum, from the perspective of SDT, PCT is largely incompatible with teacher autonomy support and with need-supportive teaching in general (Grolnick, 2003; Vansteenkiste, Zhou, et al., 2005). It is particularly interesting to examine psychological control in the teaching context because SDT-based research on teaching style has tended to focus on the adaptive side of each of the teaching dimensions and their beneficial effects on students’ learning (but see, for example, Deci, Schwartz, Sheinman, & Ryan, 1981). An examination of the concept of PCT may provide an opportunity to address the relatively neglected “dark” side of teaching.

Consequences of Teaching Style

According to SDT, students’ perceptions of their teachers as need-supportive or need-frustrating (including perceptions of teachers as being psychologically controlling) have important ram-
ifications for their motivational orientation and subsequent learning strategies and achievement (Niemiec & Ryan, 2009; Vansteenkiste, Zhou, et al., 2005). In SDT, the quality of motivation is conceptualized in terms of the degree to which motivation is autonomous (vs. relatively more controlled) in nature. Autonomously motivated students learn in a self-endorsed or volitional fashion because of the perceived value (i.e., identified regulation) or because of the inherent satisfaction (i.e., intrinsic motivation) of the learning activity (Ryan & Connell, 1989). In contrast, students with a controlled motivation learn to meet external (e.g., rewards, external regulation) or internal (e.g., feelings of guilt, introjected regulation) pressures (Ryan, Connell, & Grolnick, 1992). Several studies demonstrated that an autonomous, relative to a controlled, study motivation is associated positively with students’ use of effective and thorough strategies of self-regulated learning such as time management and deep-level cognitive processing (Vansteenkiste, Sierens, Soenens, Luyckx, & Lens, 2009) and grades (Black & Deci, 2000).

Whereas need-supportive teaching would foster a relatively more autonomous motivation in students, need-frustrating teaching is thought to relate negatively to relative autonomy for studying (Niemiec & Ryan, 2009). Consistent with this hypothesis, research has indeed shown positive associations between teacher autonomy support and autonomous (relative to controlled) motives for studying (Vansteenkiste, Zhou, et al., 2005). Few studies, however, have examined how student perceptions of autonomy-suppressing teacher practices relate to students’ quality of motivation. Herein, we propose that perceived PCT, as it represents a feature of need-frustrating teaching, would relate negatively to autonomous (relative to controlled) motivation for studying and to subsequent self-regulated learning strategies and grades.

**Antecedents of Teaching Style**

In addition to providing an analysis of the consequences of need-thwarting teaching (including PCT), SDT offers a theoretical perspective on the antecedents of teaching style. Specifically with regard to controlling teaching, it is argued that pressuring features in teachers’ own functioning and interpersonal environment increase the likelihood of engagement in a controlling teaching style. Such need-frustrating features and pressures might deplete teachers’ energy. As a consequence, they may fail to engage in a vitalizing and autonomy-supportive style and instead look for shortcuts to make the students’ comply with the teachers’ agenda. This would be reflected in the use of controlling practices and psychological control in particular.

We distinguish three sources of pressure similar to the sources discerned in the parenting and SDT literature: pressure from above, from within, and from below (Grolnick, 2003). Within the teaching context, pressure from above refers to pressure from the environment, in particular from parents, colleagues, and principals. Such pressure can be characterized, for example, by frequent evaluations and forced conformity to colleagues’ teaching methods (Pelletier, Séguin-Lévesque, & Legault, 2002). Pressure from within and pressure from below refer to stressful conditions in the functioning of teachers themselves and of their students, respectively. One important feature of pressure from within is teachers’ own motivational orientation. Much like students’ motivation for school can be more or less autonomous (vs. controlled) in nature, teachers differ in how autonomously (vs. controlled) they are motivated to do their work. Similarly, teachers may perceive their students as high or low on quality of motivation, and a perception of low-quality motivation in students may represent another source of pressure for teachers.

Various studies have examined associations between these pressures and teaching style, thereby typically focusing on one particular source of pressure. For example, Roth, Assor, Kanat-Maymon, and Kaplan (2007) demonstrated, using multilevel modeling, that teachers’ self-reported autonomous, relative to their controlled, reasons for teaching was positively associated with child-reported perceptions of autonomy-supportive teaching. Few studies, however, examined the combined effects of the three forms of pressure, with the exception of Taylor, Ntoumanis, and Standage (2008). These authors found that perceived job pressure (pressure from above), teachers’ autonomous causality orientation (low pressure from within), and perceptions of students’ relative autonomy (low pressure from below) were all related to teachers’ use of adaptive motivational strategies. In this research, we further examined whether the three types of perceived pressure would yield a significant relation with the maladaptive teaching dimension of PCT. It was expected that the exposure to any of these pressuring sources would prompt teachers to act in a psychologically controlling way.

**The Present Set of Studies**

We present the results of two studies intended to address two broad aims. First, we aimed at developing a self-report measure of perceived PCT and demonstrating its reliability and validity. Second, we wanted to study the dynamics of perceived PCT by examining both outcomes (Study 1) and antecedents (Study 2) of perceived PCT. Specifically, we hypothesized that perceived PCT will be negatively associated with students’ autonomous motivation and self-regulated learning (Study 1, outcomes) and will be positively related to rigid and controlling forces in teachers’ own functioning and working climate (Study 2, antecedents). The hypothesis that controlling dynamics would be involved in PCT fits with SDT, which maintains that both teachers and students will function in a more controlled and dysfunctional fashion when encountering pressuring events or persons (Deci & Ryan, 2000).

**Study 1: Psychologically Controlling Teaching and Students’ Motivation and Learning**

The first goal of Study 1 was to develop and validate a measure of perceived PCT. To externally validate our scale, we examined associations between perceived PCT and a well-validated measure of dimensions of need-supportive teaching, that is, involvement, structure, and autonomy support (Skinner & Belmont, 1993). The second goal of Study 1 was to examine associations between perceived PCT and students’ motivation, learning, and performance. On the basis of SDT, we hypothesized that PCT would relate negatively to autonomous (vs. controlled) motives for studying as well as to strategies of self-regulated learning and grades.

Self-regulated learning (SRL) has been defined as a set of proactive and self-focused processes in which students constructively monitor their learning toward the completion of academic tasks (Zimmerman, 2008). In our study, as in many other studies...
(e.g., Case, Harris, & Graham, 1992), we concentrated on the cognitive and meta-cognitive components of SRL. Cognitive strategies comprise deep-level cognitive strategies such as critical thinking and summarizing. Students who use deep-level processing avoid simply memorizing the learning material by repetition, but want to master the learning material thoroughly (Rozendaal, Minnaert, & Boekaerts, 2005). Meta-cognitive strategies refer to planning, organizing, and self-monitoring one’s learning process (Winne, 1995). We hypothesized that perceived PCT would be negatively related to both types of self-regulatory capacities. Because a lack of self-regulatory capacities represents a risk factor for low academic achievement (Pintrich & De Groot, 1990), we also examined whether perceived PCT is related to lower school achievement through its negative association with self-regulation strategies. Finally, we hypothesized that associations between perceived PCT and SRL (and subsequent grades) would be mediated by students’ quality of motivation (i.e., autonomous vs. controlled).

Method

Participants and procedure. The sample comprised 533 adolescents (11th and 12th grade; 41.2% boys) from nine secondary schools in the academic track in Flanders (Belgium). Participants’ mean age was 16.9 years ($SD = 0.7$ years). The questionnaires were administered during a class period of 50 min, with the first author being present to answer questions. One or two teachers were also present during the administration of the surveys. Students’ permission to participate in the study and for researchers to scrutinize their exam scores was obtained through a procedure of passive informed consent. Specifically, the researcher orally explained the purpose of the study and the necessity to use students’ exam scores. Confidential treatment of the data was guaranteed. All students were told they could refuse participation and deny permission for their exam scores to be used in the study by filling out a form. None of the students chose to do so. A total of 511 exam scores were provided by the school board 1 month later.

Measures. All questionnaires in Study 1 and Study 2 were translated from English to Dutch, the participants’ mother tongue, using the guidelines of the International Test Commission (Hambleton, 1994). All scales used a 5-point Likert-type scale, ranging from 1 (strongly disagree) to 5 (strongly agree), unless otherwise indicated. Scale scores were computed as the means of items. Means and standard deviations for all study variables are provided in Table 1.

Psychologically controlling teaching. A group of scholars experienced with research on psychological control (i.e., the first three authors) selected seven items from two frequently used and validated scales, that is, the Psychological Control Scale–Youth Self-Report (PCS–YSR; Barber, 1996) and the Psychological Control Scale of the Child’s Report of Parental Behavior Inventory (CRPBI; Schaefer, 1965). Five items were almost literally taken over, but the socialization figure referred to was changed from parents to teachers (e.g., “My teachers often interrupt me”). Two items were slightly adjusted to tap PCT (e.g., “My teachers clearly show that I have hurt their feelings when I have failed to live up to their expectations”). The resulting scale and its descriptive statistics can be found in Table 2. Information about the psychometric characteristics of this scale is provided in the Results section.

Autonomy support, structure, and involvement. These teaching dimensions were measured using the short form of the Teacher as Social Context Questionnaire (TASC; Belmont, Skinner, Wellborn, & Connell, 1988). The TASC comprises subscales for Autonomy Support (eight items; e.g., “My teachers give me a lot of choices about how I do my schoolwork”; $\alpha = .71$), Structure (eight items; e.g., “If I can’t solve a problem, my teachers show me different ways to try it”; $\alpha = .70$), and Involvement (eight items; e.g., “My teachers really care about me”; $\alpha = .83$).

Relative autonomy for studying. To assess students’ academic motivation, we used an adapted, Dutch version (16 items; Vansteenkiste et al., 2009) of the Self-Regulation Questionnaire–Academic initially introduced by Ryan and Connell (1989). The measure consists of four subscales, representing four different types of motivation for studying, that is, external regulation (four items, e.g., “Studying is what I’m supposed to do”; $\alpha = .82$), introjected regulation (four items, e.g., “I will feel bad about myself if I do not study”; $\alpha = .72$), identified regulation (four items, e.g., “It is personally important to me”; $\alpha = .79$), and intrinsic motivation (four items, e.g., “I enjoy studying”; $\alpha = .90$). Similar to the procedure used in previous research (Soenens & Vansteenkiste, 2005), after assigning a weight to the four types of motivation according to their degree of autonomy—that is, exter-

<table>
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<tr>
<th>Variable</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
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<th>8</th>
<th>Total</th>
<th>Male</th>
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<th>Female</th>
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<tbody>
<tr>
<td>1. PCT</td>
<td>$-22^{**}$</td>
<td>$-05$</td>
<td>$-08$</td>
<td>$08$</td>
<td>$-15^{**}$</td>
<td>$-27^{**}$</td>
<td>$-14^{**}$</td>
<td>2.28</td>
<td>0.71</td>
<td>2.50</td>
<td>0.73</td>
<td>2.13</td>
<td>0.66</td>
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<td>2. Relative autonomy</td>
<td>$02^{**}$</td>
<td>$06$</td>
<td>$24^{**}$</td>
<td>$30^{**}$</td>
<td>$39^{**}$</td>
<td>$22^{**}$</td>
<td>$-18^{**}$</td>
<td>3.18</td>
<td>0.60</td>
<td>3.12</td>
<td>0.62</td>
<td>3.22</td>
<td>0.58</td>
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<tr>
<td>3. Elaboration</td>
<td>$05^{**}$</td>
<td>$03^{**}$</td>
<td>$50^{**}$</td>
<td>$28^{**}$</td>
<td>$07$</td>
<td>$3.18$</td>
<td>0.60</td>
<td>3.12</td>
<td>0.62</td>
<td>3.22</td>
<td>0.58</td>
<td>3.77*</td>
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<tr>
<td>4. Organization</td>
<td>$06^{**}$</td>
<td>$33^{**}$</td>
<td>$20^{**}$</td>
<td>$04$</td>
<td>$3.08$</td>
<td>0.84</td>
<td>2.90</td>
<td>0.87</td>
<td>3.20</td>
<td>0.80</td>
<td>16.51**</td>
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<tr>
<td>5. Critical thinking</td>
<td>$05^{**}$</td>
<td>$13^{**}$</td>
<td>$01$</td>
<td>$27^{**}$</td>
<td>0.74</td>
<td>2.94</td>
<td>0.78</td>
<td>2.66</td>
<td>0.69</td>
<td>18.85**</td>
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<tr>
<td>6. Meta-cognitive self-regulation</td>
<td>$08^{**}$</td>
<td>$23^{**}$</td>
<td>$3.19$</td>
<td>0.49</td>
<td>$3.14$</td>
<td>0.49</td>
<td>3.23</td>
<td>0.49</td>
<td>4.68*</td>
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<tr>
<td>7. Time and study environment</td>
<td>$26^{**}$</td>
<td>$3.10$</td>
<td>$0.66$</td>
<td>$3.00$</td>
<td>$0.65$</td>
<td>$3.17$</td>
<td>0.65</td>
<td>$8.56^{**}$</td>
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<td>8. Academic achievement</td>
<td>$66.47$</td>
<td>$7.16$</td>
<td>$65.15$</td>
<td>$7.13$</td>
<td>$67.40$</td>
<td>$7.06$</td>
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Note. PCT = psychologically controlling teaching.

$\alpha = (1, 524)$ for the SRL variables; $df = (1, 526)$ for PCT; $df = (1, 528)$ for relative autonomy for studying; $df = (1, 509)$ for academic achievement.

*p < .05. **p < .01.
null regulation, introjected regulation, identified regulation, and intrinsic motivation. For example, one item from the teacher report version is "I always try to change my students."

Deep-level cognitive strategy use. Participants were administered three scales from the Motivated Strategies for Learning Questionnaire (MSLQ; Pintrich, Smith, Garcia, & McKeachie, 1991), namely, Elaboration (six items, e.g., "When reading for a class, I try to relate the material to what I already know"; $\alpha = .56$), Organization (four items, e.g., "I make simple charts, diagrams, or tables to help me organize course material"; $\alpha = .67$), and Critical Thinking (5 items, e.g., "I treat the course material as a starting point and try to develop my own ideas about it"; $\alpha = .75$). Rather than tapping into participants’ use of deep-level cognitive learning strategies for a specific course, as is commonly done, we assessed participants’ deep-level learning in general.

Meta-cognitive strategy use. We measured students’ use of meta-cognitive strategies using the subscales for Meta-Cognitive Self-Regulation (12 items; e.g., “Before I study new course material thoroughly, I often skim it to see how it is organized”) and Time and Study Environment (eight items; e.g., “I usually study in a place where I can concentrate on my course work”) of the MSLQ. These items also pertained to participants’ use of meta-cognitive strategy use in general rather than with respect to a specific course. The subscales had a Cronbach’s alpha of .65 (Meta-Cognitive Self-Regulation) and .70 (Time and Study Environment).

Academic performance. Academic performance was measured by students’ overall grades at the end of the first semester (December), which were obtained through the school board. Grades ranged between 41% and 88%, with a mean of 66.47% ($SD = 7.17$).

Plan of analysis. We examined the proposed model in which PCT relates to motivation, SRL, and achievement using structural equation modeling with latent variables (LISREL 8.7; Jöreskog & Sörbom, 1996). In line with Holmbeck’s (1997) recommendations, we tested the following models: (a) direct-effects models, (b) full-mediation models, and (c) partial-mediation models. Full mediation is demonstrated when the addition of a direct path in the third model does not improve fit compared with the second model. This three-step approach was used to test different portions of our hypothesized model (see Figure 1). Assessment of model fit was based on multiple criteria: the root-mean-square error of approximation (RMSEA), the comparative fit index (CFI), and the standardized root-mean-square residual (SRMR). A RMSEA of .08 or below (Hu & Bentler, 1999), a CFI value $>.90$ (Byrne, 1994), and a small SRMR value (.06; Quintana & Maxwell, 1999) indicate acceptable fit to the data.

Results

Preliminary analyses. Initial analyses focused on the psychometric characteristics of the newly developed instrument and associations with related constructs.

Reliability and validity of the PCT Scale—Student Report. To ensure the adequacy of the PCT Scale as a measure of perceived teacher psychological control, we investigated (a) the factorial validity and the internal consistency and (b) the external validity of the scale by calculating zero-order correlations with more adaptive teaching dimensions, that is, perceived autonomy support, structure, and involvement.

To examine the factorial validity of the PCT Scale, we subjected items to a principal component analysis. This analysis revealed one clear factor, accounting for 46% of the variance, with all item loadings above 0.58 (eigenvalue of 3.20). Cronbach’s alpha was .80. PCT was significantly negatively related to autonomy support ($r = -.44, p < .01$), structure ($r = -.38, p < .01$), and involvement ($r = -.29, p < .01$). PCT and autonomy support were more strongly negatively related than PCT and involvement (Fisher $z = -3.92, p < .001$) and PCT and autonomy support were somewhat more strongly related than PCT and structure (Fisher $z = -1.67, p = .09$).

Correlational analyses and descriptive statistics. Correlation coefficients among the study variables are presented in Table 1. PCT was significantly negatively related to students’ relative autonomy for studying, to the two meta-cognitive strategy use subscales, and to academic achievement. Unexpectedly, PCT was unrelated to the use of deep-level cognitive strategies. Further, students’ relative autonomy for studying was significantly positively related to all SRL strategies, except for elaboration, and to academic achievement. Finally, the two meta-cognitive strategy use subscales, but not the deep-level cognitive strategy use subscales, were significantly positively related to students’ academic performance.
Next, we examined gender differences because boys and girls have been found to differ in various study variables, such as motivation (Vallerand & Bissonnette, 1992) and meta-cognitive strategy use (Vrugt & Oort, 2008). The multivariate analysis of variance (MANOVA) with gender as the between-subjects variable and the self-regulated learning scales as dependent variables was significant, Wilks’ $\lambda = .89$; $F(5, 519) = 12.52; p < .001$, $\eta^2 = .11$. Follow-up univariate analyses (see Table 1) revealed that female, relative to male, students scored higher on organization, elaboration, time and study environment, and meta-cognitive self-regulation and lower on critical thinking. Univariate ANOVAs on the remaining variables indicated that girls scored lower on perceived PCT and higher on relative autonomy for studying and academic achievement. Because of these gender differences, we included gender as a control variable in all subsequent analyses.

**Primary analyses.** The primary analyses checked whether the constructs in the model were measured adequately and whether the expected associations held among these constructs.

**Measurement model.** We estimated a measurement model to assess whether the indicators represented the latent constructs properly. We used parcels as indicators of the latent constructs PCT (three parcels) and relative autonomy for studying (four parcels) by randomly assigning their respective items to one of the parcel groupings (Little, Cunningham, Shahar, & Widaman, 2002). The subscales critical thinking, elaboration, and organization were used as indicators of the latent construct deep-level cognitive strategy use, whereas meta-cognitive self-regulation and time and study environment were used as indicators of the latent construct meta-cognitive strategy use. In addition, gender and academic performance were each represented as a latent variable with a single indicator, the error variance of which was set to 0. The measurement model with six latent variables represented by 14 indicators approached the criteria for acceptable fit, $\chi^2(64) = 318.34$; RMSEA = .09; CFI = .93; SRMR = .07. After a cross-loading of meta-cognitive self-regulation on deep-level cognitive strategy use was added, the fit of the revised model, $\chi^2(63) = 291.17$; RMSEA = .08; CFI = .94; SRMR = .04, improved considerably, $\Delta \chi^2(1) = 27.17, p < .001$. Adding this cross-loading seemed logical because meta-cognitive self-regulation and deep-level cognitive strategy use share a cognitive focus. Moreover, the modification did not substantially change the correlations among the latent factors, as indicated by the nonsignificant chi-square test, $\Delta \chi^2(15) = 20.31, p > .05$. Factor loadings ranged from .47 to .99 (mean lambda = .74) and were all significant ($p < .001$).

**Structural model.** To examine the association between PCT and academic achievement, we tested a direct effects model including only PCT as a direct predictor of achievement, $\chi^2(4) = 3.80$; RMSEA = .00; CFI = 1.00; SRMR = .02. The direct path from PCT to achievement was significantly negative, $\beta = -.12, p < .05$. In a next model, we added deep-level cognitive and meta-cognitive strategy use as mediators in the relation between PCT and achievement. In this model, PCT was only indirectly related to achievement through the SRL strategies, $\chi^2(27) = 140.13$; RMSEA = .09; CFI = .93; SRMR = .07. Results showed that PCT was negatively related to meta-cognitive strategy use, $\beta = -.38, p < .001$, but unrelated to deep-level cognitive strategies, $\beta = -0.03, p > .05$. Further, whereas meta-cognition was positively related to achievement, $\beta = .31, p < .001$, deep-level cognitive strategies was unrelated to achievement, $\beta = -0.05, p > .05$. To examine whether the relation between PCT and achievement is fully mediated by meta-cognitive strategy use, we added a direct path from PCT to achievement, thus testing a partial mediation model, $\chi^2(26) = 139.54$; RMSEA = .09; CFI = .93; SRMR = .07. The fit of this model was not significantly better than the fit of the full mediation model, $\Delta \chi^2(1) = 0.59, p > .05$, and the direct path from PCT to achievement was no longer significant, $\beta = .02, p > .05$, suggesting that the initial relation between PCT and achievement was fully mediated by students’...
use of meta-cognitive strategies. The Sobel test (Sobel, 1982) indicated that the indirect effect of PCT to achievement (through meta-cognitive strategy use) was significant, \( z = -4.01, p < .001 \).

Next, we examined whether students’ relative autonomy for studying would mediate the negative path from PCT to SRL strategies and to meta-cognitive strategy use in particular. We first tested a model in which PCT was only indirectly related to SRL through relative autonomy for studying (i.e., a full mediation model). Next the fit of the full mediation model, \( \chi^2(67) = 309.61; \) RMSEA = .08; CFI = .93; SRMR = .07, was compared with the fit of a partial mediation model, in which a direct path was added from PCT to meta-cognitive strategy use. There was no need to examine whether there was a remaining direct pathway to deep-level cognitive strategy use because PCT was unrelated to deep-level cognitive strategy use in the direct effects model. The fit of the partial model, \( \chi^2(66) = 293.20; \) RMSEA = .08; CFI = .94; SRMR = .06, was significantly better than the fit of the full mediation model, \( \Delta \chi^2(1) = 16.41, p < .001 \), and the path from PCT to meta-cognitive strategy use remained significantly negative, \( \beta = -.26, p < .001 \). Accordingly, the association between PCT and meta-cognitive strategy use was partially mediated by students’ relative autonomy for studying, and the partial mediation model was retained as the final best fitting model. This model is displayed graphically in Figure 1. For the sake of clarity, paths from gender to each of the latent constructs were not included. Gender (dummy coded with 0 = male and 1 = female) was significantly related to PCT, \( \beta = -.36, p < .001 \), and academic achievement, \( \beta = .14, p < .01 \), with female participants scoring lower on PCT and higher on achievement.

As shown in Figure 1, perceived PCT was related negatively to students’ relative autonomy for studying, which in turn was related positively to deep-level cognitive strategy use and meta-cognitive strategy use. Only meta-cognitive strategy use was, in turn, related positively to achievement. In addition to its indirect association through relative autonomy for studying, PCT also had a direct and negative association with meta-cognitive strategy use. The Sobel testing indicated that the indirect effects of PCT over relative autonomy for studying to deep-level cognitive and meta-cognitive strategy use were both significant, \( z = -3.47, p < .001 \), and \( z = -4.28, p < .001 \), respectively.

**Summary of Study 1**

Study 1 yielded three important findings. First, the PCT scale proved to be a reliable and valid instrument. Principal component analysis on the PCT items yielded one clear factor. Cronbach’s alpha of the PCT scale was high, and the scale was significantly negatively related to dimensions of need supportive to teaching, and in particular to autonomy support. Second, as expected, higher PCT was associated with lower SRL and achievement outcomes. Third, students’ relative autonomy was found to mediate some of these associations. PCT was negatively related to relative autonomy for studying, which in turn was positively related to students’ use of deep-level cognitive and meta-cognitive strategies. Meta-cognitive strategy use, in turn, was significantly positively related to academic performance. In addition, PCT continued to be significantly and negatively related to meta-cognitive strategy use above and beyond its indirect relation through students’ relative autonomy for studying.

**Study 2: Sources of Psychologically Controlling Teaching**

Because of the maladaptive pattern of correlates of PCT, it becomes imperative to explore its antecedents. Therefore, in Study 2, we aimed to examine the role of environmental and dispositional sources of pressure in the prediction of PCT and the potential explanatory role of teacher burnout in these associations. Specifically, we examined the role of three sources of pressure, that is, perceived pressure from people in the school environment (such as parents, colleagues, and principals), teachers’ own quality of motivation for teaching, and teachers’ perceptions of students’ quality of motivation. It was expected that each of these pressuring sources would relate to PCT and that these associations would be mediated by teacher burn-out.

Burnout is defined as a state characterized by frustration as a result of a perceived discrepancy between what teachers are doing and their expected effects on their students (Friedman, 1995). The key aspects of burnout represent feelings of emotional exhaustion, which refers to being overextended, and depersonalization, which refers to the adoption of a cynical and deindividuating attitude toward others (Maslach, Schaufeli, & Leiter, 2001). Herein, we hypothesized that the encounter of pressuring sources would drain teachers’ energy and, as a result, would be associated with emotional exhaustion. Additionally, teachers who are exposed to pressuring sources might adopt a depersonalizing attitude toward their colleagues, students, and students’ parents to cope with the pressuring atmosphere of their working situation. These predictions are consistent with previous research showing that organizational pressure (pressure from above; Levesque, Zuehlke, Stanek, & Ryan, 2004); teacher characteristics, such as maladaptive perfectionism (pressure from within; Stoeber & Rennert, 2008) and teachers’ relative autonomy for teaching (Roth et al., 2007); and negative student behavior, such as disrespect (Friedman, 1995), are associated with features of burnout.

In sum, when teachers feel emotionally drained, they would have less energy available to stay attuned to their students’ wishes. Moreover, the adoption of a depersonalizing attitude would lower teachers’ threshold to act in a controlling way vis-à-vis their students. Therefore, we hypothesized that greater emotional exhaustion and depersonalization would be related to higher levels of PCT and would mediate the relationships between perceived pressures and PCT.

**Method**

**Participants and procedure.** Teachers voluntarily participated in this study during a faculty meeting or in the staff rooms of six secondary schools offering the academic track. They were informed that participation involved filling out a survey on their job conditions and interactions with students. The teachers were asked to send this questionnaire to the principal researcher of this study by regular mail. Three weeks after the initial invitation to participation, a reminder together with the survey were mailed to the nonrespondents. Out of the sample consisting of 488 Dutch-speaking Belgian teachers, 317 (65%) completed the questionnaire. Their age ranged from 21 to 61 years, with a mean of 40 years (SD = 10.4 years); 62.8% were women. The mean number of years of teaching experience was 16.8 (SD = 10.6 years); 40.4%...
of the teachers had obtained a college degree (not at a university), whereas 59.6% had a university degree.

Measures. Self-report measures were used to assess psychologically controlling teaching, its presumed sources, and burnout.

Psychologically controlling teaching. Teachers assessed their own perceptions of their PCT with the PCT Scale–Teacher Self-Report. The seven items used in Study 1 were slightly reworded to assess PCT from teachers’ own perspective (e.g., “I avoid looking at my students if they have disappointed me”). Cronbach’s alpha was .74. A principal component analysis indicated that all items loaded on a single factor with a minimum loading of .46, explaining 40.1% of the variance.

Pressure from above. We used an abbreviated version of the Constraints at Work Scale (Pelletier et al., 2002) to measure pressure exerted by colleagues, parents, and school principals. Specifically, we selected the items that most directly tapped into pressure versus sense of choice. The resulting subscale consisted of seven items. Cronbach’s alpha was .62. A sample item reads, “In this school, I have to conform to my colleagues’ teaching methods.” Ratings were made on a 7-point Likert scale, ranging from 1 (not at all true) to 7 (completely true).

Pressure from within—Relative autonomy for teaching. The same items that were used in Study 1 to assess students’ motivation were used to assess teachers’ motivation for teaching. However, the stem of this scale was reworded to: ‘I am motivated to teach well because . . .’ The reliabilities of the different motivational subtypes (i.e., external, introjected, identified, and intrinsic motivation) were satisfactory, ranging between .70 and .90. An index of relative autonomy for teaching was constructed in the same way as in Study 1. Cronbach’s alpha was .83.

Pressure from below—Relative autonomy for studying. To tap into teachers’ perceived motivation for studying of their students, we used the same items as in Study 1, although the stem of this scale was reworded to: ‘I am motivated to teach well because . . .’ The reliabilities of the different motivational subtypes (i.e., external, introjected, identified, and intrinsic motivation) were satisfactory, ranging between .73 and .88. The teacher-perceived relative autonomy index for studying had an alpha of .77.

Burnout. Participants completed the subscales for Emotional Exhaustion and Depersonalization of the widely used and validated Maslach Burnout Inventory–Educators Survey (MBI–ES; Kokkinos, 2006; Maslach & Jackson, 1986). Emotional exhaustion assesses participants’ feelings of tiredness (nine items; e.g., “I feel emotionally drained from my work”; α = .91), whereas Depersonalization assesses the development of an impersonal attitude towards the teaching job and students (five items; e.g., “I feel I treat some students as if they were impersonal objects”; α = .66).

Results

Preliminary analyses. Correlations among the study variables can be found in Table 3. We included years of teaching experience in the analyses because past research has shown differences related to teaching experience in our study variables, such as relationships with students (Pianta, Hamre, & Stuhlman, 2003). Constraints at work and teachers’ relative autonomous motivation were significantly negatively related. No other correlations among the hypothesized antecedent variables were significant. Constraints at work and teachers’ (but not students’) relative autonomous motivation were significantly related to PCT. The three variables reflecting hypothesized antecedents were significantly related to both emotional exhaustion and depersonalization, while both of them were positively interrelated and positively associated with PCT. Years of teaching experience was negatively correlated with constraints at work, but positively related to teachers’ perceived relative autonomous motivation in students.

Because past research has shown gender differences for several of the study variables, such as burnout (Grayson & Alvarez, 2008), we examined mean differences. We inspected gender differences using a MANOVA analysis treating gender as between-subjects variable and the sources of pressure as outcome variables. An overall significant effect was found, Wilks’ λ = .96; F(3, 305) = 3.97; p < .01, η² = .04. Follow-up univariate analyses revealed that female teachers scored higher on perceived constraints at work than male teachers. A MANOVA with the burnout components as dependent variables also yielded an overall significant effect, Wilks’ λ = .97; F(2, 314) = 3.97; p < .01, η² = .04. Follow-up univariate analyses revealed that female teachers scored lower on depersonalization than male teachers. A univariate ANOVA on PCT indicated that female teachers scored lower than male teachers. The results are shown in Table 3. Because of the effects of gender and teaching experience, we included them as control variables in the primary analyses.

Primary analyses. The actual analyses checked whether the constructs in the model were measured adequately and whether the expected associations held among these constructs.

Table 3

Correlations, Means, Standard Deviations, and Gender Differences for Study Variables in Study 2 (N = 317)

<table>
<thead>
<tr>
<th>Variable</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>Total M</th>
<th>SD</th>
<th>Male M</th>
<th>SD</th>
<th>Female M</th>
<th>SD</th>
<th>F*</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Constraints at work (pressure from above)</td>
<td>.22**</td>
<td>.10</td>
<td>.24**</td>
<td>.24**</td>
<td>.21**</td>
<td>3.06</td>
<td>0.87</td>
<td>2.90</td>
<td>0.93</td>
<td>3.16</td>
<td>0.83</td>
<td>6.64**</td>
</tr>
<tr>
<td>2. Relative autonomy teacher (low pressure from within)</td>
<td>.08</td>
<td>.37**</td>
<td>.33**</td>
<td>.33**</td>
<td>.28**</td>
<td>6.98</td>
<td>3.12</td>
<td>6.62</td>
<td>3.19</td>
<td>7.15</td>
<td>3.10</td>
<td>2.10</td>
</tr>
<tr>
<td>3. Relative autonomy students (low pressure from below)</td>
<td>-.14**</td>
<td>-.13**</td>
<td>-.09</td>
<td>1.76</td>
<td>2.76</td>
<td>-1.57</td>
<td>2.67</td>
<td>-1.91</td>
<td>2.80</td>
<td>1.14</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Emotional exhaustion</td>
<td>.38**</td>
<td>.28**</td>
<td>1.92</td>
<td>0.81</td>
<td>1.91</td>
<td>0.86</td>
<td>1.93</td>
<td>0.79</td>
<td>0.09</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Depersonalization</td>
<td>.39**</td>
<td>1.41</td>
<td>0.50</td>
<td>1.51</td>
<td>0.57</td>
<td>1.34</td>
<td>0.45</td>
<td>8.84***</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Psychologically controlling teaching</td>
<td>.97</td>
<td>0.58</td>
<td>2.06</td>
<td>0.59</td>
<td>1.92</td>
<td>0.57</td>
<td>4.21*</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

*a df = (1, 308) for constraints at work, relative autonomy teacher, and relative autonomy students; df = (1, 316) for emotional exhaustion and depersonalization; df = (1, 314) for psychologically controlling teaching.

*p < .05. **p < .01.
Measurement model. We evaluated a measurement model including six latent constructs, that is, constraints at work, teachers’ relative autonomous motivation, teacher-perceived relative autonomous study motivation in students, emotional exhaustion, depersonalization, and PCT. Three to four parcels were used as indicators of each of these constructs. Gender and years of teaching experience were each represented as a latent variable with a single indicator. The measurement model provided an excellent fit to the data, \( \chi^2(183) = 274.05; \) RMSEA = .04; CFI = .98; SRMR = .05. Examination of factor loadings, ranging from .90 to .92 (mean \( \lambda = .82 \)), indicated that they were all significant.

Structural model. To verify the relative contribution of each hypothesized antecedent of PCT, we tested a direct effects model, \( \chi^2(91) = 152.81; \) RMSEA = .05; CFI = .98; SRMR = .05. Whereas constraints at work was related positively to PCT, \( \beta = .27, p < .001 \), teachers’ relative autonomous motivation was related negatively to PCT, \( \beta = -.28, p < .001 \). In line with the correlations, the path from teacher-perceived relative autonomous study motivation in students to PCT was not significant, \( \beta = -.10, p > .05 \).

Next, the burnout components were included in the model as intervening variables in the relations between perceived pressures and PCT. We first tested a full mediation model, in which the antecedents were only indirectly related to PCT through the burnout components, \( \chi^2(186) = 282.82; \) RMSEA = .04; CFI = .98; SRMR = .05. Next, we compared this model with a partial mediation model, in which we allowed direct paths from both constraints at work and teachers’ relative autonomous motivation over depersonalization to PCT were significant, \( z = -3.14, p < .01 \) and \( z = -4.39, p < .001 \), respectively.

Figure 2 graphically displays all structural paths in the full mediation model. For the sake of clarity, paths from gender and years of teaching experience to each of the latent constructs were not included. Gender (dummy coded with 0 = male and 1 = female) was significantly related to constraints at work, \( \beta = .18, p < .05 \), and depersonalization, \( \beta = -.28, p < .01 \), with women reporting more constraints at work and less depersonalization. Years of teaching experience was related negatively to constraints at work, \( \beta = -.20, p < .01 \). As shown in Figure 2, both constraints at work and low teacher relative autonomy were related to depersonalization, which in turn was related positively to PCT. Low teacher relative autonomy was also related to emotional exhaustion but emotional exhaustion was not related to PCT.

Summary of Study 2

The relations between perceived pressure from above (as indexed by constraints at work) and pressure from within (as indexed by low relative autonomy for teaching) and PCT were mediated by depersonalization. Pressure from below, as indexed by students’ low relative autonomy for learning, was not related to PCT. Further, pressure from within was the only source of pressure that was significantly related to emotional exhaustion. Emotional exhaustion was not related to PCT, indicating that it did not function as an intervening variable in the relationships between different sources of perceived pressures and PCT.

Figure 2. Final model of antecedents of psychologically controlling teaching. For reasons of clarity, effects of gender and years of teaching experience are not shown. \( * p < .05 \). \( ** p < .01 \). \( *** p < .001 \).
General Discussion

The present studies applied the construct of psychological control, which involves the communication of a conditionally approving attitude through intrusive and manipulative practices (including shaming and expression of disappointment) to the teaching context. Specifically, we examined associations between PCT and a number of hypothesized antecedents, mediators, and outcomes. Validity and reliability analyses show that PCT can be assessed as a reliable and unidimensional factor that correlates negatively with adaptive teaching dimensions, that is, autonomy support, structure, and involvement. The remaining part of the discussion is organized around two important sets of findings, that is, (a) the hypothesized outcomes and (b) the hypothesized antecedents of PCT. Across the two studies, we aimed to test the SDT-based notion that controlling teaching, and PCT in particular, relates to a controlled orientation in the functioning of both teachers and students.

Outcomes of Psychologically Controlling Teaching

Through structural equation modeling, our first study demonstrated negative associations between PCT and (a) important components of SRL, that is, deep-level cognitive and meta-cognitive strategy use and (b) academic achievement. Our findings further indicated that the association between PCT and meta-cognitive strategy use was partially mediated by students’ low relative autonomy for studying. Low use of meta-cognitive strategies was, in turn, related to lower academic performance. Together, these findings are consistent with the idea that PCT undermines students’ autonomous motivation to learn and instead fosters a controlled regulation of study activities (Vansteenkiste, Simons, et al., 2005). This low-quality type of motivation would in turn deplete students’ energy and vitality that are needed to adequately self-regulate their learning process (De Bilde, Vansteenkiste, & Lens, 2011). The direct relationship between PCT and meta-cognitive strategy use possibly indicates that PCT is a strong and direct source of stress, reducing the energy needed for meta-cognitive strategy use.

With regard to the self-regulatory learning strategies, it is interesting to note that meta-cognitive strategy use was significantly related to academic achievement, whereas deep-level cognitive strategy use was not. These findings are in line with the results of previous research showing stronger relations between meta-cognitive strategy use and performance than between cognitive strategy use and performance (Wolters & Pintrich, 1998). Furthermore, the positive association found between meta-cognitive strategy use and academic performance is consistent with investigations showing that the promotion of self-regulated learning increases academic performance (Lane et al., 2008).

Antecedents of Psychologically Controlling Teaching

Another aim was to identify factors associated with teachers’ PCT. In doing so, we examined the role of three sources of pressure in relation to PCT. Results indicated that perceived pressure from above, as indexed by teacher-perceived constraints at work, and perceived pressure from within, as measured by teachers’ controlled relative to their autonomous motivation for teaching, but not perceived pressure from below, as measured by students’ controlled relative to their autonomous motivation for studying, were associated with PCT. These findings are consistent with research reporting relations between perceived pressure from authorities and teachers’ own use of pressure (Deci, Spiegel, Ryan, Koestner, & Kauffman, 1982) and between personal characteristics and motivation in teachers and their behavior toward students (Boggiano, Barrett, Weiher, McClelland, & Lusk, 1987; Roth et al., 2007).

Furthermore, we found that depersonalization played a mediating role in the relations between pressures from above and within and PCT. So, it seems that pressure from above and pressure from within distract teachers from students’ personal wants and desires, presumably because they foster an “objectifying” stance towards students (Moller & Deci, 2010; Vansteenkiste, Mouratidis, & Lens, 2010). This attitude of depersonalization might lower teachers’ threshold for adopting a controlling attitude toward students as they are reduced to objects that can be pushed around. Although emotional exhaustion was positively correlated with PCT, it did not play a unique mediating role in the relation between the sources of pressures and PCT. Possibly, emotional exhaustion is relatively more strongly related to intrapsychic problems such as internal distress and somatic complaints (Jackson, Schwab, & Schuler, 1986; Leung & Lee, 2006). In contrast, depersonalization may yield relatively more relational costs, as expressed, for instance, in a controlling interpersonal style (Moller & Deci, 2010).

Some results were not in line with our predictions. First, pressure from below, defined as teachers’ beliefs about students’ quality of motivation, was not uniquely related to the use of PCT, nor was it related to burnout. These findings were not in line with some previous studies on pressure from below (Taylor & Ntoumanis, 2007). A possible explanation for this lack of association may be that teachers do not really suffer from a controlled motivation in their students. Students with a controlled orientation may still be compliant and obedient, such that the teacher’s authority is not immediately threatened. We speculate that students who display rebellious reactions, show apathy, or achieve poorly do induce PCT because these behaviors involve a stronger and more immediate threat to teachers’ capacities. Second, there was no significant path from pressure from above to emotional exhaustion, whereas there was a significantly positive path from pressure from within to emotional exhaustion. It is possible that pressure from above, which refers to an interpersonal experience, is especially important in developing interpersonal attitudes, like depersonalization, whereas experiences of pressure in one’s own functioning is detrimental to both intrapersonal and interpersonal functioning.

Limitations and Suggestions for Future Research

The current research has some limitations. First, our focus is limited by primarily relying on self-report data. To avoid possible response bias and thereby to validate our results, multiple informants, such as external observers, and behavioral measures are needed. In developing an observational coding scheme, future research could rely on Barber (1996) who assessed parental psychological control in videotaped family problem-solving tasks. In our view, the examination of associations between objective teacher use of psychological control and subjective perceptions of psychological control is not only important to demonstrate construct validity. Such research also could contribute to a number of
important and substantive research questions. For instance, do students experience objective expressions of psychological control similarly? Or are some students more sensitive to expressions of psychological control than others? It could be hypothesized, for instance, that students’ motivational orientation might moderate these associations such that students with a controlled orientation are more likely to subjectively experience even mild expressions of psychological control as strongly pressuring and intrusive. As such, an important direction for future research is to examine personal (and perhaps also sociocultural variables) that may moderate associations between objective teacher behavior and subjective perceptions of psychological control.

Second, the cross-sectional nature of our studies does not allow us to examine reciprocal relations between the concepts we studied. For that purpose, longitudinal research is recommended. Further, for causality statements, experimental research is recommended (see Vansteenkiste, Simons, et al., 2005, for an example). Third, we would like to raise three issues related to the generalizability of our findings. First, students’ frame of reference in Study 1 for responding to the measures was devoid of context. Therefore, to internally validate our findings, investigators conducting future research should ask students to respond to the instruments with reference to a particular course. Considering different courses (e.g., math, chemistry, and language learning), one could examine whether the structural relationships among the study variables are similar across courses or rather course specific. Second, although the return rate of 65% in Study 2 was rather high, it leaves open the question as to how representative of secondary school teachers the sample is. Third, the involvement of only secondary school students and teachers from the academic track limits the generalizability of our findings to the educational system as a whole. Given the obvious work and organizational differences between educational levels, it may be important to replicate the present findings with kindergarten, elementary school, or college students and teachers. Moreover, we encourage future researchers to replicate the findings in countries outside of Europe, such as the United States. Such external validation seems necessary due to the contextual differences between countries, such as the system of high-stakes testing in the United States, which clearly represents pressure from above and is absent in the European context.

Finally, we propose two important additional avenues of study. First, due to the partial mediating role of students’ relative autonomy for studying (Study 1), future researchers could focus on other mediators, such as need satisfaction in students. Second, our study is a first step toward elucidating the dynamics involved in PCT. It would be instructive for future research to more thoroughly explore the relation between PCT and other teaching dimensions, such as autonomy support, structure, and external control, and to look for unique effects of these teaching dimensions on students’ learning, well-being, and performance. Of particular interest is an examination of associations between PCT and SDT-based measures of internally controlling teaching. Roth, Assor, Niemiec, Ryan, and Deci (2009) have recently argued that internally controlling socialization may involve both the use of negative conditional regard (i.e., withdrawing love when children do not meet standards) and positive conditional regard (i.e., showing more love than usual when children do meet standards). Although the concept of PCT entails features of negative conditional regard, it does not capture the use of positive conditional regard. As such, future researchers would do well to compare the educational outcomes and antecedents of both psychological control and positive conditional regard.

Practical Implications

Given the harmful correlates of PCT, from an applied perspective, it is important for teachers to refrain from PCT. To modify psychologically controlling teacher behavior, teachers can be provided with information about what behaviors constitute PCT and their effects on adolescent learning and achievement. To the extent that teachers wish to positively influence their students’ learning, they can be advised to teach in an autonomy-supportive fashion, for instance, by explaining the relevance of learning strategies (Reeve, 2009). It is equally important that pressure on and control of teachers is reduced, as indicated by the results of Study 2. To avoid the development of an objectifying attitude toward students, which seems to catalyze the use of PCT, it is desirable that the entire educational community and the general public recognize the complexity, responsibilities, and stresses that are inherent in the teaching profession so that the pressure from above on teachers is reduced. To achieve this aim, principals could create an autonomy-supportive climate in which teachers have a say in various decisions, a rationale is provided when staff involvement in decisions is limited, and teachers are offered opportunities for self-direction and self-initiative. At the intrapersonal level, increasing teachers’ pleasure and importance of their teaching might be important because teachers’ motivation relates significantly to the use of a psychologically controlling stance. Perhaps, it is better for teachers who primarily teach for controlled reasons to reorient themselves in their professional career and to choose a job that lies more in line with their values and interests.

Conclusion

By introducing psychological control as a dimension of teaching style, our aim was to contribute to both research on parental psychological control and SDT-based research in educational psychology. Developmental research on parental psychological control has convincingly shown its negative ramifications for children’s and adolescents’ general well-being and adjustment. Few studies, however, have examined the implications of parental psychological control for educational and learning outcomes (see Aunola & Nurmi, 2004; Vansteenkiste, Simons, et al., 2005; Vansteenkiste, Zhou, et al., 2005 for exceptions). This research contributes to the literature by showing that perceived teacher psychological control is related to a nomological network of mal-adaptive motivational and learning outcomes in adolescents. At the same time, this research adds to SDT-based research on teaching style by highlighting one important feature of need-frustrating teaching. There is increasing recognition that experiences of need frustration do not simply reflect a lack of need satisfaction and that it is important to identify the specific dynamics involved in need-frustrating interpersonal styles, including psychological control (Bartholomew, Ntoumanis, Ryan, Bosch, & Thogerson-Ntoumani, in press).

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