



Can it be good to set the bar high? The role of motivational regulation in moderating the link from high standards to academic well-being



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ABSTRACT

This study explored a motivational approach to examining individuals' perfectionistic strivings, using Self-Determination Theory as the theoretical foundation. Data were collected from 384 undergraduate students. Hierarchical multilevel models were performed to examine whether the association between the tendency to set high personal standards and learning outcomes would be moderated by people's type of motivational regulation. The results indicated that the striving for high standards was associated with less adaptive learning experiences when students experienced controlled regulation around their behaviors. We measured controlled regulation both as a personality orientation, and as students' reasons for participating in each of their classes. We found convergent evidence at both the between-person and the within-person, between-class levels that when students reported low controlled regulation, those who tended to set high standards for themselves reported less anxiety and difficulty in their learning, and more learning progress in their classes than the students who set low standards.

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1. Introduction

Frost, Marten, Lahart, and Rosenblate (1990) conceptualized perfectionism as a multidimensional personality trait that is composed of six unique components. According to this group of researchers, perfectionists are characterized as people who strive for extremely high standards, are obsessively concerned over making mistakes, experience constant self-doubts, tend to be overly organized, often experience high internalized parental expectations, and grow up facing a lot of parental criticisms. Among those components, the element that pertains to perfectionists' tendency to set high personal standards has recently spurred debates among researchers, mainly around the question of whether setting high standards can be the positive aspect of perfectionism (see a review by Stoeber & Otto, 2006). Researchers have often referred to this aspect of perfectionism as Personal Standards Perfectionism (PSP).

Recent research showed that, when individuals set high standards for themselves, they tended to endorse mastery goals instead of performance goals, show greater self-determined motivation for school, achieve higher grades, cheat and procrastinate less, and show lower academic burnout (Bong, Hwang, Noh, & Kim, 2014; Chang, Lee, Byeon, & Lee, 2015; Harvey et al., 2015; Thorpe & Netteelbeck, 2014). Nonetheless, at the same time, other studies also reported that setting high standards showed positive zero-order correlations with stress, anxiety, self-

blame, and extrinsic motivation for school, such as studying to earn high grades and social approval (e.g., Dunkley, Blankstein, Halsall, Williams, & Winkworth, 2000; Enns, Cox, Sareen, & Freeman, 2001; Hill et al., 2004; McArdle & Duda, 2004; Mills & Blankstein, 2000; Miquelon, Vallerand, Grouzet, & Cardinal, 2005; Van Yperen, 2006). Therefore, the topic of whether PSP constitutes the adaptive aspect of perfectionism has remained highly debatable.

1.1. The links of PSP to psychological outcomes

Attempting to clarify when setting high standards would likely be adaptive and when it might turn awry, several researchers have investigated different moderation models that might explain the strength and direction of the varied links of PSP to positive and negative outcomes. The most prominent attempt has been a recent formulation of the 2 × 2 model by Gaudreau and Thompson (2010), using maladaptive components of perfectionism, commonly referred to as Evaluative Concerns Perfectionism (ECP), as a moderator of the links of PSP to well-being outcomes. Studies that tested this model in the academic domain showed that, when setting high standards was accompanied by high perfectionistic concerns (i.e., high PSP, high ECP), there was lower performance, decreased academic self-determination and academic satisfaction, as well as less goal progress than when setting high standards was accompanied by low evaluative perfectionistic concerns (i.e., high PSP, low ECP) (Gaudreau & Thompson, 2010; Franche, Gaudreau, & Miranda, 2012).

Other moderation models also provided evidence to suggest that the effect of trait PSP on outcomes could be moderated by malleable

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variables. Flett, Hewitt, Blankstein, and Mosher (1995) found that setting high personal standards while experiencing greater life stress predicted higher depressive symptoms. Another study by Chang, Sanna, Chang, and Bodem (2008) found that high standard perfectionism was associated with greater depressive and anxious symptoms when accompanied by the experience of loneliness and isolation. In a study by Dunkley et al. (2000), setting high standards was associated with greater psychological distress for those who reported more perceived hassles in their lives, but the direction of this association was reversed for those who reported having greater social support. Overall, those findings suggested that PSP could yield either benign or adaptive outcomes in the absence of either personal (e.g., loneliness) or contextual (e.g., life stress, perceived hassles) stressors. In the current study we chose to examine personal motivation stressors to determine whether a high level of stressful motivation would yield relations between PSP and poor academic outcomes (e.g., anxiety, difficulties in learning, and poor progress in courses), whereas a low level of stressful motivation would yield relations between PSP and more positive academic outcomes.

1.2. The moderation of PSP by self-determination-theory variables

To examine the extent to which the relations of trait PSP to educational well-being outcomes would be moderated by personal motivation variables, we used the Self-Determination Theory concept of controlled regulation as both a between-person and a within-person possible moderator (SDT; Ryan & Deci, 2000). Controlled regulation involves people engaging in behaviors either to get rewards and avoid punishments (i.e., external regulation) or to feel social approval and to avoid feeling guilty or worthlessness (i.e., introjected regulation). Within SDT this controlled type of motivation can be examined as either a general personality orientation or as a state variable that concerns the reasons for engaging in a specific behavior or a domain of behaviors.

Numerous studies over the past 30 years have shown that controlled motivational regulation—that is, behaving primarily to earn rewards, to compensate for damaged self-esteem, or to avoid punishment, guilt, or anxiety—has been associated with ill-being variables, particularly those in academic and goal striving domain, such as test anxiety, poor learning quality, and academic dissatisfaction at both personality orientation and state levels of analysis (e.g., Black & Deci, 2000; Deci & Ryan, 1985; Grolnick & Ryan, 1987; Koestner et al., 2006; Ratelle, Guay, Vallerand, Larose, & Senecal, 2007; Vansteenkiste et al., 2010). Among those studies, a few have also examined the relations between PSP and controlled regulation. For example, participants who were high in PSP also tended to be high in controlled regulation but only when they were also high in maladaptive perfectionism (McArdle & Duda, 2004). So this suggests that there are some connections among PSP, controlled regulation, and maladaptive responding (McArdle & Duda, 2004; Mills & Blankstein, 2000; Miquelon et al., 2005; Van Yperen, 2006). Although these results do not provide any direct support for our hypotheses, they do suggest some relations among these variables. As such, we will consider whether controlled motivational regulation for behaviors, particularly in the academic domain, would influence the relations of personal standard perfectionism to negative outcomes.

2. The present study

In the present study, we focus on the role of more versus less controlled regulation in modifying the link of PSP and academic well-being outcomes. We hypothesized that when students approached their learning with higher controlled regulation, setting high personal standards would be linked to negative outcomes while showing no association with positive outcomes. On the other hand, with lower controlled regulation, the associations between setting high standards with negative outcomes would be null or negative, and the link from setting high standards to positive outcomes would be positive.

There is no doubt that setting high standards boosts performance and confidence (e.g., Bieling, Israeli, Smith, & Antony, 2003; Enns et al., 2001; Nounopoulos, Ashby, & Gilman, 2006; Seo, 2008). Nonetheless, as is examined in the present study, the pursuits of high standards might come at the cost of academic well-being if the individuals regulate themselves with controls. We operationalize academic well-being by targeting students' learning experiences in three different courses that they were taking during a semester. As outcomes, we examined how much progress students perceived they were making in their learning, independent of their objective performance (i.e., grades), the extent to which they experienced anxiety while studying, and how much difficulties they had while processing class materials. Those were the same outcomes that have been studied in previous studies (Koestner et al., 2006; Vansteenkiste et al., 2010) to assess students' emotional and cognitive experiences during their pursuits of academic goals.

3. Method

3.1. Procedure

Three hundred and eighty four undergraduate students (287 females) between the age of 18 and 34 ($M = 20$, $SD = 1.49$) were recruited to participate in this study. The study was conducted in the middle of the semester after the first exam period. Each participant filled out several personality measures and answered questions about three specific classes that they were taking that semester. The final data set included 1143 classes that were reported on by 381 students.

3.2. Measures

3.2.1. Personal standards perfectionism

In this study, to measure trait PSP, we used a short version of the High Personal Standards subscale from Frost et al.'s (1990) Multidimensional Perfectionism Scale (validated by Cox, Enns, & Clara, 2002). The short version of the High Personal Standards subscale consisted of 5 items that measure the extent to which individuals set high goals and try to be best at everything they do ($\alpha = .85$). A sample item of this subscale is "I have extremely high goals". Participants responded to the items by indicating the degree to which they agreed or disagreed with each of the statements (1 = strongly disagree, 5 = strongly agree).

3.2.2. Susceptibility to control

To measure individual differences in participants' general levels of controlled regulation around their behaviors, we used the Susceptibility to Control (StC) subscale from Weinstein, Przybylski, and Ryan's (2012) Autonomous Functioning Index. This measure captures the degree to which a person feels that he or she tends to behave in ways to please others or to avoid shame and guilt (e.g., "I do a lot of things to avoid feeling ashamed") ($\alpha = .75$). Participants indicated the degree to which they agreed or disagreed with 5 items from this subscale (1 = strongly disagree, 7 = strongly agree).

3.2.3. Class-specific measures

The participants were asked to list the 3 classes they were taking that semester in which they were working the hardest (compared to the other classes they were taking). If the participants were only taking 3 classes that semester, we asked them to list all 3 classes in the order of how hard they worked in each class. The reason for having the students focus their responses around the classes they worked hard in was to target the learning contexts where their PSP was most likely to be activated. After the participants listed the courses as asked, they were directed to the subsequent pages in which they were asked to answer a few questions about each course. Descriptions of those measures are detailed below.

3.2.3.1. Control variables. We included one question that asked them how hard they worked in each of the three courses (i.e., “Please rate the extent to which you work hard to succeed in this class”) and controlled for this variable, called *effort*, in our analyses. A mean of 3.84 on a scale from 1 to 5 for this variable suggested that students had in fact listed the three classes in which they put extended effort. Students were also asked to report the raw scores they received on their most recent exams along with the total possible points for the exams. With the scores the participants provided, we computed the percentages by dividing the points they earned by the total possible points. We used this variable as another control and referred to it as *past grade* in our analyses. On average, students scored around 81% ($SD = 14.37$) in the most recent exam, ranging from the lowest score of 10% to the highest score of 100%.

3.2.3.2. Controlled regulation around learning. To assess participants' controlled regulation (CR) around learning in their classes, we used the Controlled Regulation subscale from the Learning Self-Regulation Questionnaire (William & Deci, 1996; Black & Deci, 2000). In this subscale, there were 3 stems, each followed by 4 items. In total, participants responded to 12 items for each of the three classes that they listed on a 7-point Likert-like scale (1 = not at all true, 7 = very true). For example, the participants read one of the stems that said: “When I can, I try to participate in [course as listed];” and then they rated how true each of the following reasons was for them, such as “Because others might think badly of me if I didn't” (controlled regulation). Learning regulation measures for all three classes demonstrated satisfactory internal consistency ($\alpha s > .70$).

3.2.3.3. Academic well-being. As noted, there were three concepts within the academic well-being outcomes: learning progress, anxiety, and difficulty. In all there were 12 self-report items that assessed these outcomes, four items for each of the 3 courses. First, participants were asked about how much progress they personally felt they had made in the course (i.e., “Please rate how much progress you have made in [course as listed], (for example in your homework, class projects and term papers) during the last month?”) and how satisfied they were with the progress they had made (i.e., “Please rate how satisfied you are with the progress you have made in [course as listed] during the last month?”). Participants indicated their responses on those two items on a 9-point Likert-like scale (1 = not at all, 9 = a great deal). Those two items were averaged to make up the scores for a variable called *learning progress*. Another item of learning experience assessed the extent to which the participants felt anxious when studying for the course (i.e., “During the last month, when I was studying for [course as listed], worrying about doing poorly in this class interfered with my concentration”). This item came from a scale used by Vansteenkiste et al. (2010) to measure the variable called *test anxiety*. Finally, participants were asked to rate how much difficulty they had experienced in identifying the main points when reading for the course (i.e., “I have difficulty identifying the important points in my readings for [course as listed]”). This item was part of a scale to measure the variable called *selecting main ideas* also in the Vansteenkiste et al. (2010) study. For the items assessing anxiety and learning difficulty, participants indicated whether the statements were typical of their experiences in class on a 5-point Likert-like scale, ranging from “not at all typical” to “very much typical”.

3.3. Analytic strategy

3.3.1. Susceptibility to control as moderator

To observe the interaction effect of PSP and overall StC on class-specific outcomes, we used the multilevel modeling approach to simultaneously address between- and within-person analyses (Kenny, Kashy, & Bolger, 1998). In level 1, we controlled for *effort* to account for how hard the participants worked in each class and *past grade* to account

for participants' previous exam performance in the class. We also created two dummy codes, D1 and D2, to control for the differences between the three classes:

$$(1) \text{ Class-specific outcome} = \beta_{0j} + \beta_{1j} (D1) + \beta_{2j} (D2) + \beta_{3j} (\text{effort}_{ij}) + \beta_{4j} (\text{past grade}_{ij}) + r_{ij}.$$

In level 2, we entered centered values of trait PSP and StC and their interaction term to predict the intercepts of class-specific outcomes. The equation was as follows:

$$(2) \begin{aligned} \beta_{0j} &= \gamma_{00} + \gamma_{01} (\text{PSP}) + \gamma_{02} (\text{StC}) + \gamma_{03} (\text{PSP} \times \text{StC}) + \mu_{0j} \\ \beta_{1j} &= \gamma_{10} \\ \beta_{2j} &= \gamma_{20} \\ \beta_{3j} &= \gamma_{30} \\ \beta_{4j} &= \gamma_{40} \end{aligned}$$

where the intercept effect in the person-level equation was treated as random (μ_{0j}).

3.3.2. Class-specific controlled regulation as moderator.

In the second set of HLM analyses, after controlling for two dummy codes representing class differences in *effort* and *past grade*, we added CR as one of the level-1 predictors to model the intercepts of class-specific outcomes, as follows:

$$(3) \text{ Class-specific outcome} = \beta_{0j} + \beta_{1j} (D1) + \beta_{2j} (D2) + \beta_{3j} (\text{effort}_{ij}) + \beta_{4j} (\text{past grade}_{ij}) + \beta_{5j} (\text{CR}_{ij}) + r_{ij}.$$

In the level-2 model, we entered centered values of PSP to predict the intercepts of class-specific outcomes (as seen in Eq. 2). To observe the 2-way interactions of PSP with CR, we also added centered values of PSP to predict the slope of CR. Therefore, γ_{01} and γ_{50} represent the main effects of level-2 PSP and level-1 controlled regulation on level-1 class-specific outcomes, whereas γ_{51} represents the interaction effect of PSP and CR. The equation was as follows:

$$(4) \begin{aligned} \beta_{0j} &= \gamma_{00} + \gamma_{01} (\text{PSP}) + \mu_{0j} \\ \beta_{1j} &= \gamma_{10} \\ \beta_{2j} &= \gamma_{20} \\ \beta_{3j} &= \gamma_{30} \\ \beta_{4j} &= \gamma_{40} \\ \beta_{5j} &= \gamma_{50} + \gamma_{51} (\text{PSP}) \end{aligned}$$

where the intercept effect in the person-level equations were treated as random (μ_{0j}), and effect of learning CR_{ij} , the effect of the dummy codes, and the effects of effort_{ij} and past grade_{ij} were fixed.

4. Results

4.1. Preliminary results

We first observed the zero-order correlations between our predictor and moderator variables (i.e., PSP, StC, CR) with the class-specific variables (see Table 1). Consistent with previous research, on average, those with higher PSP reported putting more effort into their classes, achieving higher grades on the most recent exams, and feel more satisfied with their progress in classes. There was no association of PSP with test anxiety and learning difficulty. Additionally, PSP positively correlated with overall susceptibility to control as well as controlled regulation for learning. StC was positively associated with test and anxiety and learning difficulty and higher CR for learning in classes was significantly associated with lower grades on the most recent events, more test anxiety and higher learning difficulty. Interestingly, those with higher controlled regulation for learning also reported putting more effort into their classes.

Table 1
Correlations between measures of Personal Standards Perfectionism, susceptibility to control, and averages of class-specific variables.

		1	2	3	4	5	6	7	8
1	Personal Standards Perfectionism (PSP)	0.85***							
2	Susceptibility to control (StC)	.20**	0.75						
3	Effort	.34**	0.07	n/a					
4	Past grade	.11*	−0.09	.11*	n/a				
5	Controlled regulation (CR)	.23**	.44**	.25**	−0.16**	0.7			
6	Test anxiety	0.08	.37**	0.08	−.34**	.44**	n/a		
7	Learning difficulty	−0.07	.33**	−0.01	−.39**	.26**	.62**	n/a	
8	Learning progress	.14**	−0.07	.23**	.41**	0.03	−.19**	−.29**	0.75

Notes. Bold numbers indicate scale internal consistency.

* $p < .05$.

** $p < .01$.

*** $p < .001$.

4.2. Main analyses

The first sets of HLM analyses included only the control variables in the model. We found that levels of effort that students reported putting into each class were associated positively with anxiety and perceived progress in class. Students' most recent exam grades were negatively associated with how much anxiety and difficulty they reported experiencing while studying for the class, and positively associated with how much progress they perceived having made in the class. We also found some differences between the three classes being reported on learning outcomes. As such, all four controls remained in subsequent analyses.

4.3. Susceptibility to control as a moderator

The HLM results indicated that the individual difference of setting high standards was weakly associated with experiencing less learning difficulty ($b = -.12, SE.b = .06, p < .05$), but was not significantly linked to test anxiety or perceived learning progress. Overall, the individual difference of controlled regulation, assessed with the StC variable, was linked to the experience of greater test anxiety ($b = .33, SE.b = .04, p < .001$) and greater difficulty in identifying main ideas in class materials ($b = .26, SE.b = .04, p < .001$), but was not associated with perceived learning progress. There was a marginally significant interaction of PSP and StC in predicting test anxiety ($b = .09, SE.b = .05, p = .05$), and a significant interaction of PSP and StC on perceived learning progress ($b = -.14, SE.b = .05, p < .01$) (see Table 2).

Following guidelines by Cohen, Cohen, West, and Aiken (2013), we performed simple slope analyses to observe the slopes of PSP in relation to test anxiety and learning progress at 1 standard deviation above and below the mean on StC. The results showed that when individuals' StC

was high, setting high standards was associated with a slightly decrease in learning progress ($b = -.11, SE.b = .09, p = .23$) and a slight increase in test anxiety ($b = .12, SE.b = .08, p = .15$), with neither relation being significant. On the other hand, when StC was low, the link between PSP and learning progress was positive and significant ($b = .21, SE.b = .08, p < .05$), while the association of PSP with test anxiety was nonsignificant ($b = -.08, SE.b = .08, p = .30$). Although not all of the simple slopes were significant, the directions of the interaction supported our hypotheses, and marginal to significant interactions indicated significant difference between the slopes at high and low levels of StC. It was shown that the link of PSP and negative learning outcomes trended toward positive at high levels of the individual difference in controlled regulation and was reversed at low levels of controlled regulation, while the link of PSP to positive learning outcomes trended toward positive at low levels of controlled regulation and was reversed at high levels of controlled regulation (see Fig. 1 and Fig. 2).

4.4. Class-specific controlled regulation as moderator

When learning CR was entered into the HLM model at level 1, the main effect of PSP on all learning outcome disappeared. Students' class-specific CR for learning was strongly and positively associated with the levels of anxiety and difficulty they reported when studying for that class (see Table 2). There were significant interaction effects of PSP and learning CR on both test anxiety ($b = .12, SE.b = .04, p < .01$) and difficulty in finding main ideas ($b = .09, SE.b = .04, p < .05$) (see Table 3).

Analyses of the simple slopes showed that when students were high in class-specific CR, setting high standards was associated with significantly greater test anxiety ($b = .18, SE.b = .08, p < .05$). With low CR, the association of PSP with test anxiety was reduced to non-significant

Table 2
Hierarchical multilevel models showing the main effects and interaction of Personal Standards Perfectionism and susceptibility to control.

		Test anxiety			Idea difficulty			Learning progress		
		<i>b</i>	<i>SE.b</i>	<i>t</i>	<i>b</i>	<i>SE.b</i>	<i>t</i>	<i>b</i>	<i>SE.b</i>	<i>t</i>
Dummy 1	γ_{10}	−.13*	.06	−2.08	−.05	.07	−.67	.10	.10	1.08
Dummy 2	γ_{20}	−.25**	.07	−3.55	−.19*	.08	−2.31	−.02	.10	−.22
Effort	γ_{30}	.11**	.04	2.65	.05	.05	1.09	.31***	.06	5.38
Past exam	γ_{40}	−.03***	.00	−11.40	−.02***	.00	−8.96	.04***	.00	13.59
PSP	γ_{01}	.02	.06	.30	−.12*	.06	−2.25	.05	.07	.77
StC	γ_{02}	.33***	.04	7.49	.26***	.04	6.69	−.06	.05	−1.37
PSP × StC	γ_{03}	.09†	.05	1.93	.03	.04	.77	−.14**	.05	−2.81

Notes. PSP = Personal Standards Perfectionism; StC = susceptibility to control.

* $p < .05$.

** $p < .01$.

*** $p < .001$.

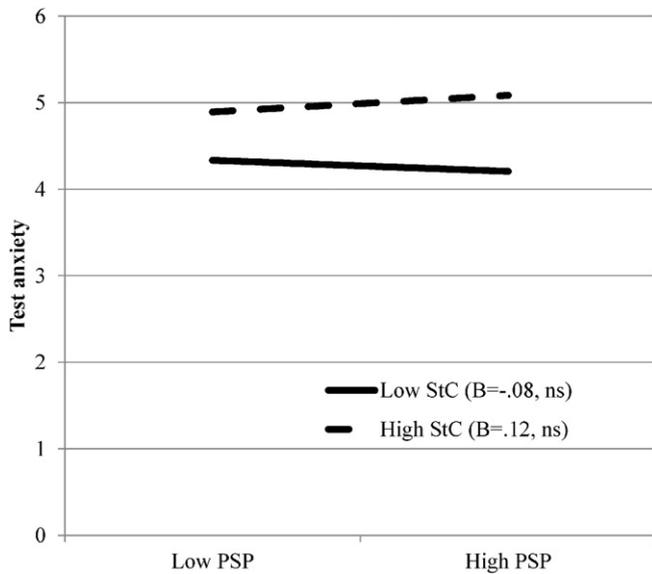


Fig. 1. Relationship of Personal Standards Perfectionism with test anxiety at high and low levels of susceptibility to control.

and the direction of this association was reversed ($b = -.06$, $SE.b = .07$, $p = .38$). Additionally, the link from setting high standards to learning difficulty was not significant at higher level of CR for learning ($b = .01$, $SE.b = .08$, $p = .86$). With low CR, setting high standards was significantly associated with experiencing less difficulty in finding main ideas when reading class materials ($b = -.17$, $SE.b = .07$, $p < .05$). While not all of the simple slopes were significant, the directions of them were consistent with what we predicted—namely, that the association between setting high standards and negative learning outcomes would either disappear or become negative at low levels of controlled regulation around one's learning for a specific class. On the other hand, when students reported high controlled regulation around their learning, setting high standards was associated with greater experience of anxiety, and setting high standards did not appear to help students be better at extracting main ideas from their class readings (see Fig. 3 and Fig. 4).

5. Discussion

Generally, high standard perfectionists are likely to internalize and identify with their standards to a certain extent. They are likely to see value in the tasks that they undertake, and enjoy the challenge of mastering those tasks (Hewitt & Flett, 1991; Mills & Blankstein, 2000). This tendency of striving for excellence was shown in our zero-order correlations, which suggested that those who set high standards were also likely to put more effort into their classes. Nonetheless, this effort could be invested for controlled reasons, as shown in the correlation between effort and controlled regulation for learning. In turn, HLM results showed that those who put more effort into their classes experienced more anxiety when studying for exams, but at the same time they also perceived making further progress in classes. Those associations were interesting because effort was shown to be associated with both positive and negative variables. Perhaps it was the anxiety and controlled regulation that drove students to put more effort in their studying. In turn, they perceived that they made more progress in classes because of the effort that they had made in the classes. As such, the effort that those who set high standards put into their classes could still be a function of the anxiety and guilt around failing to live up to those standards (Ryan & Deci, 2000). This is consistent with previous empirical findings showing that while PSP was more strongly associated with intrinsic motivation for excellence, it was also linked to controlled types of motivation, such as striving for high standards to earn approval or external

rewards (McArdle & Duda, 2004; Mills & Blankstein, 2000; Miquelon et al., 2005; Van Yperen, 2006). By focusing on those controlled types of regulation among high standard perfectionists, our findings suggested that the lower people's controlled regulation, both in general and in relation to specific activities they were undertaking such as learning, the more they would benefit from setting high standards for themselves. In contrast, the higher their controlled regulation the more their high standards would be related to negative educational outcomes.

When individuals experience controlled regulation, they tend to feel that they “must”, “should”, or “have to” live up to certain expectations in order to earn some external rewards or approval, or to gain contingent self-worth. Similarly, in relation to personal standards, it is likely that people with high controlled regulation would perceive their standards to be something they “must”, “should”, or “had to” maintain or achieve. From the perspective of SDT, they would be carrying out the behaviors related to those standards in ways that lack autonomy and self-endorsement, so their basic psychological need for autonomy would be thwarted and would lead to negative well-being consequences (Deci & Ryan, 2000). As shown in the current study, setting high standards with this type of regulation would likely lead to anxiety and difficult in learning. Additionally, controlled goal strivings were also found to cause rigid processing of in-class materials and the satisfaction after attaining goals were often short-lived (Guay, Ratelle, & Chanal, 2008; Vansteenkiste, Lens, & Deci, 2006; Vansteenkiste et al., 2007; Vansteenkiste et al., 2010). Future research could look into other learning outcomes to understand further the detrimental effects of setting high standards in controlled ways.

Furthermore, individuals who set high personal standards with controlled regulation might at the same time also display maladaptive perfectionistic tendencies, such as being overly concerned about mistakes and failure, perceiving critical evaluations from others, or being doubtful about their actions. This suggested that future research could investigate whether maladaptive perfectionistic tendencies could be the outcomes of pursuing high standards with a controlled regulation. According to Gaudreau and Thompson (2010), the subtype of perfectionism that involves setting high standards without displaying high maladaptive perfectionism, called Evaluative Concern Perfectionism (ECP), was referred to as pure PSP. The subtype that involves setting high standards in combination with high ECP would be called mixed perfectionism. Based on the current analysis of perfectionism, controlled regulation could be the moderator that separated those with pure PSP from those with mixed perfectionism. In other words, future

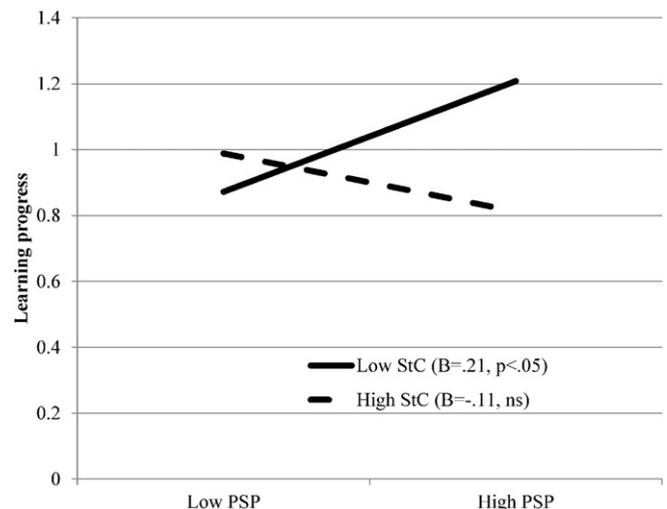


Fig. 2. Relationship of Personal Standards Perfectionism with learning progress at high and low levels of susceptibility to control.

Table 3
Hierarchical multilevel models showing the main effects and interaction of Personal Standards Perfectionism and learning controlled regulation.

		Test anxiety			Idea difficulty			Learning progress		
		<i>b</i>	<i>SE.b</i>	<i>t</i>	<i>b</i>	<i>SE.b</i>	<i>t</i>	<i>b</i>	<i>SE.b</i>	<i>t</i>
Dummy 1	γ_{10}	-.13*	.06	-2.13	-.05	.07	-.72	.12	.10	1.26
Dummy 2	γ_{20}	-.22**	.07	-3.30	-.18*	.08	-2.20	-.00	.10	-.03
Effort	γ_{30}	.01	.04	.28	-.02	.05	-.39	.32***	.06	5.35
Past exam	γ_{40}	-.03***	.00	-11.11	-.02***	.00	-8.36	.04***	.00	13.59
PSP	γ_{01}	.06	.06	1.00	-.08	.06	-1.34	.02	.07	.32
CR	γ_{50}	.36***	.04	9.61	.24***	.04	6.26	.04	.05	.76
PSP × CR	γ_{51}	.12**	.04	3.00	.09*	.04	2.22	-.06	.05	-1.26

Notes. PSP = Personal Standards Perfectionism; CR = controlled regulation.

* $p < .05$.
** $p < .01$.
*** $p < .001$.

studies could look at ECP as an outcome predicted by the interaction of PSP and controlled regulation.

5.1. Limitations and future directions

In this study, we tested the hypothesized interaction of PSP and controlled regulation both at the level of overall susceptibility to control (i.e., at the level of between-person difference) or at the level of students' learning regulation for three specific classes where their performance standards were high (i.e., at the level of within-person, between-class difference). By showing that PSP was only linked to positive learning outcomes at low levels of between-person susceptibility to control as well as within-person controlled regulation, we were able to perform an internal replication of our primary findings.

On the other hand, we only assessed PSP at the individual difference level. This was a limitation that could be addressed in future studies. In this study, we only asked the participants to report three classes they were taking, specifically ones in which they put the most effort. We measured how much effort they put in each class as a control variable but did not measure the extent to which students set high standards in those classes. While we were able to assure that our sample indeed reported classes in which they invested above-the-midpoint levels of effort, we couldn't ascertain whether those who tended to set high standards for herself or himself would also be likely to set high standards in areas in which he or she was invested. Therefore, future research could assess PSP at the within-person, context-specific level to understand whether the interaction of PSP and controlled regulation would still

hold when they were measured in any specific context, not just in school but also sport, exercise, or eating habits (cf., Stoeber & Stoeber, 2009; Sherry et al., 2013). We expected that the interaction would be stronger when all variables were assessed at a more specific level of analysis.

6. Conclusion

The present study pointed to the value of studying Personal Standards Perfectionism (i.e., setting high standards) from the perspective of SDT-based motivational variables. With this theoretically grounded approach we examined high-standards perfectionists' regulation around their lives as well as around their domain-specific strivings. Our findings suggest that coaches, teachers, or counselors who work with high-standard perfectionists might usefully pay attention to how those perfectionists regulate behaviors intended to meet personal standards. For example, by providing more autonomy-support in any of those settings the authorities could decrease controlled motivation as they increase autonomous motivation. Counseling approaches such as motivational interviewing or mindfulness training can also be used to help perfectionists become less controlled in attempting to attain their standards. Indeed, SDT research has shown that both of these approaches allow individuals to identify and be aware of different controls that might be present in their lives so as to regulate their behaviors more autonomously (cf., Niemiec et al., 2010; Ryan & Deci, 2008; Schultz, Ryan, Niemiec, Legate, & Williams, 2014). When high-

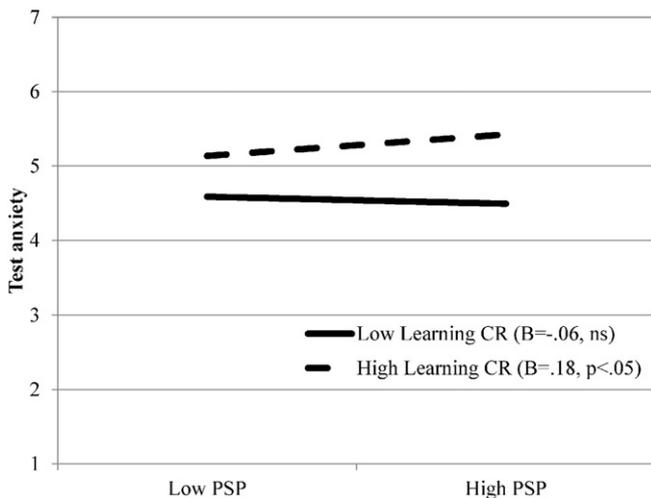


Fig. 3. Relationship of Personal Standards Perfectionism with test anxiety at high and low levels of learning controlled regulation.

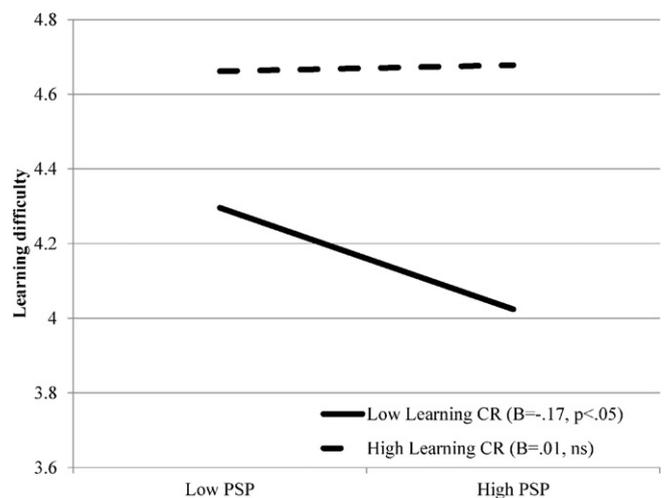


Fig. 4. Relationship of Personal Standards Perfectionism with learning difficulty at high and low levels of learning controlled regulation.

standard perfectionists are aware of the reasons why they are pursuing their personal standards and able to confront different forces that control the behaviors around those standards, they will begin to internalize the values of those behaviors so that they can experience greater choice and autonomy in their pursuits (Ryan & Deci, 2008).

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