
Perfectionism, Academic Motivation, and Psychological Adjustment: An Integrative Model

Paule Miquelon

Robert J. Vallerand

Université du Québec à Montréal

Frédéric M. E. Grouzet

University of Ottawa

Geneviève Cardinal

Université du Québec à Montréal

The purpose of this article was to propose and test an integrative model on the role of perfectionism, academic motivation, and psychological adjustment difficulties in undergraduate students. The model posits that self-oriented perfectionism facilitates self-determined academic motivation, whereas socially prescribed perfectionism enhances non-self-determined academic motivation. In turn, self-determined and non-self-determined academic motivations, respectively, lead to lower and higher levels of psychological adjustment difficulties. Results from two studies using structural equation modeling analyses provided support for the model.

Keywords: *self-oriented perfectionism; socially prescribed perfectionism; self-determined academic motivation; non-self-determined academic motivation; psychological adjustment; academic adjustment*

The concept of perfectionism represents an important individual-difference variable that has received considerable attention (e.g., Blatt, 1995; Hollender, 1978; Pacht, 1984). Although it was first conceptualized as a unidimensional construct (e.g., Burns, 1980), perfectionism is now seen as being multidimensional in nature (e.g., Multidimensional Perfectionism Scale; Frost, Marten, Lahart, & Rosenblate, 1990; Hewitt & Flett, 1991). Consistent with a multidimensional view of perfectionism, the aim of the present research was to propose and test an integrative model on the role of perfectionism and academic motivation in the psychological adjustment difficulties (PAD) of undergraduate students in two studies. This model is presented below.

TOWARD AN INTEGRATIVE MODEL OF THE RELATIONSHIP BETWEEN PERFECTIONISM, ACADEMIC MOTIVATION, AND PSYCHOLOGICAL ADJUSTMENT

A Multidimensional Approach to Perfectionism

Although different multidimensional perfectionism models exist (e.g., Frost's multidimensional perfectionism model; Frost et al., 1990), one of the most studied models of multidimensional perfectionism has been the one proposed by Hewitt and Flett (1991). According to these authors, perfectionism is defined as a multidimensional phenomenon composed of self-oriented (SOP), other-oriented (OOP), and socially prescribed perfectionism (SPP). SOP refers to the intrapersonal dimension of perfectionism, whereas OOP and SPP pertain to the interpersonal dimension of perfectionism (Flett, Hewitt, Blankstein, & O'Brien, 1991). SOP characterizes those individuals who are assumed to hold excessively high standards for themselves and to engage in intense self-criticism. The object to whom the perfectionistic

Authors' Note: Preparation of this article was facilitated through doctoral fellowships from the Fonds pour la Formation de Chercheurs et l'Aide à la Recherche (FCAR) and the Research Council of Canada (SSHRC) to the first author, and through grants from the SSHRC and the FCAR to the second author. Correspondence concerning this article should be addressed to Paule Miquelon or Robert J. Vallerand, Laboratoire de recherche sur le comportement social, Département de psychologie, Université du Québec à Montréal, Case postale 8888, succursale Centre-Ville, Montréal (Québec), H3C 3P8, Canada; e-mail: r33055@er.uqam.ca.

PSPB, Vol. 31 No. 7, July 2005 913-924

DOI: 10.1177/0146167204272298

© 2005 by the Society for Personality and Social Psychology, Inc.

behavior is directed is the individual himself or herself (e.g., "One of my goals is to be perfect in everything I do"). SOP is under an individual's control and involves standards that may be changed in a proactive manner (e.g., setting exacting standards for oneself and stringently evaluating or censuring one's own behavior). OOP refers to the tendency of an individual to expect that others should or would be perfect in their performance (e.g., "If I ask someone to do something, I expect it to be done flawlessly"). Finally, SPP characterizes those individuals who perceive that significant others are imposing excessively high standards on them and that they must meet these standards to please others. The object to which the perfectionistic behavior is directed is others rather than the individual himself (e.g., "The people around me expect me to succeed at everything I do"). Whereas SOP is under an individual's control and involves standards that may be changed in a proactive manner, SPP is derived from the perception of other people's imposed expectations.

Self-Oriented Perfectionism, Socially Prescribed Perfectionism, and Psychological Adjustment Among Students

According to some researchers (e.g., Chang & Rand, 2000), SPP and SOP should be particularly involved in psychological adjustment variables because, unlike OOP, these two dimensions place the explicit focus of perfectionistic expectations on the individual. Therefore, OOP is not considered in the present research. Although both SPP and SOP should be associated with adjustment variables, they do not seem to produce the same impact on psychological adjustment. On one hand, SPP should result in a variety of negative consequences because the standards imposed by significant others may be perceived as being excessive and uncontrollable (Hewitt & Flett, 1991). Numerous empirical investigations using Hewitt and Flett Multidimensional Perfectionism Model within student samples tend to support this assumption (e.g., Chang & Rand, 2000; Chang & Sanna, 2001; Dunkley, Blankstein, Halsall, Williams, & Winkworth, 2000; O'Connor & O'Connor, 2003; Sherry, Hewitt, Flett, & Harvey, 2003). Results from these studies provide consistent evidence that SPP has adverse consequences on students' psychological adjustment, including lower self-esteem, depression, anxiety, avoidant coping, hassles, negative attributional style, hopelessness, loneliness, shyness, fear of negative evaluation, and more.

On the other hand, having high personal standards and goals (i.e., an SOP orientation) should not necessarily be maladaptive because it is under an individual's control and involves standards that might be changed in a proactive manner (see Frost et al., 1990; Hewitt & Flett, 1991). Research that has used Hewitt and Flett's Multidi-

mensional Perfectionism Model within student samples reveals that SOP tends to be adaptive. First, a number of studies support the adaptive role of SOP in students' psychological adjustment. For instance, various investigators have found a positive connection between SOP and some positive psychological adjustment outcomes within student samples, including self-esteem, resourcefulness, and constructive striving (e.g., Flett, Hewitt, Blankstein, & Dynin, 1994; Flett, Hewitt, Blankstein, & Mosher, 1995), high levels of perceived personal control (e.g., Flett et al., 1991), active coping (Dunkley et al., 2000), self-efficacy for learning and performance, adaptive cognitive learning strategies, and effective resources management (Mills & Blankstein, 2000). Second, findings from other investigations have demonstrated that SOP was unrelated to a variety of negative consequences, including general health and psychological adjustment (e.g., O'Connor & O'Connor, 2003), perceived coping difficulties, interpersonal and achievement hassles (Sherry et al., 2003), as well as anxiety, hostility, and hopelessness (e.g., Chang & Rand, 2000). However, it is noteworthy to point out that some researchers also have found SOP to be positively associated with certain negative consequences among student samples, such as depressive symptoms and negative attributional style (Chang & Sanna, 2001), anxiety, self-criticism, self-blame, hostility and guilt (Hewitt & Flett, 1991), suicide ideation (Hewitt, Flett, & Weber, 1994), as well as hassles and distress (Dunkley et al., 2000).

In sum, SOP is usually considered as being a more adaptive form of perfectionism because a majority of research has found it to be either associated with positive outcomes or unrelated to negative consequences. In contrast, SPP is considered as being a maladaptive form of perfectionism because it has been found to be consistently associated with negative outcomes.

Multidimensional Perfectionism, Academic Motivation, and Students' Psychological Adjustment

Although a great deal of research examining the association between multidimensional perfectionism and students' psychological adjustment has taken place (e.g., Chang & Rand, 2000; Chang & Sanna, 2001; Dunkley et al., 2000; Dunkley, Zuroff, & Blankstein, 2003; O'Connor & O'Connor, 2003), several important questions remain to be addressed. One important focus for subsequent research is an examination of the specific factors that contribute to the respective impact of the SOP and SPP dimensions on students' psychological adjustment. According to Hewitt and Flett (1991), one potential factor that can contribute to the distinct impact of SOP and SPP is the level and type of motivation associated with each of these perfectionism dimensions. For instance, these authors suggest that SOP should be

associated with a more intrinsic form of motivation because it is characterized by an inherent and personal need to be perfect and a striving for perfection and self-improvement. In contrast, Hewitt and Flett (1991) propose that SPP should be associated with a more extrinsic form of motivation because it is characterized by a sense of helplessness about the inability to establish personal control over evaluative standards and by a great desire to please others and avoid punishment (see Flett et al., 1994; Hewitt & Flett, 1991). Moreover, empirical evidence on the role of socially prescribed standards in increased levels of extrinsic motivation but decreased levels of intrinsic motivation is provided by experimental work on intrinsic motivation. Research has shown that controlling feedback, which involves the perception that one must meet someone else's expectations, leads to reduced levels of intrinsic motivation and increased negative affect (Deci & Ryan, 1985; Ryan, 1982). According to Self-Determination Theory (Deci & Ryan, 1985, 1991, 2000), Hewitt and Flett's proposition regarding the relationship between perfectionism style and motivational orientation seems to suggest that SOP is associated with self-determined forms of motivation, whereas SPP is associated with non-self-determined forms of motivation. Self-determined motivation is defined as the extent to which individuals engage in an activity out of personal choice and/or pleasure (Blais, Sabourin, Boucher, & Vallerand, 1990; Ryan, & Connell, 1989; Vallerand & Bissonnette, 1992; Vallerand, Fortier, & Guay, 1997). For example, students who go to school either because they enjoy it or because they think that university education will help them better prepare for the career they have chosen display a self-determined form of motivation. On the other hand, non-self-determined motivation refers to the extent to which individuals engage in an activity for external reasons and/or internal pressure (Blais et al., 1990; Vallerand et al., 1997; Vallerand & Bissonnette, 1992). Thus, students who go to university because they want to please their parents or because they experience an internal pressure to do so display a non-self-determined motivation toward school.

The proposed different motivational processes associated with SOP and SPP may have important implications for students' psychological adjustment. For instance, several studies examining motivation in student samples have found a self-determined motivational orientation to be associated with positive psychological outcomes, including school enjoyment (Ryan & Connell, 1989), positive emotions in the classroom, enjoyment of academic work, and satisfaction with school (Vallerand, Blais, Brière, & Pelletier, 1989; Vallerand et al., 1993). In contrast, these and other studies (e.g., Sénécal, Koestner, & Vallerand, 1995) found a non-self-determined motivational orientation to be associated with indicators

of PAD, such as poorer coping with failure, less positive emotions in school, general anxiety, and depression. Thus, a self-determined motivational orientation toward school is positively associated with a better psychological adjustment, whereas a non-self-determined motivational orientation is positively associated with PAD (see Vallerand, 1997, for a review).

Although much research has evaluated the influence of either multidimensional perfectionism or motivational orientation on students' psychological adjustment, very few have considered the possible mediating role of academic motivation between each perfectionism dimension (i.e., SOP and SPP) and psychological adjustment. To the best of our knowledge, only two studies (Accordino, Accordino, & Slaney, 2000; Mills & Blankstein, 2000) have assessed the influence of multidimensional perfectionism on students' motivation in academic settings. However, none of these studies has investigated the mediating role of academic motivation in the relationship between multidimensional perfectionism and students' psychological adjustment. Furthermore, only Mills and Blankstein have used motivation measures that assessed differences between a self-determined motivational versus a non-self-determined motivational orientation, namely, the Work Preference Inventory (WPI; Amabile, Hill, Hennessey, & Tighe, 1994) and the Motivated Strategies for Learning Questionnaire (MSLQ; Pintrich, Smith, Garcia, & McKeachie, 1993). Results obtained by Mills and Blankstein partially supported the theoretical hypothesis that posits that SOP should be associated with a self-determined motivational orientation, whereas SPP should be associated with a non-self-determined motivational orientation. As expected, they found that SPP was strongly and positively associated with a non-self-determined academic motivation. However, even though these authors found a moderate correlation between SOP and a measure of self-determined academic motivation, the strongest correlation was obtained between SOP and non-self-determined academic motivation. Although Mills and Blankstein made an important effort to test the relationship between perfectionism style and motivational orientation, they did not examine the mediating role of academic motivation in the relationship between multidimensional perfectionism and PAD. This represents the purpose of the present research.

The goal of the present research was to propose and test in two studies an integrative model that examines the mediating role of students' academic motivation in the relation between their perfectionism orientations (i.e., SOP and SPP) and their PAD (see Figure 1). This model posits that (a) SOP leads to self-determined academic motivation, whereas (b) SPP leads to non-self-determined academic motivation. In turn, self-

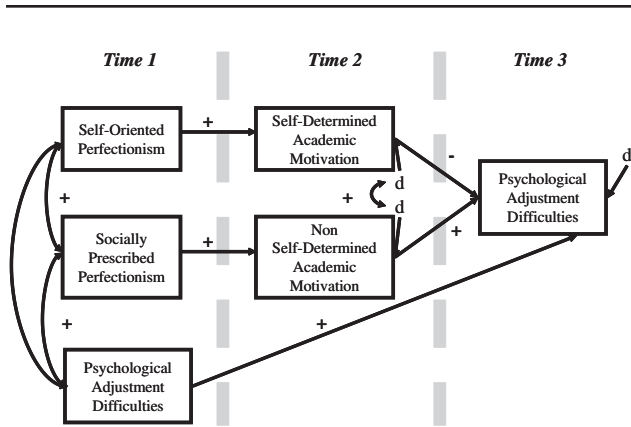


Figure 1 A theoretical model of the relationship between perfectionism, academic motivation, and psychological adjustment difficulties: Study 1.

NOTE: The symbol “+” specifies a positive relationship between the indicated variables of the path analysis model, whereas the symbol “-” specifies a negative relationship between the indicated variables of the path analysis model. Finally, the letter “d” indicates the disturbance term associated with each endogenous variable of the path analysis model.

determined and non-self-determined academic motivations, respectively, lead to less PAD on one hand and to more PAD on the other. In addition, whereas Study 1 tested the basic model proposed in Figure 1, Study 2 examined more fully the mediating role of academic motivation while taking into consideration the constructs of neuroticism and school adjustment.

STUDY 1

The purpose of Study 1 was to test the model proposed in Figure 1 using a three-wave prospective design. It was hypothesized that (a) SOP at Time 1 would be positively associated with self-determined academic motivation at Time 2, which in turn, would be negatively associated with PAD at Time 3, and (b) SPP at Time 1 would be positively associated with non-self-determined academic motivation at Time 2, which in turn, would be positively associated with PAD at Time 3. Of course, PAD at Time 1 was predicted to be positively associated with PAD at Time 3.

Method

PARTICIPANTS

Participants were 166 French-Canadian undergraduate students. The sample was composed of 130 women and 33 men (3 unspecified). The mean age of participants was 26 years.

MEASURES

Perfectionism orientations. The Multidimensional Perfectionism Scale (MPS; Hewitt & Flett, 1991) is a 45-item

self-report measure of perfectionism tendencies. It assesses three dimensions of perfectionism: (a) SOP (e.g., “I demand nothing less than perfection of myself”), (b) OOP (e.g., “If I ask someone to do something, I expect it to be done flawlessly”), and (c) SPP (e.g., “The people around me expect me to succeed at everything I do”). However, for the sake of the present research, only the SOP and the SPP subscales of the MPS were used. We used the French version, validated by Labrecque, Stephenson, Boivin, and Marchand (1999). Respondents rated their agreement with each item on a 7-point scale ranging from *do not agree at all* (1) to *very strongly agree* (7). Acceptable Cronbach’s alphas were obtained in the present study for both the SOP ($\alpha = .90$) and SPP ($\alpha = .86$) subscales.

Academic motivation. The French version of the Academic Motivation Scale (AMS; Vallerand et al., 1992, 1993), namely, l’Échelle de Motivation en Éducation (EME; Vallerand et al., 1989), was used to assess students’ self-regulation style toward their academic activities. Previous studies have found high levels of reliability and validity for the AMS and the EME (see Vallerand, 1997; Vallerand et al., 1989, 1992, 1993). Although the original version of the EME includes seven subscales, only six were used in the present research. Three assess types of intrinsic motivation: intrinsic motivation to know (e.g., “Because I experience pleasure and satisfaction while learning new things”), to accomplish things (e.g., “For the pleasure I experience while surpassing myself in my studies”), and to experience stimulation (e.g., “For the high feeling that I experience while reading about various interesting subjects”). The other three subscales assess types of extrinsic motivation: external regulation (e.g., “Because I need at least a high school degree to find a high-paying job later on”), introjected regulation (e.g., “To show myself that I am an intelligent person”), and identified regulation (e.g., “Because I think that a high school education will help me better prepare for the career I have chosen”). With respect to the EME, respondents were asked, “Why are you going to the University?” Four reasons were given for each of the six regulations styles, yielding 24 items scored on a 7-point Likert scale ranging from *do not agree at all* (1) to *very strongly agree* (7). These six regulations styles sample a continuum of self-determination for behavior (Deci & Ryan, 1985), ranging from non-self-determined (i.e., external regulation) to self-determined motivation (i.e., intrinsic motivation). In line with this continuum, we computed a self-determined academic motivation variable for each participant by adding the intrinsic and identified reasons for pursuing academic activities ($\alpha = .90$). Likewise, we also computed a non-self-determined academic motivation variable by adding the external and introjected ratings ($\alpha = .85$). Therefore, rather than

having separate regulatory-style subscales, we had only two main subscales (i.e., self-determined and non-self-determined academic motivation). This procedure has been widely used in previous research (e.g., Carver & Baird, 1998; Williams, Grow, Freedman, Ryan, & Deci, 1996; Williams, McGregor, Zeldman, Freedman, & Deci, 2004).

Psychological adjustment difficulties. The General Health Questionnaire (GQH; Goldberg & Hillier, 1979) was used to measure PAD. Numerous studies have established the validity and the reliability of the GHQ (e.g., Goldberg & Hillier, 1979; Vieweg & Hedlund, 1983). In the present study, two scales of the GHQ were used to measure PAD. These were the social dysfunction (e.g., "I am not able to make decisions") and anxiety (e.g., "I feel nervous and fraught all the time") subscales, each made up of seven items. Participants rated each item on a 7-point Likert scale ranging from *do not agree at all* (1) to *very strongly agree* (7). For each participant, we computed a PAD variable by adding the anxiety and social dysfunction items. Because PAD was measured twice in Study 1, we computed Time 1 (T1 PAD) and Time 3 PAD (T3 PAD) variables, which yielded Cronbach's alphas of .88 and .90, respectively.

PROCEDURES

A three-wave prospective design was used in the present study. Participants completed a first questionnaire measuring their perfectionism orientation and their psychological adjustment (T1 PAD) in class at the beginning of the fall semester. The questionnaire was administered by a trained experimenter according to standardized instructions. Students were told that additional information would be gathered later on and so it was important that they write their student identification code on the questionnaire. The experimenter also explained the types of questions that students would be asked to answer and provided examples. It was clearly stated that confidentiality of their answers would prevail at all times. For all participants, the administration of the first questionnaire took place 3 weeks after the beginning of the semester. Seven weeks after they had completed the first questionnaire (i.e., 10 weeks after the beginning of the semester), participants completed a second questionnaire measuring their individual academic motivation. Finally, at the end of the semester (i.e., 15 weeks after the beginning of the semester), participants completed a questionnaire assessing psychological T3 PAD.

Results

OVERVIEW OF THE ANALYSES

A path analysis with EQS was performed to test the model involving perfectionism, academic motivation,

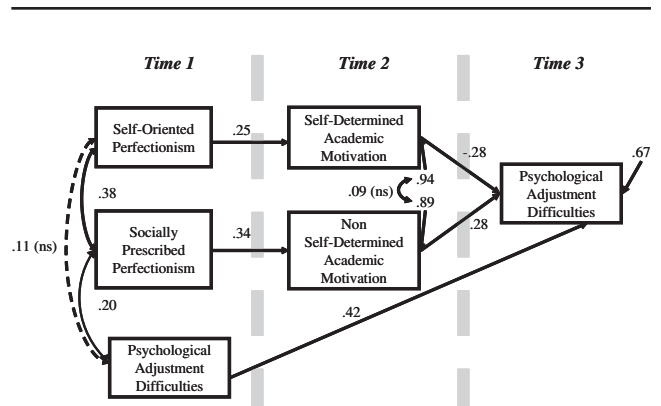


Figure 2 Results from the longitudinal path analysis: Study 1.

and PAD. The covariance matrix served as a database for the path analysis. The method of estimation was maximum likelihood. The variables were composites, but to take account of the measurement error, we fixed the error variances to $(1 - \rho_{y_i y_i}) \text{var}(y_i)$, where $\rho_{y_i y_i}$ is the estimate of reliability (see Bollen, 1989). As shown in Figure 2, the model was composed of three exogenous variables (i.e., T1 PAD, SOP, and SPP) and three endogenous variables (i.e., self-determined academic motivation, non-self-determined academic motivation, and T3 PAD). Covariances were estimated between the two types of perfectionism, between both types of perfectionism and T1 PAD, as well as between the two proposed forms of academic motivation (i.e., self-determined and non-self-determined). All paths were specified according to the hypotheses of full mediation. In addition, a path was specified from T1 PAD to T3 PAD so that other paths to T3 PAD would represent the prediction of residual changes in general PAD.

Finally, to test for the mediating role of academic motivation in the perfectionism-PAD relationship, we conducted additional analyses following the recommendations of MacKinnon, Lockwood, Hoffman, West, and Sheets (2002). Specifically, we used the z' coefficient resulting from the division of the mediated, or indirect, effect (which is the product of the two path coefficients involved in the effect) by its standard error. Then, one compares this z' value to critical values derived from this product term's empirical sampling distribution (see MacKinnon et al., 2002). The coefficients and standard errors used in this test are obtained from a supplemental path analysis in which the direct paths from perfectionism (i.e., SOP and SPP) to T3 PAD are estimated. Significant indirect effects are analogous to showing that the direct effects are significantly reduced when the mediators (i.e., self-determined and non-self-determined motivation) are included in the equation.

TABLE 1: Means, Standard Deviations, and Pearson Correlations Among Variables of Study 1 ($N = 166$)

Variable	M	SD	1	2	3	4	5	6
1. Self-oriented perfectionism	4.26	1.01	—					
2. Socially prescribed perfectionism	2.58	0.82	.33**	—				
3. Self-determined academic motivation	4.89	0.82	.22**	.15	—			
4. Non-self-determined academic motivation	4.05	1.26	.06	.29**	.11	—		
5. Psychological adjustment difficulties (T1 PAD)	2.39	0.83	.10	.16*	.04	.20**	—	
6. Psychological adjustment difficulties (T3 PAD)	2.69	1.03	.03	.20**	-.20**	.30**	.41**	—

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

PATH ANALYSIS

Means, standards deviations, and Pearson correlations among variables of Study 1 appear in Table 1. Results of the path analysis revealed a satisfactory fit of the model to the data. The chi-square value was nonsignificant, $\chi^2(df = 6, N = 166) = 7.39, p > .29$, and other fit indices were high: Nonnormed Fit Index (NNFI) = .93, Comparative Fit Index (CFI) = .98, root mean square error of approximation (RMSEA) = .037 (.000, .112), and standardized root mean square residual (SRMR) = .041. As shown in Figure 2, the estimated paths between SOP and self-determined academic motivation ($\beta = .25$), as well as between SPP and non-self-determined academic motivation ($\beta = .34$), were both significant (z values > 1.96). In addition, the estimated paths between self-determined academic motivation ($\beta = -.28$), non-self-determined academic motivation ($\beta = .28$), and T3 PAD also were significant (z value > 1.96), even when controlling for the path from T1 PAD to T3 PAD ($\beta = .42$). In summary, results of the path analysis provided strong support for the proposed theoretical model presented in Figure 1.

THE MEDIATING ROLE OF ACADEMIC MOTIVATION

To assess the mediating role of academic motivation in the relationship between perfectionism orientation and T3 PAD, we used the z' coefficient presented above (see MacKinnon et al., 2002). With respect to the mediating role of non-self-determined academic motivation in the relationship between SPP and T3 PAD, the z' coefficient = 2.43, $p < .01$, was significant. Furthermore, although the SOP-PAD correlation was close to zero (i.e., $r_{286} = .03, p > .71$), we nonetheless examined the mediating role of self-determined academic motivation in the relationship between these two variables using the z' coefficient again.¹ For this mediation, we found that the z' coefficient was significant ($z' = -1.97, p < .05$).

BRIEF DISCUSSION

Results of Study 1 provided strong support for the model postulated in Figure 1. Findings from the path analysis showed that both types of academic motivation were mediators of the relationship found between the

two types of perfectionism orientations and T3 PAD, although controlling for the influence of T1 PAD. More specifically, self-determined academic motivation was found to mediate the link between SOP and T3 PAD, whereas non-self-determined academic motivation was found to mediate the relationship between SPP and T3 PAD. It thus seems that students possessing an SOP orientation typically engage in their academic activities mostly out of self-determined motivation (i.e., pleasure, satisfaction, interest or personal convictions), whereas students possessing a SPP orientation are participating in their academic activities out of non-self-determined academic motivation (i.e., external reasons and/or internal pressure). In turn, these two types of academic motivation are negatively and positively associated with increases in PAD, respectively.

STUDY 2

In Study 2, we focused on two important issues that were not addressed in Study 1. The first issue concerns the role of neuroticism as a potential confounding variable in the relationships among variables of the model. Past research has shown that neuroticism is related to PAD (e.g., McCrae, 1990). It is thus important to test the validity of the proposed model while controlling for the neuroticism-PAD link. The second issue is in regard to the influence of perfectionism and academic motivation on contextual psychological adjustment. This concern is warranted because perfectionism and motivation orientations are both measured at a contextual level (i.e., the academic context; see Vallerand, 1997). Therefore, we decided to include a contextual measure of psychological adjustment, namely, academic adjustment (i.e., satisfaction, subjective vitality, and positive emotions generally experienced at school) in addition to the more general or global PAD measure used in Study 1.

In sum, the purpose of Study 2 was to replicate and improve on our first conceptual model by means of controlling for neuroticism and participants' academic adjustment. In line with the results found in Study 1 and prior research, the model (see Figure 3) tested in Study 2 posits that (a) SOP is positively associated with self-determined academic motivation, which in turn, is nega-

tively associated with PAD but positively related with academic adjustment (see Vallerand et al., 1989, 1993) and (b) SPP is positively associated with non-self-determined academic motivation, which in turn, is positively associated with PAD but unrelated to academic adjustment (see also Vallerand et al., 1989, 1993). Moreover, in line with past research (e.g., Chemers, Hu, & Garcia, 2001; Juvonen, Nishina, & Graham, 2000), we expected a negative relationship between PAD and academic adjustment. Finally, also consistent with past research (e.g., Guay, Sénécal, Gauthier, & Fernet, 2003; Ingledew, Markland, & Sheppard, 2004), we predicted positive and negative relationships, respectively, between neuroticism on one hand and non-self-determined and self-determined academic motivations on the other.

Method

PARTICIPANTS

Participants were 229 French-Canadian undergraduate students. The sample was composed of 192 women and 36 men (1 unspecified). The mean age of participants was 25 years.

MEASURES AND PROCEDURE

In the present study, participants completed only one questionnaire during the academic semester. Scales contained in this questionnaire appear below.

Perfectionism orientations, academic motivation, and psychological adjustment. To be consistent with Study 1, we used the same scales, that is, the Multidimensional Perfectionism Scale (Hewitt & Flett, 1991; Labrecque et al., 1999) assessing SOP ($\alpha = .92$) and SPP ($\alpha = .92$), the Échelle de Motivation en Éducation (Vallerand et al., 1989) assessing self-determined motivation (intrinsic and identified regulation subscales, $\alpha = .94$) and non-self-determined motivation (introjected and external regulation subscales, $\alpha = .83$), and the General Health Questionnaire (social dysfunction and anxiety subscales) (Goldberg & Hillier, 1979) assessing PAD ($\alpha = .93$).

Academic adjustment. The academic adjustment variable was composed of three specific scales. One of these scales was students' subjective vitality felt in their undergraduate studies and was adapted from the Subjective Vitality Scale (Ryan & Frederick, 1997). The concept of subjective vitality refers to the state of feeling alive and alert as well as having energy available to the self. The original scale had seven items but only four items were used in the present study. The second scale was students' positive emotions regarding their undergraduate studies. It was adapted from the positive affect scale of the well-validated Positive and Negative Affect Schedule (PANAS; Watson, Clark, & Tellegen, 1988). We used five items to measure positive affect. Finally, a third scale was

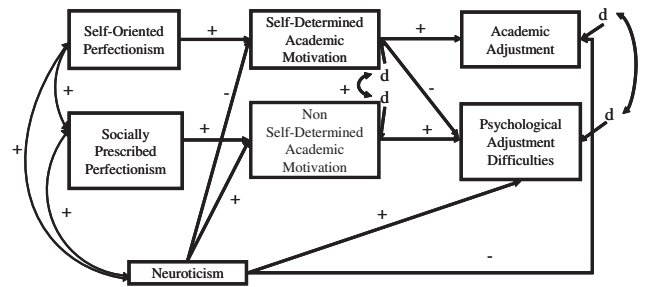


Figure 3 A hypothesized model of the relationship between perfectionism, academic motivation, and psychological adjustment difficulties when controlling for neuroticism influence: Study 2.

NOTE: The symbol "+" specifies a positive relationship between the indicated variables of the path analysis model, whereas the symbol "-" specifies a negative relationship between the indicated variables of the path analysis model. Finally, the letter "d" indicates the disturbance term associated with each endogenous variable of the path analysis model.

students' satisfaction regarding their undergraduate studies (from Vallerand & Bissonnette, 1990). For each scale, respondents rated their agreement with each item on a 7-point scale ranging from *do not agree at all* (1) to *very strongly agree* (7). Acceptable Cronbach's alphas were obtained in the present study for students' academic subjective vitality ($\alpha = .88$), positive emotions ($\alpha = .89$), and satisfaction ($\alpha = .83$).

Neuroticism. Neuroticism was assessed by the 12-item neuroticism subscale of the NEO Five-Factor Inventory (NEO-FFI; Costa & McCrae, 1980). Higher scores on this scale indicate greater levels of neuroticism, and respondents rated their agreement with each item on a 7-point scale ranging from *do not agree at all* (1) to *very strongly agree* (7). An acceptable Cronbach's alpha was obtained for this scale ($\alpha = .88$).

Results

OVERVIEW OF THE ANALYSES

As in Study 1, a path analysis with EQS was performed using the same method of estimation (i.e., maximum likelihood) and error variance estimation approach. As shown in Figure 3, the model was composed of three exogenous variables (i.e., neuroticism, SOP, and SPP) and four endogenous variables (i.e., self-determined and non-self-determined academic motivation, PAD, and academic adjustment). Covariances were estimated between the three exogenous variables as well as between the two proposed forms of academic motivation (i.e., self-determined and non-self-determined) and between academic adjustment and PAD. All paths were specified according to the hypotheses of full mediation. In addi-

TABLE 2: Means, Standard Deviations, and Pearson Correlations Among Variables of Study 2 (N = 229)

Variable	M	SD	1	2	3	4	5	6	7
1. Self-oriented perfectionism	4.06	1.14	—						
2. Socially prescribed perfectionism	2.36	0.82	.47**	—					
3. Self-determined academic motivation	4.95	1.01	.30**	.08	—				
4. Non-self-determined academic motivation	3.41	1.21	.12	.30**	.29**	—			
5. Psychological adjustment difficulties (PAD)	2.94	1.25	.03	.23**	-.20**	.17*	—		
6. Academic adjustment	4.36	1.21	.17**	-.03	.44**	.11	-.47**	—	
7. Neuroticism	3.11	1.05	.18**	.36**	-.13*	.15*	.53**	.31**	—

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

tion, a path was specified from neuroticism to both PAD and academic adjustment. This was done to control for the influence of neuroticism on the psychological adjustment variables of the proposed model. Finally, we also tested the mediating role of academic motivation using the same procedures as those used in Study 1.

PATH ANALYSIS

Means, standards deviations, and Pearson correlations among variables of Study 2 appear in Table 2. Results of the path analysis revealed a satisfactory fit of the model to the data. The chi-square value was nonsignificant, $\chi^2(df = 7, N = 229) = 7.251, p > .40$, and other fit indices were very good: NNFI = .998, CFI = .999, RMSEA = .013 (.000, .083), and SRMR = .027.² As shown in Figure 4, the estimated paths between SOP and self-determined academic motivation ($\beta = .35$), as well as between SPP and non-self-determined academic motivation ($\beta = .36$), were both significant (z value > 1.96). In addition, the estimated paths between self-determined academic motivation and PAD ($\beta = -.21$), and between non-self-determined academic motivation and PAD ($\beta = .16$), also were significant (z values > 1.96), even when including a path from neuroticism to PAD ($\beta = .51$). Similarly, the estimated path between self-determined academic motivation and academic adjustment ($\beta = .46$) was significant (z value > 1.96), even when including a path from neuroticism to academic adjustment ($\beta = -.31$). However, although we hypothesized positive and negative associations, respectively, between neuroticism on one hand and non-self-determined and self-determined academic motivation on the other, only the path between neuroticism and self-determined academic motivation ($\beta = -.23$) was significant (z value > 1.96). Finally, as predicted, a significant negative relationship between academic adjustment and PAD, $r(229) = -.41, p < .001$, was obtained. In sum, results of the path analysis provided strong support for the proposed model.

THE MEDIATING ROLE OF ACADEMIC MOTIVATION

As in Study 1, we used the z' coefficient (see MacKinnon et al., 2002) to assess the mediating role of academic motivation in the relationship between perfec-

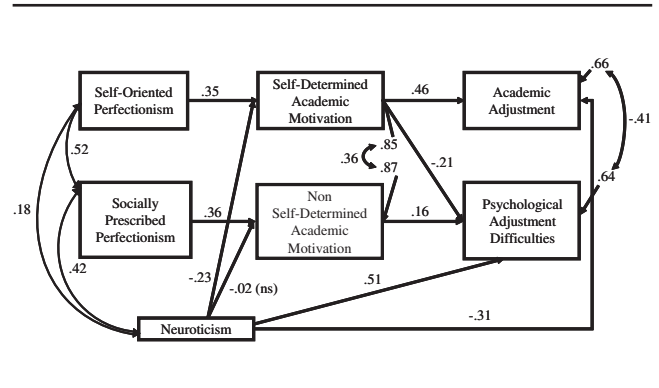


Figure 4 Results from the path analysis: Study 2.

tionism orientation and PAD. We first examined the mediating role of non-self-determined motivation in the observed relationship between SPP and PAD. For this mediation, the z' coefficient = 1.66, $p < .01$. Then, we also examined whether self-determined motivation mediated the SOP-PAD relationship, even though their observed correlation was close to zero (i.e., $r_{229} = .03, p > .63$). The results revealed that mediation between SOP and PAD was significant, the z' coefficient = $-2.13, p < .01$. Finally, we also investigated the mediating role of self-determined academic motivation in the relationship between SOP and academic adjustment. For this mediation, the z' coefficient = -3.21 , also was significant, $p < .01$. However, because non-self-determined academic motivation was not related to academic adjustment, we could not assess its mediation effect in the SPP-academic adjustment relationship.

BRIEF DISCUSSION

The results of Study 2 supported the model presented in Figure 3, even though we controlled for the influence of neuroticism on PAD. Therefore, as in Study 1, self-determined and non-self-determined academic motivations were found to mediate the relationship between both perfectionism orientations and PAD. Moreover, results of Study 2 also indicated that self-determined academic motivation mediated the relationship between

SOP and academic adjustment. To summarize, students who possess an SOP orientation are more self-determined toward their academic activities and have a better academic adjustment as well as less PAD in their overall life. On the other hand, students who possess a SPP orientation are non-self-determined toward their academic activities and, as a result, also experience more PAD in their overall life. Moreover, these effects take place above and beyond those involving neuroticism.

GENERAL DISCUSSION

The purpose of the present article was to propose and test an integrative model that posits that academic motivation mediates the perfectionism-PAD relationship. Specifically, the model posits that SOP facilitates self-determined academic motivation, which in turn, leads to less PAD, whereas SPP facilitates non-self-determined academic motivation, which in turn, leads to more PAD. Overall, the present results supported the proposed integrative model. Results of Study 1 revealed that both types of academic motivation were mediators of the relationship found between perfectionism orientations and T3 PAD, controlling for the influence of T1 PAD. In more concrete terms, our results suggest that students possessing an SOP orientation typically engage in their academic activities mostly out of self-determined motivation, whereas students possessing a SPP orientation are participating in their academic activities out of non-self-determined academic motivation. In turn, these two types of motivation are negatively and positively associated with increases in PAD, respectively. Similarly, results of Study 2 replicated the findings of Study 1 while controlling for the neuroticism-PAD link. In addition, results of Study 2 also indicated that self-determined academic motivation mediates the relationship between SOP and academic adjustment. Thus, students who possess an SOP orientation are more self-determined toward their academic activities, which is associated with a better academic adjustment. These results lead to a number of theoretical implications.

Theoretical Implications

Findings of the present research corroborate the existence of two different dimensions of perfectionism (e.g., Hewitt & Flett, 1991), which are distinctively associated with two types of academic involvement. As the present results revealed, even though SOP entails high self-standards, it is nevertheless associated with a positive form of academic involvement, namely, self-determined academic motivation. In contrast, SPP appears to be a maladaptive form of perfectionism. It entails a belief that significant others hold unrealistic standards for them, evaluate them stringently, and exert pressure on them to be perfect. Moreover, our results indicated that

SPP is associated with a more negative form of academic involvement, namely, non-self-determined academic motivation.

Our findings regarding the positive relationship between SPP and PAD are consistent with those found in a majority of past research (e.g., Chang & Rand, 2000; Chang & Sanna, 2001; Dunkley et al., 2000; O'Connor & O'Connor, 2003; Sherry et al., 2003). In addition, the present results corroborate findings obtained by Mills and Blankstein (2000) that showed that SPP was positively associated with students' non-self-determined motivation toward their academic work. However, the present results extend past research in showing that the association between SPP and PAD is due in large part to a non-self-determined academic motivation. These results suggest that socially prescribed perfectionists are more likely to develop PAD due to a non-self-determined form of motivation toward their academic activities.

Our results seem to support the adaptive role of SOP in students' psychological adjustment. As such, results of Study 1 showed that throughout a 4-month semester, SOP prospectively predicted a more self-determined form of academic motivation, which in turn, predicted less PAD at the end of the semester. These results also were upheld in Study 2, even while controlling for neuroticism. In sum, results support our proposition that SOP positively contributes to psychological adjustment through its relation with self-determined motivation.

Although the present findings corroborate results of previous research examining the relationship between SOP and PAD in student samples, they slightly differ from results of prior research examining the relationship between perfectionism and academic motivation (Mills & Blankstein, 2000). More specifically, Mills and Blankstein found a moderate positive correlation between SOP and a measure of self-determined academic motivation. However, they found a stronger correlation between SOP and non-self-determined academic motivation. We suggest that the divergence between our results and the ones obtained by Mills and Blankstein might be explained by the difference in scales used to measure academic motivation. In the present research, our measure of self-determined motivation was composed of both intrinsic (i.e., academic activities chosen for their inherent satisfaction, interest, and excitement) and identified (academic activities choicefully engaged in for their long-term significance) forms of motivation. In contrast, Mills and Blankstein's measure of self-determined motivation was only composed of academic intrinsic motivation (e.g., curiosity, enjoyment, and interest). Because several aspects of education are unlikely to be perceived as exciting or interesting (e.g., revising materials in preparation for an examination)

but are rather performed for their long-term significance, it would appear important that self-determined academic motivation includes both intrinsic and identified reasons for pursuing academic activities. Results of previous investigations (see Koestner & Losier, 2002) support the importance of identified regulation in the educational domain. These results reveal that it was particularly identified regulation, rather than intrinsic motivation, that promoted positive engagement in academic activities and continued persistence in school. These findings clearly demonstrate that identified regulation is a key component of self-determined academic motivation. It is thus possible that the measure of self-determined academic motivation used in this study was more strongly and positively related to SOP because it also assessed identified reasons for pursuing academic tasks, which was not measured in the Mills and Blankstein study.

Overall, the present results provide strong support for the proposed integrative model. This model highlights the motivational processes underpinning the two types of perfectionism, namely, SOP and SPP and their different consequences. In line with Hewitt and Fleet (1991), our model posits that SOP is associated with self-determined forms of motivation, whereas SPP is associated with non-self-determined forms of motivation. We believe that our model integrates past findings found between SOP and SPP on one hand and a variety of consequences on the other. For example, investigators have found a positive link between SOP and various positive psychological adjustment outcomes within student samples, including self-esteem, resourcefulness, and constructive striving (e.g., Flett et al., 1994, 1995), high levels of perceived personal control (e.g., Flett et al., 1991), active coping (Dunkley et al., 2000), self-efficacy for learning and performance, adaptive cognitive learning strategies, and effective resources management (Mills & Blankstein, 2000). In addition, other studies have demonstrated that SOP is unrelated to a variety of negative consequences, including general health and psychological adjustment (e.g., O'Connor & O'Connor, 2003), perceived coping difficulties, interpersonal and achievement hassles (Sherry et al., 2003), as well as anxiety, hostility, and hopelessness (e.g., Chang & Rand, 2000). However, none of these studies has considered the mediating role of self-determined motivation in the relationship between SOP and outcomes. We suggest that the self-determined motivational processes underpinning SOP explain, at least in part, why this perfectionism dimension has been found to be adaptive (i.e., associated with positive consequences or unrelated to negative consequences). Indeed, as much motivation research has shown, self-determined forms of motivation provide

inner strength and direction leading to several positive outcomes (see Deci & Ryan, 2000; Vallerand, 1997).

We believe that the same reasoning applies to SPP. Previous research (e.g., Chang & Rand, 2000; Chang & Sanna, 2001; Dunkley et al., 2000; O'Connor & O'Connor, 2003; Sherry et al., 2003) has provided consistent evidence that SPP has adverse consequences on students' psychological adjustment, including lower self-esteem, depression, anxiety, avoidant coping, hassles, negative attributional style, hopelessness, loneliness, shyness, fear of negative evaluation, and more. Still, as research examining the impact of SOP on students' psychological adjustment has shown, none of these studies has investigated the mediating role of non-self-determined motivation in the relationship between SPP and all these negative outcomes. We propose, and the present findings show, that the reason why SPP leads to negative outcomes is that it triggers non-self-determined forms of motivation, which stifle the person's inner resources and lead to negative outcomes.

In sum, we believe that the integrative model proposed herein clarifies why previous research examining the role of both SOP and SPP perfectionism dimensions has been associated with different types of outcomes. It is the different underlying types of motivation that the two types of perfectionism trigger that produce these different outcomes. We believe that this model represents a significant advance in perfectionism research and that future research examining our integrative model could prove fruitful. We now turn to this issue.

Limitations and Directions for Future Research

Although the present results provided support for our integrative model, some limitations should be taken into consideration when interpreting these findings. First, even though we used a prospective design in Study 1, it is nevertheless inappropriate to make causal inferences. One would need to use an experimental design to do so. Moreover, long-term longitudinal studies may provide a clearer picture about the mediating role of academic motivation in the relationship between multidimensional perfectionism and psychological adjustment. In addition, the data collected in the present research came from self-report measures. Such measures may be influenced by social desirability and experimenter biases. Thus, replication with other methods of data collection (e.g., personal diaries and observer ratings) would be important.

Second, similar to most previous perfectionism studies conducted with college students, the present sample was largely made up of young Caucasian adults. Given that other ethnic groups (e.g., Asians) have been found to report greater perfectionistic tendencies than Cauca-

sians (Chang, 1998), it would be important to determine the extent to which ethnic or racial differences might moderate the strength and influence of perfectionism on academic motivation as well as on academic and psychological adjustment. Clearly, more research is needed to examine the nomological network of perfectionism in other populations.

With respect to future research, it would be important to investigate the role of other potential mediators in the relationship between perfectionism orientation, academic motivation, and PAD. For example, Lazarus and Folkman (1984) have argued that the influence of personality factors on psychological adjustment is frequently mediated by how individuals appraise and cope with stressful situations. Thus, it would be interesting to examine how academic motivation, appraisals, and coping strategies combine to influence the relationship between perfectionism and PAD. For instance, in addition to mediating the relationship between perfectionism and PAD, it is also possible that academic motivation influences students' coping strategies (see Skinner & Edge, 2002, to this effect).

CONCLUSION

In sum, the present research contributes to the extant literature in demonstrating that perfectionism contributes to psychological adjustment through its relation with academic motivation. However, additional research is needed to provide a more comprehensive picture of the various psychological processes involved in the relationship between multidimensional perfectionism, academic motivation, and psychological adjustment.

NOTES

1. Judd and Kenny (1981, p. 207) acknowledged the possibility that mediation does exist, even if there is not a significant relationship between the independent and the dependent variable.

2. These indices of fit were based on a model in which the path from non-self-determined motivation to academic adjustment was fixed to 0.0. This path was nonsignificant in the formal model ($\beta = -.07$, z value < 1.96). The Wald test indicated that fixing this path to 0.0 does not change significantly the chi-square value, $\chi^2(1) = .021$, $p > .89$. This choice also was motivated by the principle of parsimony.

REFERENCES

- Accordino, D. B., Accordino, M. P., & Slaney, R. B. (2000). An investigation of perfectionism, mental health, achievement, and achievement motivation in adolescents. *Psychology in the Schools, 37*, 535-545.
- Amabile, T., Hill, K. G., Hennessey, B. A., & Tighe, E. M. (1994). The Work Preference Inventory: Assessing intrinsic and extrinsic motivational orientation. *Journal of Personality and Social Psychology, 66*, 950-967.
- Blais, M. R., Sabourin, S., Boucher, C., & Vallerand, R. J. (1990). Toward a motivational model of couple happiness. *Journal of Personality and Social Psychology, 59*, 1021-1031.
- Blatt, S. J. (1995). The destructiveness of perfectionism: Implications for the treatment of depression. *American Psychologist, 50*, 1003-1020.
- Bollen, K. A. (1989). *Structural equations with latent variables*. New York: John Wiley.
- Burns, D. (1980). The perfectionist's script for self-defeat. *Psychology Today*, pp. 34-57.
- Carver, C. S., & Baird, E. (1998). The American dream revisited: Is it what you want or why you want it that matters? *Psychological Science, 9*, 289-292.
- Chang, E. C. (1998). Cultural differences, perfectionism, and suicidal risk: Does social problem solving still matter? *Cognitive Therapy and Research, 22*, 237-254.
- Chang, E. C., & Rand, K. L. (2000). Perfectionism as a predictor of subsequent adjustment: Evidence for a specific diathesis-stress mechanism among college students. *Journal of Counseling Psychology, 47*, 129-137.
- Chang, E. C., & Sanna, L. J. (2001). Negative attributional style as a moderator of the link between perfectionism and depressive symptoms: Preliminary evidence for an integrative model. *Journal of Counseling Psychology, 48*, 490-495.
- Chemers, M. M., Hu, L.-T., & Garcia, B. F. (2001). Academic self-efficacy and first year college student performance and adjustment. *Journal of Educational Psychology, 93*, 55-64.
- Costa, P. T., & McCrae, R. R. (1980). Influence of Extraversion and Neuroticism on subjective well-being: Happy and unhappy people. *Journal of Personality and Social Psychology, 38*, 668-678.
- Deci, E. L., & Ryan, R. M. (1985). *Intrinsic motivation and self-determination in human behavior*. New York: Plenum.
- Deci, E. L., & Ryan, R. M. (1991). A motivational approach to self: Integration in personality. In R. Dienstbier (Ed.), *Nebraska symposium on motivation: Vol. 38. Perspectives on motivation* (pp. 237-288). Lincoln: University of Nebraska Press.
- Deci, E. L., & Ryan, R. M. (2000). The "what" and "why" of goal pursuit: Human needs and the self-determination of behaviour. *Psychological Inquiry, 11*, 227-268.
- Dunkley, D. M., Blankstein, K. R., Halsall, J., Williams, M., & Winkworth, G. (2000). The relation between perfectionism and distress: Hassles, coping, and perceived social support as mediators and moderators. *Journal of Counseling Psychology, 47*, 437-453.
- Dunkley, D. M., Zuroff, D. C., & Blankstein, K. R. (2003). Self-critical perfectionism and daily affect: Dispositional and situational influences on stress and coping. *Journal of Personality and Social Psychology, 84*, 234-252.
- Flett, G. L., Hewitt, P. L., Blankstein, K. R., & Dynin, C. B. (1994). Dimensions of perfectionism and Type A behavior. *Personality and Individual Differences, 16*, 477-485.
- Flett, G. L., Hewitt, P. L., Blankstein, K. R., & Mosher, S. W. (1995). Perfectionism, life events, and depressive symptoms: A test of a diathesis-stress model. *Current-Psychology: Developmental, Learning, Personality, Social, 14*, 112-137.
- Flett, G. L., Hewitt, P. L., Blankstein, K. R., & O'Brien, S. (1991). Perfectionism and learned resourcefulness in depression and self-esteem. *Personality and Individual Differences, 12*, 61-68.
- Frost, R. O., Marten, P., Lahart, C., & Rosenblate, R. (1990). The dimensions of perfectionism. *Cognitive Therapy and Research, 14*, 449-468.
- Goldberg, D. P., & Hillier, V. F. (1979). A scaled version of the General Health Questionnaire. *Psychological Medicine, 9*, 139-145.
- Guay, F., Sénécal, C., Gauthier, L., & Fernet, C. (2003). Predicting career indecision: A self-determination perspective. *Journal of Counseling Psychology, 50*, 165-177.
- Hewitt, P. L., & Flett, G. L. (1991). Perfectionism in the self and social contexts: Conceptualization, assessment and association with psychopathology. *Journal of Personality and Social Psychology, 60*, 456-470.
- Hewitt, P. L., Flett, G. L., & Weber, C. (1994). Dimensions of perfectionism and suicide ideation. *Cognitive Therapy and Research, 18*, 439-460.
- Hollender, M. H. (1978). Perfectionism: A neglected personality trait. *Journal of Clinical Psychiatry, 39*, 384-394.

- Ingledeu, D. K., Markland, D., & Sheppard, K. E. (2004). Personality and self-determination of exercise behavior. *Personality and Individual Differences*, *36*, 1921-1932.
- Judd, C. M., & Kenny, D. A. (1981). Process analysis: Estimating mediation in treatment evaluations. *Evaluation Review*, *5*, 602-619.
- Juvonen, J., Nishina, A., & Graham, S. (2000). Peer harassment, psychological adjustment, and school functioning in early adolescence. *Journal of Educational Psychology*, *2*, 349-359.
- Koestner, R., & Losier, G. F. (2002). Distinguishing three ways of being highly motivated: A closer look at introjection, identification, and intrinsic motivation. In E. L. Deci & R. M. Ryan (Eds.), *The motivation and self-determination of behavior: Theoretical and applied issues* (pp. 101-121). Rochester, NY: University of Rochester Press.
- Labrecque, J., Stephenson, R., Boivin, I., & Marchand, A. (1999). Validation de l'Échelle multidimensionnelle du perfectionnisme auprès de la population francophone du Québec [Validation of the Multidimensional Perfectionism Scale in the French-speaking population of Quebec]. *Revue Francophone de Clinique Comportementale Cognitive*, *3*, 1-14.
- Lazarus, R. S., & Folkman, S. (1984). *Stress, appraisal, and coping*. New York: Springer.
- Mackinnon, D. P., Krull, J. L., & Lockwood, C. M. (2000). Equivalence of mediation, confounding and suppression effect. *Prevention Science*, *1*, 173-181.
- Mackinnon, D. P., Lockwood, C. M., Hoffman, J. M., West, S. G., & Sheets, V. (2002). A comparison of methods to test mediation and other intervening variable effects. *Psychological Methods*, *7*, 83-104.
- McCrae, R. R. (1990). Controlling neuroticism in the measurement of stress. *Stress Medicine*, *6*, 237-241.
- Mills, J., & Blankstein, K. R. (2000). Perfectionism, intrinsic vs. extrinsic motivation, and motivated strategies for learning: A multidimensional analysis of university students. *Personality and Individual Differences*, *29*, 1191-1204.
- O'Connor, R. C., & O'Connor, D. B. (2003). Predicting hopelessness and psychological distress: The role of perfectionism and coping. *Journal of Counseling Psychology*, *3*, 362-372.
- Pacht, A. R. (1984). Reflections on perfection. *American Psychologist*, *39*, 386-390.
- Pintrich, P. R., Smith, D. A., Garcia, T., & McKeachie, W. J. (1993). Reliability and predictive validity of the motivated strategies for learning questionnaire (MLSQ). *Educational and Psychological Measurement*, *53*, 801-813.
- Ryan, R. M. (1982). Control and information in the intrapersonal sphere: An extension of cognitive evaluation theory. *Journal of Personality and Social Psychology*, *43*, 450-461.
- Ryan, R. M., & Connell, J. P. (1989). Perceived locus of causality and internalization: Examining reasons for acting in two domains. *Journal of Personality and Social Psychology*, *57*, 749-761.
- Ryan, R. M., & Frederick, C. (1997). On energy, personality, and health: Subjective vitality as a dynamic reflection of well-being. *Journal of Personality*, *65*, 529-565.
- Sénécal, C., Koestner, R., & Vallerand, R. J. (1995). Self-regulation and academic procrastination. *Journal of Social Psychology*, *135*, 607-619.
- Sherry, S. B., Hewitt, P. L., Flett, G. L., & Harvey, M. (2003). Perfectionism dimensions, perfectionistic attitudes, dependant attitudes, and depression in psychiatric patients and university students. *Journal of Counseling Psychology*, *50*, 373-386.
- Skinner, E., & Edge, K. (2002). Self-determination, coping, and development. In E. L. Deci & R. M. Ryan (Eds.), *Handbook of self-determination research* (pp. 297-337). Rochester, NY: The University of Rochester Press.
- Vallerand, R. J. (1997). Toward a hierarchical model of intrinsic and extrinsic motivation. *Advances in Experimental and Social Psychology*, *29*, 271-360.
- Vallerand, R. J., & Bissonnette, R. (1990). Construction et validation de l'Échelle de Satisfaction dans les Études [Construction and validation of the Academic Satisfaction Scale]. *Canadian Journal of Behavioral Sciences*, *22*, 295-306.
- Vallerand, R. J., & Bissonnette, R. (1992). On the predictive effects of intrinsic, extrinsic and amotivational styles on behavior: A prospective study. *Journal of Personality*, *60*, 599-620.
- Vallerand, R. J., Blais, M. R., Brière, N. M., & Pelletier, L. G. (1989). Construction et validation de l'Échelle de motivation en éducation (EME) [Construction and validation of the Motivation in Education Scale (EME)]. *Canadian Journal of Behavioral Sciences*, *21*, 323-349.
- Vallerand, R. J., Fortier, M. S., & Guay, F. (1997). Self-determination and persistence in a real-life setting: Toward a motivational model of high school dropout. *Journal of Personality and Social Psychology*, *72*, 1161-1176.
- Vallerand, R. J., Pelletier, L. G., Blais, M. R., Brière, N. M., Sénécal, C. B., & Vallières, E. F. (1992). The Academic Motivation Scale: A measure of intrinsic, extrinsic, and amotivation in education. *Educational and Psychological Measurement*, *52*, 1003-1017.
- Vallerand, R. J., Pelletier, L. G., Blais, M. R., Brière, N. M., Sénécal, C., & Vallières, E. F. (1993). On the assessment of intrinsic, extrinsic, and amotivation in education: Evidence on the concurrent and construct validity of the Academic Motivation Scale. *Educational and Psychological Measurement*, *53*, 159-172.
- Vieweg, B. W., & Hedlund, J. L. (1983). The General Health Questionnaire: A comprehensive Review. *Journal of Operational Psychiatry*, *14*, 74-81.
- Watson, D., Clark, L. A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: The PANAS scales. *Journal of Personality and Social Psychology*, *54*, 1063-1070.
- Williams, G. C., Grow, V. M., Freedman, Z., Ryan, R. M., & Deci, E. L. (1996). Motivational predictors of weight-loss and weight-loss maintenance. *Journal of Personality and Social Psychology*, *70*, 115-126.
- Williams, G. C., McGregor, H. A., Zeldman, A., Freedman, Z. R., & Deci, E. L. (2004). Testing a self-determination theory process model for promoting glycemic control through diabetes self-management. *Health Psychology*, *23*, 58-66.

Received June 28, 2004

Revision accepted September 28, 2004