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Does Perfectionism Predict Depression, Anxiety, Stress, and Life Satisfaction After Controlling
for Neuroticism? A Study of Canadian and Chinese Undergraduates

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Abstract

Neuroticism overlaps substantially with several perfectionism dimensions, depression, anxiety, stress, and life satisfaction. Accordingly, research testing whether perfectionism dimensions explain unique variance in these outcomes beyond neuroticism is needed. Research on cultural differences in perfectionism is also scarce. And it is especially unclear whether the link between perfectionism and psychological distress differs across individualistic and collectivistic cultures. Our study addressed these important gaps in knowledge. A sample of undergraduates from a traditionally individualistic culture (Canada; $N = 449$) and a traditionally collectivistic culture (China; $N = 585$) completed measures of self-oriented perfectionism, personal standards, socially prescribed perfectionism, concern over mistakes, doubts about actions, depression, anxiety, stress, and satisfaction with life. To test the incremental validity of perfectionism dimensions beyond neuroticism, as well as to test potential moderating effects of culture, four hierarchical regression analyses with interactions were conducted. Results supported the explanatory power of concern over mistakes and doubts about actions, beyond neuroticism and culture, in the prediction of depression, anxiety, and stress. As the first study to explore the incremental validity of perfectionism dimensions across undergraduates from traditionally individualistic and collectivistic cultures, our research both extends and clarifies understanding of the predictive power of perfectionism in important ways.

Keywords: perfectionism, neuroticism, cross-cultural, incremental, China

1. Introduction

Perfectionism is a personality trait characterized by striving for flawlessness, setting excessively high personal standards, and experiencing overly negative reactions to perceived mistakes and setbacks (Frost, Marten, Lahart, & Rosenblate, 1990; Hewitt & Flett, 1991). Extensive evidence suggests perfectionism is multidimensional with several lower-order dimensions composing two higher-order factors: perfectionistic strivings and perfectionistic concerns (Dunkley, Blankstein, & Berg, 2012; Dunkley, Blankstein, Halsall, Williams, & Winkworth, 2000; Dunkley, Zuroff, & Blankstein, 2003).

Perfectionistic strivings are composed of a two lower-order dimensions: self-oriented perfectionism (demanding perfection of oneself; Hewitt & Flett, 1991) and personal standards (setting unreasonably high personal standards and goals; Frost et al., 1990). On the one hand, self-oriented perfectionism and personal standards are associated with negative outcomes such as depression (Smith, Sherry, Rnic, Saklofske, Enns, & Gralnick, 2016b). On the other hand, self-oriented perfectionism and personal standards are also associated with positive outcomes such as satisfaction with life (Stoeber & Otto, 2006).

In contrast, perfectionistic concerns are composed of three lower-order dimensions: socially prescribed perfectionism (perceiving others as demanding perfection of oneself; Hewitt & Flett, 1991), concern over mistakes (extreme reactions to perceived failures; Frost et al., 1990), and doubts about actions (nagging doubts about performance abilities; Frost et al., 1990). Findings suggest socially prescribed perfectionism, concern over mistakes, and doubts about actions are detrimental to psychological health given robust positive associations with depression, anxiety, and stress (Cox, Enns, & Clara, 2002; Smith, Saklofske, Yan, & Sherry, 2016a; Smith et al., 2016b).

1.1. Advancing research on the incremental validity of perfectionism beyond neuroticism

Neuroticism is a higher-order personality trait characterized by the tendency to experience negative emotional states (Costa & McCrae, 1992). Neuroticism overlaps substantially with several perfectionism dimensions (Dunkley et al., 2012; Rice, Ashby, & Slaney, 2007; Smith et al., 2016b), as well as satisfaction with life, depression, anxiety, and stress (Lahey, 2009). Consequently, it is crucial that investigators determine which, if any, perfectionism dimensions account for unique variance in outcomes such as depression after controlling for neuroticism. The apparent perfectionism-psychological distress link may otherwise be an artifact arising from shared variance with the ‘third variable’ neuroticism. A meta-analysis by Smith and colleagues (2016b) in part addressed this concern. Smith et al. (2016b) found all perfectionism dimensions had small positive relationships with follow-up depressive symptoms beyond baseline neuroticism. Nevertheless, there remains much to learn. For instance, do perfectionism dimensions’ account for unique variance in depression, anxiety, stress and satisfaction beyond neuroticism? Alternatively, what is the explanatory power of perfectionism dimensions, beyond neuroticism, in other cultures? Extant research relies heavily on samples of North Americans of European descent, raising serious questions about whether observed findings generalize to other samples (e.g., individuals from China).

1.2. Advancing research on cultural differences in perfectionism

Three studies have investigated cultural differences in perfectionism across collectivistic and individualistic cultures: Chang, Chang, and Sanna (2012), Smith et al. (2016a), and Stoeber, Kobori, and Tanno (2013). Both Chang et al. (2012) and Stoeber et al. (2013) reported undergraduates from a collectivistic culture (Japan), compared to undergraduates from an individualistic culture (US and Britain, respectively), had lower self-oriented perfectionism and

higher socially prescribed perfectionism. Stoeber et al. (2013) also reported differences in the perfectionism-pride relationship between Japanese and British undergraduates. In particular, for Japanese, but not British undergraduates, socially prescribed perfectionism was associated with pride after success.

These findings suggest perfectionism dimensions may have different consequences for undergraduates from collectivistic and individualistic cultures (Chang, 2013; Perera & Chang, 2015). Nevertheless, whether these consequences include depression, anxiety, stress or satisfaction with life, after controlling for neuroticism, is unclear. Smith et al. (2016a) reported perfectionistic strivings' and perfectionistic concerns' relationships with depression, anxiety, stress and satisfaction with life were equivalent across undergraduates from a collectivistic culture (China) and an individualistic culture (Canada). But, it remains to be determined which, if any, of the lower-order dimensions, used as indicators of perfectionistic strivings and perfectionistic concerns in Smith et al. (2016b), have differential relationships with depression, anxiety, stress, and satisfaction with life beyond neuroticism in Canadian and Chinese undergraduates.

1.3. The present study

We investigated cultural differences in perfectionism across undergraduates from a traditionally collectivistic culture (China) and a traditionally individualistic culture (Canada). If the same perfectionism dimensions were found to predict the same psychological outcomes, and to have complementary predictive utility across Canadian and Chinese undergraduates, it would substantiate past findings (Smith et al., 2016a), bolster support for the explanatory power of perfectionism dimensions (Smith et al., 2016b), and support the applicability of lower-order perfectionism dimensions to non-Western cultures (Smith et al., 2016a). Moreover, if culture

moderated perfectionism dimensions' relationships with depression, anxiety, stress, and life satisfaction, it would suggest the effects of perfectionism may be dependent on culture.

Based on the research reviewed above, we formulated several expectations. First, consideration of Chang et al.'s (2012) and Stoeber et al.'s (2013) findings, we anticipated undergraduates from a traditionally collectivistic culture (China), relative to undergraduates from a traditionally individualistic culture (Canada), would have lower self-oriented perfectionism and higher socially prescribed perfectionism. From the perspective of cultural diversity, Canada and China are appropriate given differences in individualism-collectivism: Canadian undergraduates tend to be more individualistic, whereas Chinese undergraduates tend to be more collectivistic (Oyserman, Coon, & Kemmelmeier, 2002). Second, following Smith et al.'s (2016a) we anticipated perfectionism dimensions' relationships with depression, anxiety, stress, and satisfaction with life would not differ between Canadian and Chinese undergraduates. Third, based on Smith et al.'s (2016b) findings we anticipated that all perfectionism dimensions would add incrementally to the prediction of psychological distress beyond neuroticism. Regarding further expectations, our study should be considered more exploratory as research investigating the relationship between perfectionism dimensions and depression, anxiety, stress, and satisfaction with life across collectivistic and individualistic cultures are scarce.

2. Method

2.1. Participants

A sample of 1034 undergraduates were recruited from large universities in central Canada ($N = 449$; 113 men; 336 women) and in Beijing China ($N = 585$; 89 men; 477 women, 49 not reported). In the Canadian sample, the mean age was 18.7 ($SD = 3.9$) years. In the Chinese sample, the mean age was 19.5 ($SD = 1.0$) years. Due to a clerical error, data on the ancestry of

the Canadian sample was not obtained. The majority of the Chinese sample reported Han ancestry (87.8%). Our Canadian data is shared with a larger collaborative study (see Smith et al., 2015b; Smith et al., 2016a). A portion of the Chinese data was reported in Smith, Saklofske, and Yan (2015a).

2.2. Measures

Measures used in the Chinese sample were translated by bilingual psychologists following the standard procedures outlined by Hambleton and Lee (2013), which included translating and back-translating scales to ensure content and meaning equivalence. Scores for measures were formed by averaging across items. Support for the validity and reliability of our translated measures has been reported by Smith et al. (2015a, 2015b, 2016a).

2.2.1 Perfectionism

The short form of Hewitt and Flett's (1991) Multidimensional Perfectionism Scale (HFMPs-SF; Hewitt, Habke, Lee-Baggly, Sherry, & Flett, 2008) was used to measure self-oriented perfectionism (SOP; e.g., "I demand nothing less than perfection from myself") and socially prescribed perfectionism (SPP; e.g., "The better I do, the better I am expected to do"). The 45-item original form of Hewitt and Flett's Multidimensional Perfectionism Scale (HFMPs) can be reduced to 10 items without the loss of its strong psychometric properties (Nealis, Sherry, Sherry, Stewart, & Macneil, 2015). Reliability and validity evidence for the HFMPs-SF-SOP and HFMPs-SF-SPP have been reported (Hewitt et al., 2008). Participants responded to items using a 7-point scale from 1 (*strongly disagree*) to 7 (*strongly agree*).

Doubts about actions, concern over mistakes, and personal standards were measured using Frost et al.'s (1990) Multidimensional Perfectionism Scale (FMPS). The FMPS includes the 4-item doubts about action subscale (FMPS-DAA; e.g., "I usually have doubts about the

simple everyday things I do”) and the 4-item personal standards subscale (FMPS-PS; e.g., “I set higher goals than most people”). Support for the reliability and validity of the FMPS-DAA and FMPS-PS has been reported (Nealis et al., 2015). Concern over mistakes was measured using the 5-item short form of the FMPS concern over mistakes subscale (FMPS-SF-COM; e.g., “If I fail at work/school, I am a failure as a person;” Cox, Enns, & Clara, 2002). Reliability and validity evidence for the five item FMPS-SF-COM was reported by Cox et al. (2002). Participants responded to the FMPS-DAA, FMPS-PS, and FMPS-SF-COM using a 5-point scale from 1 (*strongly disagree*) to 5 (*strongly agree*).

2.2.2. Neuroticism

Neuroticism was assessed with the 8-item neuroticism subscale of the Big Five Inventory (BFI-N; e.g., “I see myself as someone who can be moody;” Benet-Martinez & John, 1998). Participants responded to items using a 5-point scale from 1 (*disagree strongly*) to 5 (*agree strongly*). Evidence supporting the reliability and validity of the BFI-N has been reported (Benet-Martinez & John, 1998).

2.2.3. Depression, anxiety, and stress

Depression, anxiety, and stress were measured using the 21-item Depression, Anxiety and Stress Scale (DASS-21; Lovibond & Lovibond, 1995). The DASS-21 is composed of three 7-item subscales: a depression subscale (e.g., “I felt that life was meaningless”), an anxiety subscale (“I felt scared without any good reason”), and a stress subscale (“I found it hard to wind down”). Participants were asked to report symptoms that occurred over the previous week using a 4-point scale from 0 (*Did not apply to me at all*) to 3 (*Applied to me very much, or most of the time*). Research supporting the reliability and validity of the DASS-21 has been reported (Osman, Wong, Bagge, Freedenthal, Guitierrez, & Lozano, 2012). Moreover, Lovibond and

Lovibond (1995) presented structural validity evidence, as well as demonstrated advantages of the DASS-21 relative to other measures of anxiety and depression.

2.2.4. Satisfaction with life

Satisfaction with life was measured using the 5-item Satisfaction With Life Scale (SWLS; e.g., “I am satisfied with my life;” Diener, Emmons, Larsen, & Griffen, 1985). Participants used a 7-point scale, from 1 (*strongly disagree*) to 7 (*strongly agree*) to indicate their level of agreement. Support for the reliability and validity of the SWLS has been reported by Diener et al. (1985) and Pavot and Diener (2004).

2.3. Procedure

The Research Ethics Board at the Canadian university approved the present study. Canadian participants were recruited from the Department of Psychology’s subject pool and directed to an online consent form and questionnaires. Chinese participants were recruited according to the established research protocol at Beijing Normal University. As compensation, Canadian participants were awarded one credit to use towards an introductory psychology course. Chinese participants volunteered without receiving compensation.

2.4. Data analytic strategy

To test the incremental validity of lower-order perfectionism dimensions beyond neuroticism in the prediction of depression, anxiety, stress, and satisfaction with life, as well as to test potential moderating effects of culture, four hierarchical regression analyses with interactions were conducted in SPSS 22. Gender was coded -1 = men and 1 = women. Culture was coded -1 = Canada and 1 = China. To facilitate the interpretation of regression coefficients and reduce multicollinearity all predictors were grand mean-centered (i.e., the grand mean of

each predictor was subtracted from each case; Fairchild & Mackinnon, 2009). Two-way interactions were computed as the product term of the centered predictor variables.

For each of the four hierarchical regressions, gender, culture, and neuroticism were entered at Step 1. Gender was entered as a covariate as the distribution of gender was less pronounced in the Canadian sample relative to the Chinese sample. At Step 2, perfectionism dimensions were entered. At Step 3, five interaction terms were entered (culture x self-oriented perfectionism, culture x socially prescribed perfectionism, culture x personal standards, culture x concern over mistakes, and culture x doubts about action). In consideration of the large number of analyses, statistical significance was tested using a conservative Bonferroni corrected p -value of .001 (i.e., $.05 / 90 = .0005$; Chang, 1998). Missing data was handled using listwise deletion.

2.5. Preliminary analysis

As multivariate outliers can severely distort the results of correlational and regression analyses (Tabachnick & Fidell, 2007), we tested for multivariate outliers. Across groups, 10 participants (6 Canadian and 4 Chinese) showed a Mahalanobis distance greater than the critical value of $\chi^2(10) = 29.59, p < .001$ and were excluded from all further analyses.

3. Results

3.1. Descriptive statistics, alpha coefficients, and bivariate correlations

Means, standard deviations, alpha coefficients, and bivariate correlations are in Table 1. The reliability of measures in the Canadian and Chinese groups was adequate ($\alpha \geq .70$). A one-way analysis of variance revealed significant differences between the Canadian and Chinese groups. The Canadian group, relative to Chinese group, reported higher self-oriented perfectionism ($F [1,938] = 5.33, p = .021$, Cohen's $d = .15$) and concern over mistakes ($F [1,938] = 22.25, p < .001$, Cohen's $d = .31$), but lower socially prescribed perfectionism ($F [1,938] =$

33.39, $p < .001$, Cohen's $d = -.37$). In contrast, significant differences between the Canadian and Chinese groups were not observed for personal standards ($F[1,938] = 0.17$, $p = .677$, Cohen's $d = .07$) or doubts about actions ($F[1,938] = 0.38$, $p = .375$, Cohen's $d = -.37$).

3.2. Regression analyses

Regression analyses are in Table 2. Tolerance values were consistently above .20, suggesting excessive multicollinearity was not present (O'Brien, 2007). Together, at Step 1, gender, culture, and neuroticism accounted for 30.3% of the variance in depression, 23.2% of the variance in anxiety, 32.1% of the variance in stress, and 23.9% of the variance in satisfaction with life. The model at Step 2, including self-oriented perfectionism, socially prescribed perfectionism, personal standards, doubts about actions, and concern over mistakes, added incrementally to the prediction of depression, anxiety, stress, and satisfaction with life.

Following Cohen's (1992) guidelines for small, medium, and large effect sizes ($r = .10$, $.30$, $.50$, respectively), after removal of overlap among perfectionism dimensions, neuroticism, gender, and culture, concern over mistakes and doubts about actions had small positive relationships with depression, anxiety, and stress. In contrast, main effects predicting satisfaction with life beyond gender, culture, and neuroticism were small and non-significant (i.e., $p > .001$). Likewise, all Step 3 interaction vectors were small and non-significant (i.e., $p > .001$).

4. Discussion

Although the incremental validity of perfectionism dimensions beyond neuroticism in the prediction of depression is clear (Smith et al., 2016b), the explanatory power of perfectionism dimensions beyond neuroticism in the prediction of anxiety, stress, and satisfaction with life is unclear. Moreover, it remained to be determined whether perfectionism dimensions'

relationships with depression, anxiety, stress, satisfaction with life differ across individualistic and collectivistic cultures. Our study begins to fill these important gaps in knowledge.

As expected, Canadian undergraduates reported higher self-oriented perfectionism and higher concern over mistakes, but lower socially prescribed perfectionism relative to Chinese students. Given the strongly held individualistic values in Canadian culture (Oyserman, et al., 2002) and strongly held collectivistic values in Chinese culture, self-oriented perfectionism and concern over mistakes may be more relevant to Canadian undergraduates as the majority of self-oriented perfectionism items (e.g., “*I strive to be as perfect as I can be;*” italics added) and concern over mistakes items (e.g., “*If I fail at work/school I am a failure as a person;*” italics added) are self-focused. Conversely, socially prescribed perfectionism may be more relevant to Chinese undergraduates, relative to Canadian undergraduates, as the majority of socially prescribed perfectionism’s items are other-focused (e.g., “*My family expects me to be perfect;*” italics added).

Results also indicated that for Canadian and Chinese undergraduates, concern over mistakes and doubts about action added significantly to the prediction of depression, anxiety, and stress beyond neuroticism. Although concern over mistakes and doubts about actions likely incorporate negative emotionality and approval concerns that are central features of neuroticism, they also appear to capture unique, non-redundant variance associated with the evaluative tendency to believe one’s performance is either perfect or worthless as well as a persistent sense of doubt about the quality of one’s performance. The present studies’ support of the incremental validity of concern over mistakes and doubts about actions above and beyond neuroticism also complements Smith et al. (2016b)’s meta-analysis, which suggested these two variables add to our understanding of depression beyond neuroticism. Additionally, as anticipated, perfectionism

dimensions' relationships with depression, anxiety, stress, and satisfaction with life were not moderated by culture. Thus, preliminarily, our results suggest perfectionism dimensions may be salient traits that transcends culture (Paunonen & Hong, 2015). Nevertheless, contrary to expectations, self-oriented perfectionism, socially prescribed perfectionism, and personal standards did not add incrementally to the prediction of psychological distress beyond neuroticism.

4.1. Limitations and future directions

Our study used a mono-source design. Mono-source designs are potentially problematic when studying personality traits, such as perfectionism, which can involve self-presentational biases. Future studies should advance this literature by using methods of data collection that go beyond self-report (e.g., informant reports or laboratory observation; Besser, Flett, & Hewitt, 2004; Flett, Besser, & Hewitt, 2005). Prior research also indicates some facets of neuroticism (e.g., depression) are more relevant to perfectionism than others (e.g., impulsiveness; Dunkley et al., 2012). Future research may benefit from using a measure of neuroticism that allows for assessment of neuroticism's facets. Finally, though self-oriented perfectionism, socially prescribed perfectionism, personal standards, concern over mistakes, and doubts about actions are among the most widely researched forms of perfectionism, there are other notable dimensions worthy of study, in particular other-oriented perfectionism (Hewitt & Flett, 1991).

4.2. Concluding remarks

Our study is the first to test the incremental validity of perfectionism dimensions beyond neuroticism when studying undergraduates from a traditionally individualistic culture (Canada) and a traditionally collectivistic culture (China). In doing so, this study makes a significant contribution to our understanding of the explanatory power of perfectionism dimensions. In

particular, our results indicate both concern over mistakes and doubts about actions remain significant predictors of depression, anxiety, and stress beyond ethnic status (i.e., Canadian or Chinese) and neuroticism.

References

- Benet-Martinez, V., & John, O. P. (1998). Los Cinco Grandes across cultures and ethnic groups: Multitrait-multimethod analyses of the Big Five in Spanish and English. *Journal of Personality and Social Psychology*, 75, 729.
- Besser, A., Flett, G. L., & Hewitt, P. L. (2004). Perfectionism, cognition, and affect in response to performance failure vs. success. *Journal of Rational-Emotive and Cognitive-Behavior Therapy*, 22, 297-324.
- Chang, E. C. (1998). Cultural differences, perfectionism, and suicidal risk in a college population: Does social problem solving still matter? *Cognitive Therapy and Research*, 22, 237-254.
- Chang, E. C. (2013). Perfectionism and loneliness as predictors of depressive and anxious symptoms in Asian and European Americans: Do self-construal schemas also matter? *Cognitive therapy and research*, 37, 1179-1188.
- Chang, E. C., Chang, R., & Sanna, L. J. (2012). A test of the usefulness of perfectionism theory across cultures: Does perfectionism in the US and Japan predict depressive symptoms across time? *Cognitive Therapy and Research*, 36, 1-14.
- Cohen, J. (1992). A power primer. *Psychological Bulletin*, 112, 155-159.
- Costa, P., & McCrae, R. (1992). *Revised NEO Personality Inventory (NEO-PI-R) and NEO Five-Factor Inventory (NEO-FF): Professional manual*. Odessa, FL: Psychological Assessment Resources.
- Cox, B. J., Enns, M. W., & Clara, I. P. (2002). The multidimensional structure of perfectionism in clinically distressed and college student samples. *Psychological Assessment*, 14, 365.
- Diener, E. D., Emmons, R. A., Larsen, R. J., & Griffin, S. (1985). The satisfaction with life scale. *Journal of Personality Assessment*, 49, 71-75.

- Dunkley, D. M., Blankstein, K. R., & Berg, J. L. (2012). Perfectionism dimensions and the five-factor model of personality. *European Journal of Personality*, 26, 233-244.
- 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.
- 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.
- Enns, M. W., Cox, B. J., & Clara, I. P. (2005). Perfectionism and neuroticism: A longitudinal study of specific vulnerability and diathesis-stress models. *Cognitive Therapy and Research*, 29, 463-478.
- Fairchild, A., & MacKinnon, D. (2009). A general model for testing mediation and moderation effects. *Prevention Science*, 10, 87-99.
- Flett, G. L., Besser, A., & Hewitt, P. L. (2005). Perfectionism, ego defense styles, and depression: A comparison of self-reports versus informant ratings. *Journal of Personality*, 73, 1355-1396.
- Frost, R. O., Marten, P., Lahart, C., & Rosenblate, R. (1990). The dimensions of perfectionism. *Cognitive Therapy and Research*, 14, 449-468.
- Hambleton, R., & Lee, M. (2013). Methods of translating and adapting tests to increase cross-cultural validity. In D. H. Saklofske, C. R. Reynolds, & V. L. Schwane (Eds.). *The Oxford Handbook of Child Psychological Assessment* (pp. 172-181). NY: Oxford.
- 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.
- Hewitt, P. L., Habke, A. M., Lee-Baggley, D. L., Sherry, S. B., & Flett, G. L. (2008). The impact of perfectionistic self-presentation on the cognitive, affective, and physiological experience of a clinical interview. *Psychiatry*, 71, 93-122.
- Lahey, B. B. (2009). Public health significance of neuroticism. *American Psychologist*, 64, 241.
- Lovibond, P. F., & Lovibond, S. H. (1995). The structure of negative emotional states: Comparison of the Depression Anxiety Stress Scales (DASS) with the Beck Depression and Anxiety Inventories. *Behaviour Research and Therapy*, 33, 335-343.
- Nealis, L. J., Sherry, S. B., Sherry, D. L., Stewart, S. H., & Macneil, M. A. (2015). Toward a better understanding of narcissistic perfectionism: Evidence of factorial validity, incremental validity, and mediating mechanisms. *Journal of Research in Personality*, 57, 11-25.
- O'Brien, R. M. (2007). A caution regarding rules of thumb for variance inflation factors. *Quality & Quantity*, 41, 673-690.
- Osman, A., Wong, J. L., Bagge, C. L., Freedenthal, S., Gutierrez, P. M., & Lozano, G. (2012). The Depression Anxiety Stress Scales—21 (DASS-21): Further examination of dimensions, scale reliability, and correlates. *Journal of Clinical Psychology*, 68, 1322-1338.
- Oyserman, D., Coon, H. M., & Kemmelmeier, M. (2002). Rethinking individualism and collectivism: evaluation of theoretical assumptions and meta-analyses. *Psychological Bulletin*, 128, 3-72.
- Paunonen, S., & Hong, R. (2015). On the properties of personality traits. In M. Mikulincer

- & P. R. Shaver (Eds.), *APA Handbook of Personality and Social Psychology: Vol. 4. Personality Processes and Individual Differences* (pp. 233-259). Washington, DC: APA.
- Pavot, W., & Diener, E. (2008). The satisfaction with life scale and the emerging construct of life satisfaction. *The Journal of Positive Psychology*, 3, 137-152.
- Perera, M. J., & Chang, E. C. (2015). Ethnic variations between European Americans in interpersonal sources of socially prescribed perfectionism: It's not just about parents! *Asian American Journal of Psychology*, 6, 31-37.
- Rice, K., Ashby, J., & Slaney, R. (2007). Perfectionism and the five-factor model of personality. *Assessment*, 14, 385-398.
- Smith, M. M., Saklofske, D. H., & Yan, G. (2015a). Perfectionism, trait emotional intelligence, and psychological outcomes. *Personality and Individual Differences*, 85, 155-158.
- Smith, M. M., Saklofske, D. H., Yan, G., Sherry, S. B. (2015b). Perfectionistic strivings and perfectionistic concerns interact to predict negative emotionality: Support for the tripartite model of perfectionism in Canadian and Chinese university students. *Personality and Individual Differences*, 81, 141-147.
- Smith, M. M., Saklofske, D. H., Yan, G., & Sherry, S. B. (2016a). Cultural similarities in perfectionism: Perfectionistic strivings and concerns generalize across Chinese and Canadian groups. *Measurement and Evaluation in Counseling and Development*, 49, 63-76.
- Smith, M. M., Sherry, S. B., Rnic, K., Saklofske, D. H., Enns, M., & Gralnick, T. (2016b). Are perfectionism dimensions vulnerability factors for depressive symptoms after controlling for neuroticism? A meta-analysis of 10 longitudinal studies. *European Journal of Personality*, 30, 201-212.

Stoeber, J., Kobori, O., & Tanno, Y. (2013). Perfectionism and self-conscious emotions in British and Japanese students: Predicting pride and embarrassment after success and failure. *European Journal of Personality*, 27, 59-70.

Stoeber, J., & Otto, K. (2006). Positive conceptions of perfectionism: Approaches, evidence, challenges. *Personality and Social Psychology Review*, 10, 295-319.

Tabachnick, B., & Fidell, L. (2007). *Using multivariate statistics* (5th ed.). Boston: Pearson.

Table 1

Descriptive statistics, alpha reliabilities, and bivariate correlations

Scale.	1	2	3	4	5	6	7	8	9	10	<i>M</i>	<i>SD</i>	α
1. Self-oriented perfectionism	--	.56*	.47*	.17*	.11	-.03	.00	.11	.14*	.14*	4.28	1.33	.82
2. Personal standards	.68*	--	.31*	.29*	.27*	.08	.10	.22*	.25*	.04	3.20	0.79	.77
3. Socially prescribed perfectionism	.60	.55*	--	.19*	.17*	.08	.08	.14*	.14*	-.02	4.48	0.93	.73
4. Concern over mistakes	.42*	.49*	.57*	--	.56*	.41*	.44*	.46*	.48*	-.25*	2.25	0.76	.80
5. Doubts about actions	.21*	.29*	.38*	.54*	--	.45*	.38*	.43*	.49*	-.27*	2.83	0.84	.77
6. Neuroticism	.11	.11	.28*	.42*	.45*	--	.45*	.50*	.55*	-.33*	2.87	0.60	.75
7. Depression	.17*	.17*	.26*	.45*	.46*	.56*	--	.75*	.73*	-.30*	0.46	0.53	.84
8. Anxiety	.21*	.15	.29*	.39*	.44*	.46*	.68*	--	.81*	-.21*	0.61	0.54	.82
9. Stress	.17*	.19*	.29*	.41*	.46*	.58*	.72*	.70	--	-.23*	0.74	0.58	.82
10. Satisfaction with life	-.07	-.05	-.19*	-.30*	-.33*	-.53	-.54*	-.40	-.41*	--	4.37	1.06	.80
<i>M</i>	4.46	3.23	4.08	2.49	2.87	2.95	0.63	0.61	0.86				
<i>SD</i>	1.38	0.94	1.27	0.98	1.05	0.87	0.58	0.51	0.55				
Cronbach's alpha (α)	.86	.83	.80	.86	.85	.86	.78	.80	.81				

Note. Statistics for Canadian students are below the diagonal. Statistics for Chinese students are above the diagonal. $N = 936$ on the basis of listwise deletion ($N = 423$ Canada, $N = 514$ China).

* $p < .001$.

Table 2

Hierarchical multiple regression analyses with interactions predicting depression, anxiety, stress, and satisfaction with life (controlling for gender)

	Depression			Anxiety			Stress			Satisfaction with life		
Step 1	$F(3, 909) = 131.61^*$, $\Delta R^2 = .303^*$, $R^2_{Adj} = .301$			$F(3, 910) = 91.59^*$, $\Delta R^2 = .232^{**}$, $R^2_{Adj} = .229$			$F(3, 918) = 144.78^*$, $\Delta R^2 = .321^{**}$, $R^2_{Adj} = .319$			$F(3, 910) = 95.21^*$, $\Delta R^2 = .239^{**}$, $R^2_{Adj} = .236$		
Step 2	$F(8, 904) = 69.03^*$, $\Delta R^2 = .076^*$, $R^2_{Adj} = .374$			$F(8, 905) = 51.28^*$, $\Delta R^2 = .080^{**}$, $R^2_{Adj} = .306$			$F(8, 913) = 77.87^*$, $\Delta R^2 = .081^{**}$, $R^2_{Adj} = .397$			$F(8, 905) = 33.82^*$, $\Delta R^2 = .021^{**}$, $R^2_{Adj} = .254$		
Step 3	$F(13, 899) = 42.86^*$, $\Delta R^2 = .003$, $R^2_{Adj} = .374$			$F(13, 900) = 33.79^*$, $\Delta R^2 = .016$, $R^2_{Adj} = .318$			$F(13, 908) = 44.93^*$, $\Delta R^2 = .014$, $R^2_{Adj} = .409$			$F(13, 900) = 24.81^*$, $\Delta R^2 = .003$, $R^2_{Adj} = .253$		
Step and variable	β	99% CI	Tol	β	99% CI	Tol	β	99% CI	Tol	β	99% CI	Tol
Step 1												
Gender (-1 = male, 1 = female)	-.12	[-.26, -.07]	.98	-.08	[-.21, -.01]	.96	-.06	[-.19, .01]	.96	.08	[.00, .45]	.96
Culture (-1 = Canadian, 1 = Chinese)	-.13*	[-.11, -.03]	.97	.02	[-.03, .05]	.99	-.08	[-.09, -.01]	.98	-.23*	[-.37, -.19]	.98
Neuroticism	.53*	[.34, .46]	.97	.49*	[.29, .40]	.98	.56*	[.37, .48]	.97	-.45*	[-.86, -.61]	.97
Step 2												
Self-oriented perfectionism	-.01	[-.05, .04]	.51	.06	[-.02, .07]	.51	.04	[-.03, .06]	.51	.05	[-.05, .15]	.51
Socially prescribed perfectionism	-.01	[-.05, .04]	.60	.00	[-.04, .04]	.60	-.02	[-.06, .03]	.60	-.02	[-.12, .08]	.60
Personal standards	-.02	[-.07, .04]	.55	.00	[-.06, .06]	.55	.05	[-.02, .09]	.55	.07	[-.05, .23]	.56
Concern over mistakes	.24*	[.10, .21]	.56	.18*	[.05, .16]	.55	.15*	[.04, .16]	.55	-.11	[-.28, -.01]	.55
Doubts about actions	.14*	[.03, .13]	.62	.17*	[.05, .14]	.62	.18*	[.06, .16]	.62	-.09	[-.23, .01]	.62
Step 3												
Culture x self-oriented perfectionism	-.07	[-.07, .01]	.51	-.06	[-.07, .02]	.51	.02	[-.03, .05]	.52	.06	[-.05, .15]	.52
Culture x socially prescribed perfectionism	.03	[-.03, .06]	.60	.00	[-.05, .04]	.60	-.01	[-.05, .04]	.60	.02	[-.09, .12]	.60
Culture x personal standards	.03	[-.04, .08]	.54	.10	[.00, .11]	.55	.03	[-.04, .08]	.55	-.04	[-.20, .08]	.55
Culture x concern over mistakes	.03	[-.04, .07]	.56	.10	[.00, .11]	.57	.08	[.00, .11]	.57	.02	[-.11, .16]	.57
Culture x doubts about actions	-.04	[-.07, .02]	.66	-.01	[-.05, .04]	.66	.03	[-.03, .07]	.66	.01	[-.10, .13]	.67

Note. CI = unstandardized confidence interval; Tol = tolerance. Listwise deletion ($N = 913$ for depression, $N = 914$ for anxiety, $N = 922$ for stress, and $N = 914$ for satisfaction with life).

* $p < .001$.