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A Person-Centered Perspective on Multidimensional Perfectionism in Canadian and Chinese University Students: A Multigroup Latent Profile Analysis

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Abstract

This study investigated the generalizability of the tripartite model of perfectionism across Canadian and Chinese university students. Using latent profile analysis, and indicators of perfectionistic strivings, perfectionistic concerns, and neuroticism, a three-profile solution was derived in both groups: Adaptive Perfectionists, Maladaptive Perfectionists and Non-Perfectionists. Furthermore, multigroup latent profile analysis supported the construct equivalence of the three-profile solution across groups. Results further suggested a greater proportion of Chinese students could be classified as Adaptive Perfectionists.

Keywords: perfectionism; cross-cultural; multi-group mixture modeling

A Person-Centered Perspective on Multidimensional Perfectionism in Canadian and Chinese University Students: A Multigroup Latent Profile Analysis

Perfectionism is a dispositional tendency to strive for flawlessness, set excessively high standards, and experience disappointment with anything falling short of perfection (Hewitt & Flett, 1991; Frost, Marten, Lahart, & Rosenblate, 1990). A widely used model proposes perfectionism is best conceptualized as a multidimensional personality trait (see Hewitt, Flett, Besser, Sherry, & McGee, 2003) comprised of two higher-order factors (Dunkley, Zuroff, & Blankstein, 2003; Stoeber & Otto, 2006): perfectionistic strivings and perfectionistic concerns. Perfectionistic strivings is the propensity to tirelessly strive for self-perfection and set excessively high personal standards (Stoeber & Otto, 2006) while perfectionistic concerns refers to a propensity to have overly negative reactions to perceived setbacks, excessive concerns over others criticisms, and nagging self-doubts (Smith, Saklofske, & Nordstokke, 2014).

Past person-centered research suggests the interaction between perfectionistic strivings and concerns differentiates three within-person combinations of perfectionism: Adaptive Perfectionists, Maladaptive Perfectionists, and Non-Perfectionists (Stoeber & Otto, 2006). Adaptive Perfectionists and Maladaptive Perfectionists have higher perfectionistic strivings than Non-Perfectionists (Rice, Lopez, & Richardson, 2013; Richardson, Rice, & Devine, 2014). Maladaptive Perfectionists, compared to Adaptive Perfectionists, have higher perfectionistic concerns (Stoeber & Otto, 2006) and relative to Adaptive Perfectionists or Non-Perfectionists, have greater depression, anxiety, and stress and lower life satisfaction (Stoeber & Otto, 2006).

While the three-profile model of within-person combinations of perfectionism is a valuable contribution, research findings stem primarily from North American respondents completing measures designed by Western researchers (e.g., Richardson et al., 2014). Moreover,

the few available studies investigating similarities and differences in perfectionism across cultures (e.g., Stoeber & Yang, 2010) tend to rely on variable-centered analyses (e.g., multiple regression and/or structural equation modeling) in contrast to person-centered analyses (e.g., latent profile analysis). These variable-centered cross-cultural studies have yielded important findings, but do not take into account the possibility that individuals may come from different within-group subpopulations in which the relation between perfectionistic strivings and perfectionistic concerns differs quantitatively and qualitatively (Eid, Langeheine, & Diener, 2003).

Until a person-centered investigation of perfectionism is conducted across cultures and countries other than Canada and the United States, it remains unclear whether (a) a three-profile solution is the "best" solution across groups, (b) the three expected profiles are structurally equivalent in other cultural groups (construct equivalence), and (c) profile size proportions (i.e., the proportion of individuals classified as Maladaptive, Adaptive, or Non-Perfectionists) varies between groups. In the current study, if a three-profile solution was supported in both Canadian and Chinese groups, and if profiles were found to be structurally equivalent, it would add support to the generalizability of this model of perfectionism. However, if evidence did not support this solution for both groups or if construct equivalence was not demonstrated, it would contest the applicability of the previously identified Adaptive, Maladaptive, and Non-Perfectionist profiles to Chinese individuals. It would also preclude the comparison of profile size proportions across groups.

The Present Study

We hypothesized a three-profile solution could be derived with three observed indicators measuring perfectionistic strivings, perfectionistic concerns, and neuroticism (Rice et al., 2013;

Richardson et al., 2014) in Canadian and Chinese university students. Neuroticism was included as an indicator based on research suggesting neuroticism underlies and predisposes perfectionism (Dunkley, Blankstein, & Berg, 2012; Rice et al., 2013; Sherry & Hall, 2009; Smith et al., 2014). In addition, we hypothesized that the tripartite model would provide the most meaningful description of perfectionism for both the Canadian and Chinese groups and would correspond to profiles identified in past research of Adaptive Perfectionists, Maladaptive Perfectionists, and Non-Perfectionists (Rice et al., 2013; Richardson et al., 2014). These profiles were expected to be structurally equivalent across groups.

Anticipating a three-profile solution and support for construct equivalence, we further expected that the construct validity of the profiles would be supported via theoretically coherent patterns of associations with depression, anxiety, stress, negative affect, positive affect and life satisfaction. That is, we expected that if a three-profile solution with construct equivalence was extracted, Maladaptive Perfectionists would report higher depression, anxiety, stress and negative affect and lower positive affect and life satisfaction relative to Adaptive Perfectionists and, in turn, the group with the lowest perfectionistic strivings, perfectionistic concerns, and neuroticism (Non-Perfectionists). Finally, past research suggests that Canadians relative to Chinese university students report equivalent perfectionistic concerns but significantly greater perfectionistic strivings (see Smith, Saklofske, Yan, & Sherry, 2015) and further, that regardless of language (English or Mandarin) or country (Canada or China), perfectionistic strivings exacerbates the effect of perfectionistic concerns on depression, anxiety, and stress (see Smith, Saklofske, Yan, & Sherry, 2015). Thus we hypothesized that a greater proportion of Canadian students would be categorized as Maladaptive Perfectionists compared with Chinese students,

and that conversely the proportion of individuals categorized as Adaptive Perfectionists would be greater in the Chinese group relative to the Canadian group.

Method

The data employed in the present study were drawn from a larger cross-cultural research project (see Smith, Saklofske, Yan, & Sherry, *in press*; Smith, Saklofske, Yan, & Sherry, 2015).

Participants

Canadian participants (N = 425; 109 men and 316 women; M age = 18.8; SD = 4.0) were recruited from a large university in central Canada. Chinese participants (N = 550, 169 men and 370 women, 11 not reported; *M* age = 20.5, *SD* = 1.4) were attending a large university in Beijing, China.

Measures

Measures used in the Chinese sample were translated into Mandarin by Chinese psychologists fluent in both English and Mandarin following the procedures outlined by Hambleton and Lee (2013) which included translating and back translating scales to ensure content equivalence.

Perfectionistic Strivings

Perfectionistic strivings were measured by standardizing and summing items from three subscales: The short form of Hewitt and Flett's (1991) *Multidimensional Perfectionism Scale Self-oriented Perfectionism subscale* (HFMPS-SOP; e.g., "I strive to be as perfect as I can be", see Hewitt, Habke, Lee-Baggley, Sherry, & Flett, 2008), the personal standards subscale of Frost et al.'s (1990) *Multidimensional Perfectionism Scale* (FMPS-PS; e.g., "I expect higher performance in my daily tasks than most people"), and the modified form of Garner, Olmstead, and Polivy's (1983) *Eating Disorder Inventory Self-oriented Perfectionism subscale* (EDI-SOP;

e.g., "I feel that I must do things perfectly, or not do them at all", see Sherry & Hall, 2009). The HFMPS-SOP, FMPS-PS, and EDI-SOP were selected based on research suggesting they measure core behavioral, interpersonal, and cognitive features of perfectionistic strivings (Mackinnon & Sherry, 2012; McGrath et al., 2012; Smith, Saklofske, & Yan, 2015; Smith, Saklofske, Yan, & Sherry, *in press*; Smith, Saklofske, Yan, & Sherry, 2015). Cronbach's alpha for the 5-item HFMPS-SOP typically ranges between .75 to .85 (see Hewitt et al., 2008). Garner et al. (1983) found a Cronbach's alpha of .82 for the EDI-SOP. Finally, Frost et al. (1990) reports a Cronbach's alpha of .77 for the FMPS-PS. Participants responded to the HFMPS-SOP using a 7-point scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). The FMPS-PS uses a 5-point scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*), and a 6-point scale (1 = *never*, 6 = *always*) is employed on the EDI-SOP

Perfectionistic Concerns

Perfectionistic concerns were measured by standardizing and summing items from three subscales: the short form of Hewitt and Flett's (1991) *Multidimensional Perfectionism Scale Socially Prescribed Perfectionism subscale* (HFMPS-SPP; e.g., "My family expects me to be perfect; Hewitt et al., 2008), the 5-item short form of Frost et al.'s (1990) *Multidimensional Perfectionism Scale Concern Over Mistakes subscale* (FMPS-COM; e.g., "If I fail partly, it is as bad as being a complete failure"; Cox, Enns, & Clara, 2002), and Frost et al.'s (1990) *Multidimensional Perfectionism Scale Doubts About Actions subscale* (FMPS-DAA; e.g., "I usually have doubts about the simple everyday things I do"). Again, the HFMPS-SPP, FMPS-COM, and FMPS-DAA were selected based on research indicating they measure core features of perfectionistic concerns (Graham et al., 2010; Smith, Saklofske, & Nordstokke, 2014; Smith, Saklofske, & Yan, 2015). Research supports the reliability ($\alpha = .88$) and validity of our measure

of perfectionistic concerns (Smith et al., 2014; Smith, Saklofske, & Yan, 2015). Sherry et al. (2010) found a Cronbach's alpha of .76 for the 5-item HFMPS-SPP. Mackinnon et al. (2011) reported a Cronbach's alpha from .87-.89 for the 5-item FMPS-COM. Finally, Rice and Dellwo (2001) reported a Cronbach's alpha of .78 for the FMPS-DAA. Participants responded to the HFMPS-SPP using a 7-point scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*)and responded to the FMPS-COM and FMPS-DAA using a 5-point scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*).

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 on the BFI-N using a 5-point scale ranging from 1 (*disagree strongly*) to 5 (*agree strongly*). Research supports the reliability and validity of the BFI-N (Benert-Martinez & John, 1998). Sherry, Mackinnon, Fitzpatrick, and Macneil (2013) reported adequate alpha reliability for the BFI-N ($\alpha = .81$). The BFI-N correlates strongly with the neuroticism subscale of Costa and McCrae's (1992) NEO Five-Factor Inventory ($r = .76$; Benet-Martinez & John, 1998).

Depression Anxiety and Stress

Depression, anxiety, and stress were measured using the 21-item short form of the Depression, Anxiety and Stress Scale (DASS-21; Lovibond & Lovibond, 1995). The DASS-21 is a 21-item scale containing three 7-item subscales assessing depression (e.g., "I felt that life was meaningless"), anxiety ("I felt scared without any good reason"), and stress ("I found it hard to wind down"). Participants responded to items using a 4-point scale ranging from 0 (*Did not apply to me at all*) to 3 (*Applied to me very much, or most of the time*). Research supports the

reliability and validity of the DASS-21 (Lovibond & Lovibond, 1995; Osman et al., 2012). Good reliabilities have been found for the Depression subscale (α = .85; 95% CI, .83-.87), the Anxiety subscale (α = .81; 95% CI, .79-.84), and the Stress subscale (α = .88; 95% CI, .87-.89) (Osman et al., 2012).

Positive and Negative Affect

Positive and negative affect was measured using the 20-item Positive and Negative Affect Schedule (PANAS; Watson, Clark, & Tellegen, 1988). The PANAS is composed of a 10-item subscale measuring positive affect (e.g., "proud") and a 10-item subscale measuring negative affect (e.g., "nervous") rated on a 5-point scale, ranging from 1 (*very slightly or not at all*) to 5 (*extremely*). Research supports the validity and reliability of the PANAS (Watson, Clark, & Tellegen, 1988; Crawford & Henry, 2004). Crawford and Henry (2004) found good reliabilities for the Positive Affect subscale (α = .89) and the Negative Affect subscale (α = .85).

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 et al., 1985). Participants used a 7-point scale, ranging from 1 (*strongly disagree)* to 7 (*strongly agree)* to indicate their level of agreement. Research supports the reliability and validity of the SWLS (Pavot & Diener, 2004). Good alpha reliability has been found for the SWLS (α = .79-.89; Pavot & Diener, 2004).

Procedure

The Research Ethics Board at the Canadian university approved the present study. Canadian participants were recruited from the Department of Psychology's participant pool and directed to an online consent form and questionnaires. Chinese participants were recruited

according to the Chinese university's established research protocol. After completing the measures, Canadian and Chinese participants were debriefed.

Data Analytic Strategy

Latent profile analysis (LPA) and multigroup latent profile analysis (MLPA) were conducted using Mplus (Version 6; Muthen & Muthen) to examine profiles of perfectionists and non-perfectionists. We choose LPA over cluster analysis in consideration of evidence suggesting the stopping-rules used by cluster analysis to determine the optimal numbers of classes is fallible (Richardson et al., 2014; Ruscio & Ruscio, 2004). For all LPA and MLPA models, robust maximum likelihood (MLR) was used. The pattern missing option was used for missing data. The assumption of conditional independence was satisfied by fixing the residual correlations between indicators to zero (Nylund, Asparouhov, & Muthen, 2007). To guard against solutions representing local maxima we used 5000 random sets of starting values, and after 100 iterations with 500 optimizations (Rice et al., 2013).

The profile solution for the entire sample was determined by conducting LPA for the Canadian and Chinese groups separately (Geiser, Lehmann, & Eid, 2006). For each group we fit models with different numbers of profiles (i.e., one- to five-profiles). For model selection purposes, the fit of different LPA solutions was evaluated according to the Bayesian Information Criterion (BIC), entropy, the Lo Mendell-Rubin Liklihood ratio test (LMLRT test), interpretability, and practicality (e.g., a sufficient number of members in each profile; see Collins & Lanza, 2010). Smaller BIC values indicate better model fit (Nylund et al., 2007). Entropy measures the extent to which distinct classes have been identified. While there is yet no consensus on cut-off values for entropy, values range from 0 to 1, with higher values indicating better fitting models with more certainty of correct classification. It is important to note that

entropy by itself is not sufficient to determine the model with the optimal number of classes (Henson, Reise, & Kim, 2007). Finally, the LMLRT test evaluates if a model with *k* profiles fits the data better than a model with *k*-1 profiles. If the *p* value for the LMLRT test is significant it suggests that the *k*-profile model should be rejected and the *k*-1 profile model preferred.

After selecting the latent profile model for the entire sample, construct equivalence was tested across Canadian and Chinese groups including unconstrained, semiconstrained, and fully constrained MLPA with country as the grouping variable (Eid, Langeheine, & Diener, 2003; Geiser et al., 2006). For the unconstrained model, within-profile means and variances were allowed to vary freely over group, in addition to profile size. For the semi-constrained model profile size was still allowed to vary freely but conditional means and variances were constrained to be equal across groups. Finally, for the fully constrained model, both profile size and within-profile means and variances were fixed to be equivalent across groups.

In comparing the fit of the semiconstrained model to the unconstrained model, one can determine if profile structure is equivalent across groups (Eid et al., 2003). If the semiconstrained model fits as well as or better than the unconstrained model it suggests the assumption of construct equivalence should not be rejected. Furthermore, if the fully constrained model fits worse than the semiconstrained model, it indicates significant differences in profile size proportions are present between groups. Following past literature the unconstrained, semiconstrained, and fully constrained models were compared according to their BIC values, and the model with the lowest BIC value was chosen (Geiser et al., 2006; Nylund et al., 2007). The criterion validity of the latent profile solution was evaluated using the Auxiliary option in Mplus to test the equality of within-class means on measures of depression, anxiety, stress, negative affect, positive affect, and satisfaction with life using posterior probability based multiple

imputation (Rice et al., 2013). The Auxiliary option in Mplus maintains the probability of profile membership and thus latent profile composition was not affected by exploring means (Rice et al., 2013). Mean differences between latent profiles were evaluated using Wald statistics (Richardson et al., 2014).

Results

Descriptive Statistics

Means, standard deviations, alpha reliabilities, and bivariate correlations are shown in Table 1. All alpha reliabilities were acceptable ($\alpha \geq .75$). In both the Canadian and Chinese groups, bivariate correlations indicated perfectionistic strivings had a strong positive association with perfectionistic concerns, and weak positive associations with neuroticism, depression, anxiety, stress, and negative affect. Furthermore, in both groups, perfectionistic concerns had moderate and positive relations with neuroticism, depression, anxiety, stress, and negative affect and weak to moderate negative correlations with satisfaction with life and positive affect. In the Canadian group, perfectionistic strivings was not significantly correlated with either life satisfaction or positive affect, whereas in the Chinese group perfectionistic strivings had a weak positive association with life satisfaction and positive affect. Canadian and Chinese participants reported equivalent levels of perfectionistic concerns ($t(957) = -.25$, $p = .805$, $d = -.02$) and neuroticism ($t(953) = 1.60$, $p = .109$, $d = -.10$), however, Canadian participants reported significantly higher perfectionistic strivings ($t(956) = 6.48$, $p < .001$, $d = .42$).

Single Group Latent Profile Analysis

All models converged on a replicated solution. Model comparison statistics are presented in Table 2. In the Canadian group, BIC values declined with each successive model, until a three profile-solution at which point BIC values appeared to level off: the lowest BIC value was for a

three-profile solution. The entropy value for a three-profile solution was .71. While the entropy value for a five-profile solution was higher than the entropy value for a three-profile solution, a five-profile solution generated one profile in which only 2.0% of the sample was likely to be classified in that group. The LMLRT also supported a two-profile solution over a single-profile solution, and revealed an improvement when a three-profile solution was compared to a two-profile solution.

For the Chinese group, BIC values declined with each successive model, until a four profile-solution, at which point BIC values appeared to level off: the lowest BIC value was for a four-profile solution. However, a four-profile solution generated one profile in which only 3% of the sample was likely to be classified in that group and thus was not considered a viable model. In addition, the five-profile solution also generated one profile in which only .4% of the population was likely to be classified in that group and therefore was also not considered a viable model. The entropy value for a three-profile solution was .67. The LMLRT supported a two-profile model over a single-profile model, but did not reveal an improvement when a three-profile model was compared to a two-profile model. However, given a two-profile solution's low entropy (.54), and a three-profile solution's higher entropy and lower BIC value, a three-profile solution was preferred over a two-profile solution. Thus, in terms of fit indicators, interpretability, and practicality, results suggest a three-profile solution is the best solution for both the Canadian and the Chinese groups (see Table 2).

Multigroup Latent Profile Analysis

Multigroup latent profile analysis was conducted to test if the three-profile solution chosen for the entire sample showed the same latent profile structure and profile size proportions across Canadian and Chinese groups (Eid et al., 2003; Geiser et al., 2006). The BIC value was

21524.20 for the unconstrained model, 21494.28 for the semiconstrained model, and 21638.71 for the fully constrained model. The best model was thus a three-profile semiconstrained solution. However, given the increase in the BIC value when profile size proportions were assumed equal, results suggest non-trivial differences in profile size proportions were present between groups. As Table 3 shows, group differences in profile sizes appear for profile 1 (Canada = 43.3%; China = 20.5%), profile 2 (Canada = 16.4%; China = 70.3%), and profile 3 (Canada = 41.3%, China = 9.2%). This explains the observed increase in the BIC value when a semiconstrained model was compared to a fully constrained model, as the fully constrained model assumes equivalent profile size proportions across groups.

The three-profile semiconstrained solution provided useful latent profile separation, with adequate classification reliability (entropy = .81). Profile 2, compared to profile 1 had greater perfectionistic strivings ($W(1) = 20.89$, $p < .001$, $d = .30$), perfectionistic concerns ($W(1) = 321.41$, $p < .001$, $d = 1.40$), and neuroticism ($W(1) = 48.565$, $p < .001$, $d = .46$). However, relative to profile 3, profile 2 had lower perfectionistic strivings ($W(1) = 203.65$, $p < .001$, $d = 1.03$), perfectionistic concerns ($W(1) = 67.59$, $p < .001$, $d = .55$), and neuroticism ($W(1) = 24.976$, $p < .001$, $d = .32$). Finally, profile 3, compared to profile 1, had greater perfectionistic strivings ($W(1) = 184.89$, $p < .001$, $d = .98$), perfectionistic concerns ($W(1) = 283.74$, $p < .001$, $d = 1.28$), and neuroticism ($W(1) = 85.93$, $p < .001$, $d = .62$). The pattern of within-profile means observed in the Canadian and Chinese groups were theoretically consistent with the tentative labels of Adaptive Perfectionists for profile 1, Non-Perfectionists for Profile 2, and Maladaptive Perfectionists for profile 3 (see Rice, Lopez, & Richardson, 2013; Richardson, Rice, & Devine, 2014).

Criterion Validity

Descriptive statistics and within-profile mean comparisons on inactive covariates for the three-profile semiconstrained solution are present in Table 4. As hypothesized the profile tentatively labeled Adaptive Perfectionists compared to the profile tentatively labeled Maladaptive Perfectionists, reported lower depression, anxiety, stress, and negative affect. However, no difference between Adaptive Perfectionists and Maladaptive Perfectionists on positive affect, or life satisfaction was observed. Relative to Non-Perfectionists, Adaptive Perfectionists reported higher depression, anxiety, stress, and negative affect and lower positive affect and life satisfaction. Maladaptive Perfectionists, compared to Non-Perfectionists, reported higher depression, anxiety, stress, and negative affect and lower positive affect and life satisfaction.

Discussion

Perfectionism is a commonly seen problem amongst university students at counseling centers (Johnson & Hay, 2003). Furthermore, most large universities have an increasing number of international students and thus it is important to evaluate the extent to which models, such as the tripartite of model of perfectionism, generalize to other cultural contexts. The present findings support the generalizability of within-person combinations of perfectionistic strivings, perfectionistic concerns, and neuroticism across a large sample of Canadian and Chinese university students. As expected, in both the Canadian and Chinese groups, LPA's did not support a single-profile solution, thereby adding to accumulating evidence suggesting perfectionism is a personality trait best understood as multidimensional (e.g., Hewitt et al., 2003) opposed to unidimensional (e.g., Shafran, Cooper, & Fairburn, 2002). Furthermore, as anticipated, the LPA's conducted in the Canadian and Chinese groups both indicated a three-

profile solution was the preferred solution. This finding complements past research (Rice et al., 2013; Richardson et al., 2014).

While the distribution of profiles varied across groups, the relationship between the latent categorical variable (i.e., profiles) and the manifest variables (i.e., perfectionistic strivings, perfectionistic concerns, and neuroticism) was equivalent across Canadian and Chinese groups. Thus, the profiles labeled as Non-Perfectionist (profile 1), Adaptive Perfectionist (profile 2), and Maladaptive Perfectionist (profile 3) in the Canadian group did not differ in structure from the similar Chinese group. This suggests the three-profile model of perfectionism found in North American individuals (e.g., Rice et al., 2013; Richardson et al., 2013) is generalizable to and relevant for Chinese individuals. Furthermore, as hypothesized, the validity of a three-profile semiconstrained solution was supported via theoretically coherent patterns of associations with measures of depression, anxiety, stress, negative affect, positive affect, and satisfaction with life. In line with past research (Rice et al., 2013; Richardson et al., 2014), Maladaptive Perfectionists reported greater depression, anxiety, stress, and negative affect relative to Adaptive Perfectionists or Non-Perfectionists. However, unexpectedly, Adaptive Perfectionists and Maladaptive Perfectionists did not differ in either life satisfaction or positive affect. This finding may stem from both Adaptive Perfectionists and Maladaptive Perfectionists inability to derive satisfaction from performance (Stoeber & Yang, 2010).

In addition, while construct equivalence of a three-profile solution was established, results indicate group differences in profile size proportions. In the Canadian group 41.3% were categorized as Maladaptive Perfectionists, compared to only 9.2% in the Chinese group. Furthermore, 70.3% of the Chinese group was classified as Adaptive Perfectionists, compared to only 16.4% of the Canadian group. These findings suggest that while perfectionism appears

more prevalent amongst Chinese university students, Maladaptive Perfectionism may be more common amongst Canadian university students. It is important to note that at the mean level the Canadian group, relative to the Chinese group, did not report significantly different levels of perfectionistic concerns or neuroticism. However, the Canadian group did report higher perfectionistic strivings. Based on research suggesting that for both Canadian and Chinese university students perfectionistic strivings interacts with perfectionistic concerns such that perfectionistic strivings exacerbates the link between perfectionistic concerns and negative psychological outcomes (see Smith et al., 2015), it seems plausible that the greater prevalence of Canadian university students categorized as maladaptive perfectionists, stems from the tendency for Canadian university students, relative to Chinese university students, to more readily and rigidly strive for perfection of the self, which subsequently amplified the association between perfectionistic concerns and maladaptive psychological outcomes (see Smith, Saklofske, Yan, & Sherry, 2015).

Nonetheless, results also suggest perfectionists, regardless of whether they were classified as Adaptive Perfectionists or Maladaptive Perfectionists, tended to report higher levels of depression, anxiety, stress, and negative affect than Non-Perfectionists. The present study found no support for the debated contention of a healthy within-person combination of perfectionism characterized by high perfectionistic strivings, low perfectionistic concerns, and low neuroticism (Rice et al., 2013; Richardson et al., 2014). This profile may not have been extracted in the present research due to our operationalization and measurement of perfectionistic strivings and perfectionistic concerns differing from Rice et al. (2013) and Richardson et al. (2014). They operationalized perfectionistic strivings and perfectionistic concerns using the Almost Perfect Scale-Revised (APS-R; Slaney, Rice, Mobley, Trippi, & Ashby, 2001), whereas

we operationalized perfectionistic strivings and perfectionistic concerns using subscales from the FMPS, HFMPS, and EDI (Mackinnon & Sherry, 2012). It is important to note that the APS-R has overt unique features and item content that distinguishes it from the FMPS, HFMPS, and EDI subscales used in the present study. For example, in contrast to the subscales used in the present study, the word 'perfect' is absent from the item content of the APS-R (Flett & Hewitt, 2015). In addition, according to Flett and Hewitt (2015) the high standards subscale of the APS-R is more akin to a measure of striving for excellence than a measure of perfectionism. Moreover, relative to the personal standards subscale of the FMPS and the self-oriented perfectionism subscale of the HFMPS, Slaney et al. (2001) reported that the high standards subscales of the APS-R had a substantially greater association with self-esteem and a substantially smaller association with concerns over mistakes.

Implications for Counselors

The present research gives rise to an important question: Does a healthy-within person combination of perfectionism exist, and if so why was the Adaptive Perfectionist profile in the present study associated with greater depression, anxiety, stress, and negative affect across two groups of students living in different countries? We encourage counseling psychologists to tackle this salient question and to consider the possibility that past support for labeling individuals as 'Adaptive Perfectionist' may stem from the APS-R's overlap with conscientiousness and excellence striving. We also advise counselors to cease labeling students as 'Adaptive Perfectionists', 'Maladaptive Perfectionists', and 'Non-Perfectionists', as this practice encourages stigmatization. In its place, we recommend that counselors adopt a personalized assessment approach that tailor's treatment based on the strengths and weaknesses of the client. Additionally, our findings suggest that counselors should be aware that even so-called Adaptive

Perfectionists may experience problems. In particular, our results indicate lofty self-expectations and intense self-scrutiny may make life satisfaction and positive affect elusive for Adaptive Perfectionists. In fact, counselors have long described perfectionism as a thief that robes people of life satisfaction and positive affect (e.g., Blatt, 1995). Adaptive Perfectionists may be especially susceptible to lower life satisfaction and lower positive affect if events in their lives (e.g., poor exam performance) signal that they are not perfect (Hewitt & Flett, 1993).

Limitations and Future Directions

The results of the present study should be considered in light of its limitations. Possible mechanisms, which might account for differences in profile size proportions, were not tested. Future research should consider examining mechanisms such as coping style (Dunkley et al., 2003) or emotion regulation (Aldea & Rice, 2006), which could potentially account for the observed discrepancy in profile size proportions between Canadian and Chinese cultures. As in past research (Rice et al., 2013; Richardson et al., 2014), the number of individuals categorized as perfectionists was relatively high. This may reflect a selection effect in which individuals with higher self-imposed standards are more likely than individuals with lower self-imposed standards to enroll in university as well as be classified as either Adaptive or Maladaptive Perfectionists (Richardson et al., 2014). This limitation could be addressed through the use of a sample of North American and Chinese individuals from non-university contexts. Finally, the majority of Canadian and Chinese participants were female. Future research should consider investigating the generalizability of our findings in a more gender balanced sample

Concluding Remarks

Despite these limitations, the present study is the first to use multigroup latent profile analysis to investigate similarities and differences in perfectionism from a person-centered

perspective. Our research provides novel evidence that Canadian and Chinese university students are comprised of different within-group subpopulations in which the relation between perfectionistic strivings, perfectionistic concerns, and neuroticism differs quantitatively and qualitatively. Moreover, the present study offers preliminary evidence that Adaptive Perfectionism is more prevalent amongst Chinese university students, whereas Maladaptive Perfectionism is more common amongst Canadian university students. While further research is needed, the present study provides the first step towards a better understanding of cultural differences in group-based perfectionism, at least amongst university students, and by doing so incrementally advances theory, research, and potentially interventions that could be employed by university counseling centers.

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Table 1

Means, Standard Deviations, Alpha Reliabilities, and Bivariate Correlations

Variable	1	2	3	4	5	6	7	8	9	α	*M*	*SD*
1. Perfectionistic strivings	-	.50*	.19*	.12*	.26*	.32*	.24*	.19*	-.04	.85	44.7	9.3
2. Perfectionistic concerns	.63*	-	.41*	.40*	.42*	.42*	.41*	-.14*	-.30*	80	44.7	8.5
3. Neuroticism	.19*	.48*	-	.52*	.58*	.61*	.64*	-.39*	-.39*	.75	23.0	4.7
4. Depression	.27*	.50*	.58*	-	.67*	.70*	.68*	-.42*	-.41*	.75	3.4	3.1
5. Anxiety	.26*	.47*	.48*	.70*	-	.75*	.71*	-.23*	-.36*	.77	3.4	3.3
6. Stress	.28*	.49*	.59*	.75*	.71*	-	.70*	-.27*	-.37*	.78	5.3	4.0
7. Negative affect	.20*	.48*	.64*	.64*	.58*	.62*	-	-.24*	-.39*	.89	19.0	6.9
8. Positive affect	.05	-.28*	-.47*	-.44*	-.28*	-.33*	-.32*	-	.35*	.89	29.7	7.3
9. Satisfaction with life	-.11	-.34*	-.53*	-.58*	-.43*	-.43*	-.47*	.50*	-	.82	20.4	5.7
α	.91	.89	.87	.88	.81	.82	.90	.90	.88			
M	49.4	44.5	23.6	4.6	4.4	6.0	22.6	34.9	24.2			
SD	12.9	13.0	7.1	4.3	3.8	3.9	9.0	7.4	6.6			

Note. Statistics for Canadian participants are below the diagonal. Statistics for Chinese participants are above the diagonal.

*$p < .01$.

Table 2
Fit Indices for One- to Five-Profile Models

Model	Profile	Count	Proportion	Entropy	BIC	LMLRT	*p*
Canada							
One-profile					9508.55		
Two-profile	1	265	.63	.72	9292.13	231.15	< .001
	2	157	.37				
Three-profile	1	178	.42	.71	**9252.80**	60.99	.002
	2	150	.36				
	3	94	.22				
Four-profile	1	164	.39	.79	9254.03	22.04	.003
	2	142	.34				
	3	106	.25				
	4	10	.02				
Five-profile	1	145	.34	.79	9259.31	18.15	.098
	2	135	.32				
	3	95	.23				
	4	35	.08				
	5	12	.03				
China							
One-profile					11008.53		
Two-profile	1	290	.53	.54	10878.56	149.29	< .001
	2	259	.47				
Three-profile	1	395	.72	.67	10849.47	52.23	.580
	2	106	.19				
	3	48	.09				
Four-profile	1	265	.48	.74	**10827.70**	45.21	.048
	2	225	.41				
	3	40	.07				
	4	19	.03				
Five-profile	1	261	.48	.77	10829.82	22.23	.016
	2	229	.42				
	3	38	.07				
	4	19	.03				
	5	2	.00				

Note. Proportions did not always sum to 1.0 because of rounding error. BIC = Bayesian information criterion; LMLRT = Lo-Mendell-Rubin test. The lowest BIC values obtained in each group are in bold.

Table 3

Estimated Indicator Means for the Three-Profile Semiconstrained Model

Profile	Canada %	China %	Perfectionistic strivings	Perfectionistic concerns	Neuroticism
1. Non-Perfectionists	43.3	20.5	39.75	33.74	19.85
2. Adaptive Perfectionists	16.4	70.3	44.96	46.03	23.62
3. Maladaptive Perfectionist	41.3	9.2	59.48	55.69	26.97

Note. Percentages do not add to 100 due to rounding.

Table 4

Means, Standard Errors, and Comparisons for Inactive Covariates Across the Three-Profile Semiconstrained Model

Profile	Depression		Anxiety		Stress		Negative affect		Positive affect		Life satisfaction	
	M	*SE*	*M*	*SE*	*M*	*SE*	*M*	*SE*	*M*	*SE*	*M*	*SE*
1. Non-perfectionist	2.22	.16	2.38	.15	3.66	.19	17.05	.39	34.03	.50	24.58	.39
2. Adaptive perfectionist	3.67	.17	3.98	.17	5.64	.17	20.46	.38	30.55	.41	21.06	.32
3. Maladaptive perfectionist	6.15	.35	6.13	.31	8.24	.32	25.56	.64	31.86	.59	20.61	.51
Profile comparisons												
1 vs. 2	$X^2 = 36.15^{***}$		$X^2 = 47.22^{***}$		$X^2 = 46.85^{***}$		$X^2 = 34.69^{***}$		$X^2 = 25.20^{***}$		$X^2 = 45.20^{***}$	
1 vs. 3	$X^2 = 101.06^{***}$		$X^2 = 113.08^{***}$		$X^2 = 142.75^{***}$		$X^2 = 127.24^{***}$		$X^2 = 7.98^{***}$		$X^2 = 38.47^{***}$	
2 vs. 3	$X^2 = 36.94^{***}$		$X^2 = 34.00^{***}$		$X^2 = 43.41^{***}$		$X^2 = 42.76^{***}$		$X^2 = 2.91$		$X^2 = 0.99$	

Note. Mean differences between latent profiles computed using the Wald statistic.

$^{*}p < .05$; $^{**}p < .01$; $^{***}p < .001$