

Psychometric properties of the Frost Multidimensional Perfectionism Scale for Australian adolescent girls: Clarification of multidimensionality and perfectionist typology

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Abstract

The psychometric properties of the ‘Multidimensional Perfectionism Scale’ (Frost, Marten, Lahart, & Rosenblate, 1990) were investigated, to determine its usefulness as a measurement of perfectionism with Australian secondary school girls, and to find empirical support for the existence of both healthy and unhealthy types of perfectionist students. Participants were 409 female mixed-ability students from Years 7, 8, 10 and 11 in two private secondary schools in Sydney, Australia. Factor analyses yielded four rather than the six factors theorized by Frost et al. Cluster analysis indicated a distinct typology of healthy perfectionists, unhealthy perfectionists and non-perfectionists. Healthy perfectionists were characterized by higher levels on *Organization*, while unhealthy perfectionists scored higher on the *Parental Expectations & Criticism* and *Concern over Mistakes and Doubts* dimensions of perfectionism. Both types of perfectionists scored high on *Personal Standards*.

Introduction

Empirical studies have embraced a global conceptualization of perfectionism as a dichotomous construct redolent of Hamachek's (1978) description of *normal* and *neurotic* perfectionists. The former set high standards and are highly motivated by their need for achievement whilst, at the same time, recognizing and accepting their limitations in an attempt to reach their goals. Hamachek (1978) defined *normal* perfectionists as "those who derive a very real sense of pleasure from the labors of a painstaking effort and *who feel free to be less precise as the situation permits*" (p.27). These individuals seek approval in much the same way as everybody else; the positive feeling derived from this approval serves to heighten their own sense of well-being and they are encouraged to continue on and further improve their efforts (p.27).

Neurotic perfectionists, on the other hand, cannot accept any limitations in their efforts to attain the high standards they set for themselves. These individuals are driven more by a fear of failure than the pursuit of excellence, and, as a result, fail to obtain satisfaction either with themselves or their performance (Hill, McIntyre, & Bacharach, 1997; Nugent, 2000; Pacht, 1984). Hamachek (1978) asserts that the efforts of *neurotic* perfectionists "never seem good enough, at least in their own eyes . . . They are unable to feel satisfaction because in their own eyes they *never seem to do things good enough to warrant that feeling*" (p.27).

A dual conceptualization of *normal* or *adaptive* perfectionism as contrasted with *neurotic* or *maladaptive* perfectionism was repeated throughout a number of early writings in the clinical literature (Adler, 1956; Burns, 1980a; Hamachek, 1978; Hollender, 1965; Pacht, 1984). By the end of the 1980s, this theoretical distinction between adaptive and maladaptive forms of perfectionism captured the attention of researchers who became interested in substantiating the dichotomy through empirical studies.

Measuring Perfectionism

Initial efforts to define and measure perfectionism stressed the multidimensional nature of the construct in the development and validation of measurement instruments (Frost et al., 1990; Hewitt & Flett, 1991; Terry-Short, Owens, Slade, & Dewey, 1995). Among these

researchers there was a collective emphasis on the conceptualization of perfectionists as having excessively high standards. Frost et al. (1990), claimed that these standards are accompanied by critically stringent self-evaluation in the form of doubting one's actions and being overly concerned with making mistakes. They also posit that perfectionists are unduly sensitive to parental criticism and expectations and tend to be preoccupied with an inflated need for order and organization.

Frost et al.'s (1990) multidimensional view of perfectionism is closely aligned with the complex characteristics and behaviors ascribed to perfectionist school students. These include compulsiveness in work habits, overconcern for details, unrealistic high standards for self and others, indiscriminate acquiescence to external evaluation, and placing over-emphasis on precision, order and organization (Kerr, 1991). Because of this we were particularly interested in the measurement instrument developed by Frost and his colleagues which was named the *Multidimensional Perfectionism Scale*, and has been validated for both child and adult non-clinical populations (Ablard & Parker, 1997; Hawkins, Watt, & Sinclair, 2000; Kornblum, 2001; Parker & Adkins, 1995a; Parker & Stumpf, 1995; Stöber, 1998). Frost et al.'s (1990) *Multidimensional Perfectionism Scale*, hereafter referred to as the 'FMPS'¹ (Flett, Sawatzky, & Hewitt, 1995), was designed to assess six factors measuring perfectionism, based on an extensive review of the literature. These six factors are *Concern over Mistakes (CM)*, *Personal Standards (PS)*, *Parental Expectations (PE)*, *Parental Criticism (PC)*, *Doubts about Actions (D)* and *Organization (O)*.

The principal factor solution employed by the authors of the FMPS extracted the hypothesized six-factor structure of the instrument which accounted for 54 percent of the

¹ This paper refers to the Multidimensional Perfectionism Scale (Frost et al., 1990), as the FMPS, as suggested by Flett, Sawatzky and Hewitt (1995).

variance. Other authors have found support for this structure using confirmatory factor analyses (Parker & Adkins, 1995a; Parker & Stumpf, 1995), yet others have argued that the structure does not replicate across different samples (Purdon, Antony, & Swinson, 1999; Rhéaume, Freeston, Dugas, Letarte, & Ladouceur, 1995). Stöber (1998), claimed that neither the CM and D dimensions, nor the PE and PC dimensions were factorially distinct. The convergence of CM with D (CMD) and PE with PC (PEC) resulted in a four factor structure based on Horn's parallel analysis (Horn, 1965). The achievement of this simple structure was believed to represent a more parsimonious description of perfectionism and is more robust across different populations (Stumpf & Parker, 2000). Although the same four-factor structure was supported by Stumpf and Parker (2000) using parallel analysis with Promax rotation, they have called for further research on the factorial structure of the instrument across diverse samples. Our observation is that much of the non-clinical work using the FMPS has been conducted with academically gifted participants and college students, and that there is a need to include samples which span a broader ability and age spectrum. There is some debate regarding the inclusion of the Organization subscale as part of a measurement of perfectionism. Frost et al. (1990) did not include O in their overall FMPS perfectionism score due to its weak correlation with the other subscales. However, in their multidimensional conceptualization the authors included the need for order and organization because of the frequency it has appeared in the literature as a common characteristic of the perfectionist. On substantive grounds, it would seem that its inclusion is justified. In the present study there was a moderately strong association between the O and PS subscales, lending empirical support for the retention of the O factor.

The calculation of an overall global perfectionism score as suggested by Frost et al. (1990) may be problematic on both theoretical and empirical grounds. A theorized, multidimensional conceptualization of a construct is at odds with the notion of calculating a

global or unidimensional score. It would seem unproductive to calculate a global score of perfectionism when the perfectionism scales themselves include content that has both positive and negative concomitants, any combination of which may contribute to the unique profile of a perfectionist individual (Bieling, Israeli, Smith, & Antony, 2003). Additionally, studies incorporating a global score of perfectionism have not reported any empirical confirmation of a one factor solution to analyses of the scores on the FMPS (Frost et al., 1990; Parker, 1997; Parker & Adkins, 1995a; Stöber, 1998).

A similar stance was taken by Stumpf and Parker (2000) who argued that it makes little sense to compute a single global perfectionism score from the FMPS, given their conclusion that two higher-order healthy and unhealthy perfectionism factors best summarize the set of four first-order factors. Although significance levels were not reported by Stumpf and Parker (2000) for correlations between perfectionism factors and personality outcomes, inspection of the coefficients showed that two of the first-order factors, *Concern and Doubts* (CD) and *Parental Pressure* (PP), differently predicted self-esteem as measured by the Rosenberg Self-Esteem Scale (Rosenberg, 1965). While CD related moderately strongly to self-esteem (- 0.58), PP showed a much lower correlation (- 0.28). Similarly the *Organization* (O) factor appeared to have a somewhat higher association with the personality characteristics of endurance (0.35), and order (0.35) scales of the Adjective Check List (ACL; Gough & Heilbrun Jr., 1983) than with *Personal Standards* (PS), (0.23) and (0.26), respectively. O and PS also differently predicted conscientiousness. O was related more strongly to conscientiousness (0.52) than PS (0.39). In light of these differential correlations between the four first-order factors of the FMPS and measures of various personality constructs, the predictive validity of the four factors may best be preserved by their retention in any detailed examination of the perfectionism construct using the FMPS.

Measures of Healthy versus Unhealthy Perfectionism

Other researchers have focused on a conceptual distinction between healthy and unhealthy perfectionism. Theorists equate the behavioral consequences of positive strivings (e.g., high standards, persistence and conscientiousness) with a positive form of perfectionism which, according to Hamachek (1978), contributes to high levels of achievement and motivation (Accordino, Accordino, & Slaney, 2000). In contrast to healthy perfectionist strivings for success, unhealthy perfectionists are seen to be driven by an overwhelming need to avoid failure (Blatt, 1995) and tend to be overcritical in evaluating their performance (Frost et al., 1990). They rarely feel good about their achievements (Hamachek, 1978), and more often than not, they feel inadequate (Burns, 1980a) or suffer from negative affect (Blatt, 1995) in achievement situations.

Previous studies have also suggested an empirical distinction between healthy and unhealthy dimensions of perfectionism. Frost, Heimberg, Holt, Mattia and Neubauer (1993), combined the six subscales from the FMPS with the three subscales from the HMPS (the Multidimensional Perfectionism Scale developed by Hewitt and Flett in 1991)² in a principal components factor analysis. Both orthogonal and oblique rotations yielded two distinct higher-order factors they named ‘Positive Strivings’ and ‘Maladaptive Evaluation Concern’. *Personal Standards, Organization* (FMPS), *Self-Oriented Perfectionism*, and *Other-Oriented Perfectionism* (HMPS), were associated with the positive factor, while *Concern Over Mistakes, Parental Criticism, Parental Expectations, Doubts about Actions* (FMPS), and *Socially-Prescribed Perfectionism* (HMPS) formed the negative factor.

² The scale developed by Hewitt and Flett in 1991 was also named the Multidimensional Perfectionism Scale in which 3 major dimensions of perfectionism were conceptualized; self-oriented perfectionism, other-oriented perfectionism, and socially-prescribed perfectionism (Hewitt & Flett, 1991).

Similarly, Stumpf and Parker (2000) argued for two higher order factors based on the exploratory approach of a principal components factor analysis of the 6 subscales of the FMPS, with *Personal Standards* (PS) and *Organization* (O) comprising the healthy, and *Concern & Doubts* (CD) and *Parental Pressure* (PP) the unhealthy dimensions. It is important to note that their correlations among component factors comprising higher-order constructs were not especially strong (.28 for O and PS, .42 for CD and PP), when considered from the proposed positive/negative higher-order perspective. Within that same study, evidence for the predictive validity of a healthy and unhealthy dichotomy was also presented. Positive correlations were found between the healthy factors (PS and O) and conscientiousness, while the unhealthy factors (CD and PP) correlated with low self-esteem. This has been taken as further support for the existence of higher-order healthy versus unhealthy perfectionism factors on the FMPS, although importantly, first-order component factors for the higher-order constructs differently predicted several outcomes, as has been discussed. It is timely that the validity of the proposed higher-order *healthy* and *unhealthy* FMPS perfectionism constructs be assessed in additional studies and across diverse samples through the use of nested confirmatory factor analyses that simultaneously assess the fit of scale items to the first-order constructs and these, in turn, to the higher-order factors.

A Perfectionist Typology

In contrast to the proposed higher-order healthy and unhealthy perfectionism constructs, other researchers have argued for a tripartite typology of perfectionist clusters. Scores on the FMPS have been used in a number of cluster analytic studies of perfectionism in which support has been found for such a typology. Parker (1977) identified two perfectionist clusters and a third non-perfectionist cluster in his study of academically talented youth. He described the first

cluster as non-perfectionists who obtained low scores on PS, PE & O as well as for total perfectionism (P), which represented an aggregate of scores on each dimension of perfectionism. Low scores on CM, PC, and D, moderate PS, and high O scores indicated a healthy perfectionist cluster. Students falling into the third cluster group were referred to as dysfunctional perfectionists because they obtained the highest scores on the CM, PS, PE, PC, D subscales as well as total P on the FMPS. The FMPS was also used in a number of studies of college students (Rice & Dellwo, 2002; Rice & Lapsley, 2001; Rice & Mirzadeh, 2000; Slaney, Rice, & Ashby, 2002), who found similar sets of two perfectionist clusters (named *adaptive* and *maladaptive*) as well as a third non-perfectionist cluster.

Although the perfectionist typology was supported across each of these cluster analytic studies, the representation of the dimensional subscales of the FMPS in each cluster contained some notable differences. Higher levels of PS were found in the unhealthy cluster in the Parker (1997) and Rice and Mirzadeh (2000) studies, in both the unhealthy and healthy clusters by Rice and Lapsley (2001), whilst Rice and Dellwo (2002) reported that the healthy cluster obtained the highest scores on this subscale. All four studies reported that the highest scores on O were obtained by the healthy cluster. It was the unhealthy cluster that scored highest on the CM, D, PE and PC subscales, although Rice and Dellwo (2002) found that the healthy cluster had higher PE than PC scores, demonstrating that healthy perfectionists perceived their parents to hold high expectations for their success accompanied by perceived lower levels of criticism. The effect of perceptions of parental influences on self-esteem was also noted by Stumpf and Parker (2000), who found that scores on PE were not as strongly related to lack of self-esteem as were the scores on PEC. They caution against a possible loss of information if both parental scales are collapsed into one, although this was unproblematic in our study.

Two Australian studies also found evidence for the perfectionist typology based on an examination of the four FMPS dimensions as proposed by Stöber (1998). In our study of Australian secondary school students, Hawkins et al., (2000) found that both the healthy and unhealthy clusters had the highest scores for PS, as was the case in a study of college students conducted by Rice and Lapsley (2001). The composition of the perfectionist clusters in Kornblum's (2001) study of Australian gifted school students was the same as Rice and Mirzadeh (2000) with unhealthy perfectionists obtaining the highest scores on PS, and the healthy cluster reporting moderately high levels of PS and very high need for order and organization. There is, however, a lack of consistency regarding the role of PS in the psyche of the perfectionist individual. How does one account for the fact that across these studies, both healthy and unhealthy groups of perfectionists were characterized by the setting of high personal standards? On the other hand it was interesting to note that high scores on the Organization scale of the FMPS were consistently obtained by the healthy perfectionist groups across all of these cluster analytic studies.

There is then, increasing support for a typology of healthy perfectionism, unhealthy perfectionism and non-perfectionism. A number of issues, however, remain unresolved. These include whether high PS typifies both healthy and unhealthy perfectionists, or the healthy cluster alone, whether the O subscale should be included in the measurement of perfectionism, and whether perfectionism itself is better represented by two higher-order factors. The relative lack of gender differences reported throughout the literature suggests further investigation into gender specific aspects of the perfectionist typology. There is a continuing need to examine the concept of perfectionism and its measurement in more diverse populations with particular emphasis on the FMPS core components of perfectionism in providing a detailed description of a perfectionist

profile, and whether the setting of high standards is attributable to both healthy and unhealthy perfectionist types.

The Present Study

A number of empirical studies have examined the presence of perfectionism in school-aged children, but these have been limited either to gifted populations, or tended to focus on negative aspects of perfectionism (Bieling et al., 2003; Einstein, Lovibund, & Gaston, 2000; Kornblum, 2001; LoCicero & Ashby, 2000; Parker, 1997; Parker, Portešová, & Stumpf, 2001; Parker & Stumpf, 1995). We extend on this body of work by examining the dimensionality of the perfectionism construct in a sample of Australian adolescent girls spanning Years 7 to 11 at secondary school and incorporating a broader spectrum for student ability in a naturally occurring ecological setting.

In Australia, there has been little empirical research into the manifestation of perfectionist behaviors, healthy or unhealthy, in the daily learning experiences of typical secondary school students. An initial investigation into the construct of perfectionism necessitates an examination of the psychometric properties of a measurement of perfectionism to clarify existing theories on the multidimensional nature of the construct and on the existence of both healthy and unhealthy types of perfectionists. The purpose of this study was therefore to extend previous studies of perfectionism conducted outside Australia, through an examination of the psychometric properties of the FMPS (Frost et al., 1990). Our first objective was to determine the number and nature of the core components of perfectionism as theorized by Frost et al., (1990) and to examine support for the presence of two higher-order factors representing positive and negative aspects of perfectionism. We also aimed to establish an empirical base for the existence of a

typology of perfectionist students and to determine if holding high personal standards could be attributable to both healthy and unhealthy perfectionists.

We examined the validity of first-order FMPS factors through exploratory factor analytic procedures as a conservative confirmatory approach (Gorsuch, 1983). Further, we tested the validity of recently proposed higher-order healthy and unhealthy perfectionism factors using nested confirmatory factor analysis, simultaneously assessing first- and higher-order factor fits as a direct test of the hierarchy proposed by Stumpf and Parker (2000).

Using factor scores on the FMPS we also aimed to investigate whether a typology of healthy, unhealthy and non-perfectionist students was empirically identifiable. On the basis of prior cluster analytic studies (Kornblum, 2001; Parker, 1997; Parker et al., 2001; Rice & Dellwo, 2002; Rice & Lapsley, 2001; Rice & Mirzadeh, 2000; Slaney et al., 2002), we hypothesized that profiles of scores on the dimensions of the FMPS would enable the identification of three distinct cluster groups. It was expected that a healthy perfectionist cluster would emerge in which students scored highest on the PS and O subscales. Unhealthy perfectionists were also expected to obtain high scores on PS in addition to obtaining the highest scores on the CM, D, PE and PC subscales. The non-perfectionist cluster was expected to demonstrate moderate to low levels of perfectionism across all dimensions of the FMPS.

Method

The present study examined the psychometric properties of the *Frost Multidimensional Perfectionism Scale* (Frost et al., 1990), to assess its usefulness as a measurement of a multidimensional concept of perfectionism in Australian adolescent female students, and if perfectionism is best viewed in more broadly defined positive and negative terms. Further, we

assessed whether students could be classified into healthy, unhealthy and non-perfectionist groups within this context.

Participants for the study were 409 mixed-ability female students from Years 7, 8, 10 and 11 in two private secondary girls' schools in the Sydney Metropolitan area. The majority of students attending private schools in Sydney are from middle to upper socioeconomic status backgrounds. The present sample also included girls from a number of non-English speaking backgrounds (S.E. Asia 8.07%; Europe 8.6%; Middle East 1.71%; Sth Africa .98%; Sth America .49%), which reflects the multicultural nature of Australian society.

All the girls completed the FMPS (Frost et al., 1990) which consists of 35 statements, to which participants respond on a five-point Likert scale ranging from 1 (not at all true) through to 5 (very true). The self-report questionnaire is designed to produce scores for six subscales. The subscales are *Concern over Mistakes (CM)*, *Personal Standards (PS)*, *Parental Expectations (PE)*, *Parental Criticism (PC)*, *Doubts about Actions (D)*, and *Organization* (see Table 1). Frost et al. (1990) reported six subscale alphas ranging from .77 to .93. The original scale was adapted for the study by changing 7 items that were originally worded in the past tense into the present tense in order to be more meaningful to the participating students' current experiences. These items specifically related to the respondents' perceived parental expectations and criticism (e.g., item 11, "*My parents wanted me to be the best at everything*" was changed to "*My parents want me to be the best at everything.*").

Following ethics approval by the NSW Department of Education and Training and the informed consent of school principals, data were obtained during the first half of the academic school year. The researcher and class teachers administered the FMPS to intact class groups. Only girls with parental consent to participate in the study completed the questionnaire which took between 10 and 15 minutes. There were no missing data.

Data Analysis

Dimensions of Perfectionism.

A combination of exploratory and confirmatory procedures was employed to confirm the factorial stability of the FMP. An exploratory factor analysis (EFA) with maximum likelihood extraction and oblimin rotation was used first to explore the factorial structure of the FMPS as a conservative confirmatory approach (Gorsuch, 1983). Cronbach alpha reliabilities determined internal consistency for the resulting factors. A confirmatory factor analysis (CFA) was subsequently applied to this factor solution, using robust maximum likelihood, where all items were specified to load only on their respective factors, no error covariances were permitted to correlate, and correlations among the latent constructs were estimated freely. Commonly accepted CFA fit statistics as well as modification indices were taken into account in evaluating the fit of the CFA. To assess the validity of possible higher-order 'positive' and 'negative' perfectionism factors, a nested CFA was conducted. Here, items were specified as indicators for first-order factors as in the preceding analysis, with the same error covariance freely estimated.

Perfectionist Typology.

Cluster analysis was used to determine whether there were identifiable typology of perfectionist students based on their FMPS factor scores, using Ward's method and squared Euclidean distance. The selection of number of clusters was based both on the *a priori* theorization of two perfectionist groups (Hamachek, 1978) and a non-perfectionist group (Kornblum, 2001; Parker, 1997; Parker et al., 2001; Rice & Dellwo, 2002; Rice & Lapsley, 2001; Rice & Mirzadeh, 2000; Slaney et al., 2002), as well as empirically based on inspection of the cluster dendogram, and relative changes in the fusion coefficient (Hair, Anderson, Tathan, &

Black, 1995; Kim & Mueller, 1984). MANOVA tested where differences in cluster group means on perfectionism factors were statistically significant ($p < .05$), and post hoc comparisons using Tukey's *a* and Bonferroni correction located significant differences between cluster pairs.

Results

Dimensions of Perfectionism

Several researchers have been concerned with the factorial instability of the FMPS due to a number of solutions where items did not load on the factors to which they had initially been assigned (Frost et al., 1990; Parker & Adkins, 1995; Purdon et al., 1999; Rhéaume et al., 1995; Stöber, 1998). The question of how many factors to retain in exploratory factor analysis is crucial to the final solution (Gorsuch, 1983). In this study with no missing data, our initial exploratory factor analysis which specified six factors showed factorial instability, with various items loading on several factors indicating a possible problem with overextraction.

In both our initial analysis and previous studies outside Australia, Item 16, 'I am very good at focusing my efforts on attaining a goal' (*Personal Standards*), and Item 18, 'I hate being less than the best at things' (*Concern over Mistakes*), were identified as problematic as they both loaded on more than one factor (Parker & Adkins, 1995; Rhéaume et al., 1995; Stöber, 1998). In the present analysis, Item 16 displayed almost equal loadings on both *Personal Standards* (PS) and *Organization* (O), (.389 and .343, respectively), while Item 18 loaded on both *Concern over Mistakes & Doubts* (CMD, .421), and *Personal Standards* (PS, .380). These two items were therefore deleted from further analyses. In determining the number of factors to retain, the criterion of eigenvalues greater than unity suggested six latent variables accounting for 54% of

the variance. However, the last two eigenvalues were close to unity (1.31 and 1.15), and the Cattell Scree Test (Cattell, 1966) indicated only four clear factors (see Figure 1).

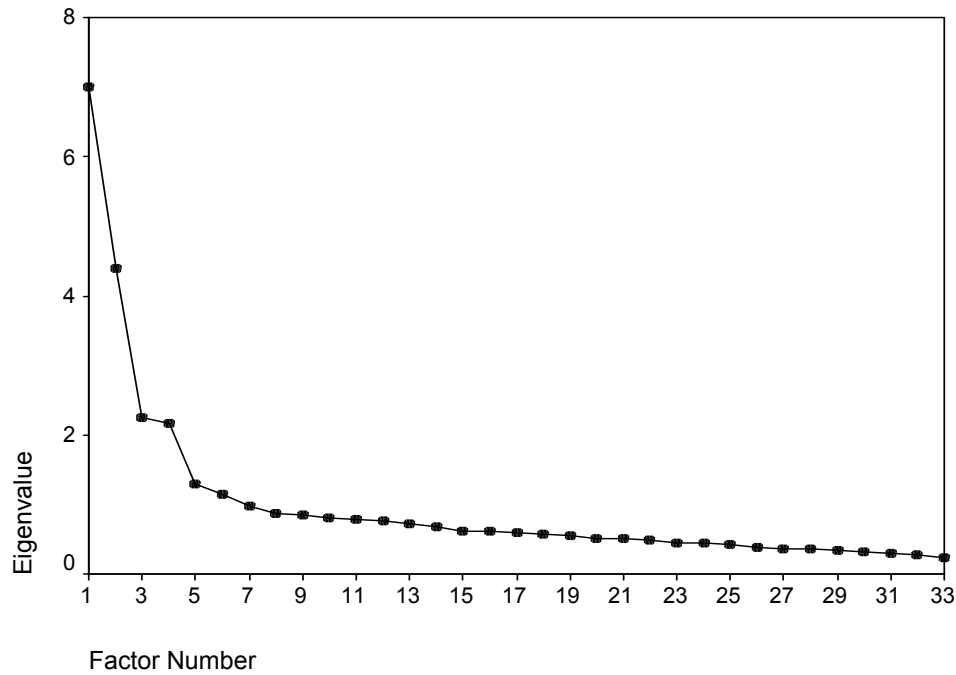


Figure 1. Scree plot for four-factor EFA.

A reformulated, 4 factor, 33-item model was subjected to maximum likelihood extraction with oblimin rotation. This four-factor solution accounted for 48% of the variance, and the resulting pattern of factor loadings is shown in Table 1, along with Cronbach alpha measures of internal consistency for each factor. All items for *Parental Expectations* (PE) and *Parental Criticism* (PC) loaded on Factor 1, which was subsequently termed *Parental Expectations and Criticism* (PEC³). Factor 2 retained items relating to *Organization* (O) and Factor 3 items relating to *Personal Standards* (PS). Items for *Concern over Mistakes* (CM) and *Doubts about*

³ These abbreviations (i.e., CMD & PEC) are taken from Stöber and Joorman (2001). Other researchers use different names and labels for the same combinations. For example, the Parker/Stumpf group calls the combination of Parental Expectations & Parental Criticism ‘Parental Pressure’.

Actions (D) items, loaded on Factor 4, subsequently termed *Concern over Mistakes and Doubts (CMD* ³).

A CFA, specifying these four factors (PEC, CMD, PS and O), converged in 11 iterations and exhibited moderate fit (normal theory weighted least squares chi-square = 1409.51 df=489, RMSEA=.07, NFI=.90, NNFI=.93, GFI=.83, AGFI=.80). A large modification index (83.92) suggested freeing the error covariance between items 22 and 35. Since the wording of these items was parallel, differing only for the last word (see Table 1), we set this error covariance to be freely estimated. A second CFA was conducted, identical to the first except for the freed error covariance between items 22 and 35. This model converged in 10 iterations, and fit statistics for this revised CFA were slightly improved (normal theory weighted least squares chi-square = 1253.68 df=488, RMSEA=.06, NFI=.90, NNFI=.94, GFI=.84, AGFI=.82), with no large modification indices (the largest was 37.28). Factor loadings and measurement errors from this second CFA are presented in Table 2, and correlations among the latent constructs are shown in Table 3.

Table 1

FMPS Items, Pattern Matrix and Cronbach Alpha Subscale Reliabilities for Four-factor Solution (Maximum Likelihood Extraction and Oblimin Rotation)

#	Item	Factor			
		PEC $\alpha=.85$	O $\alpha=.87$	PS $\alpha=.76$	CMD $\alpha=.83$
V20	My parents expect excellence from me	.773	.079	.179	-.100
V11	My parents want me to be the best at everything	.692	-.021	.174	-.087
V1	My parents set very high standards for me	.678	.003	.265	-.193
V35	I never feel that I can meet my parents' standards	.662	-.007	-.274	.217
V26	My parents have always had higher expectations for my future than I have	.649	.031	-.194	.062
V15	Only outstanding performance is good enough in my family	.626	-.053	.091	.085
V22	I never feel that I can meet my parents' expectations	.586	-.009	-.260	.262
V3	As a child, I was punished for doing things less than perfectly	.399	-.053	.013	.145
V5	My parents never try to understand my mistakes	.341	-.088	-.102	.206
V7	I am a neat person	.006	.775	.007	-.066
V29	Neatness is very important to me	.121	.767	.008	.073
V31	I am an organized person	-.036	.736	.095	-.057
V2	Organization is very important to me	-.100	.733	.110	.117
V27	I try to be a neat person	.065	.669	-.074	.028
V8	I try to be an organized person	-.089	.637	.077	.012
V12	I set higher goals than most people	-.016	.033	.740	-.005
V19	I have extremely high goals	.055	.067	.605	-.005
V30	I expect higher performance in my daily tasks than most people	.154	.071	.599	.058
V24	Other people seem to accept lower standards from themselves than I do	-.066	.017	.514	.090
V6	It is important to me that I be thoroughly competent in what I do	.032	.217	.425	-.020
V4	If I do not set the highest standards for myself, I am likely to end up a second-rate person	.053	.060	.376	.142
V33	It takes me a long time to do something 'right'	-.047	-.031	-.123	.588
V14	If I fail partly, it is as bad as being a complete failure	.012	-.084	.182	.575
V9	If I fail at school, I am a failure as a person	.096	-.027	.146	.573
V17	Even when I do something very carefully, I often feel that it is not quite right	-.061	.094	-.061	.556
V28	I usually have doubts about the simple everyday things that I do	.024	.065	-.031	.531
V13	If someone does a task at school better than I do, then I feel as if I failed the whole task	.032	-.010	.244	.524
V23	If I do not do as well as other people, it means I am an inferior being	.106	.101	.054	.517
V25	If I do not do well all the time, people will not respect me	.086	-.169	.310	.453
V10	I should be upset if I make a mistake	.038	-.053	.246	.433
V21	People will probably think less of me if I make a mistake	.126	-.108	.212	.393
V34	The fewer mistakes I make, the more people will like me	.155	-.087	.138	.388
V32	I tend to get behind in my work because I repeat things over and over	.040	.025	-.091	.374

Note. PEC = Parental Expectations & Criticism; O = Organization; PS = Personal Standards;

CMD = Concern over Mistakes & Doubts.

Table 2

Confirmatory Factor Analysis: Factor Loadings (LX) and Measurement Errors (TD)

(Completely Standardized Solution)

	#	LX	TD
<i>Parental Expectations and Criticism (PEC)</i>	V1	.63	.61
	V3	.50	.75
	V5	.45	.80
	V11	.69	.52
	V15	.72	.49
	V20	.76	.43
	V22	.59	.65
	V26	.61	.63
	V35	.65	.58
<i>Concern over Mistakes and Doubts (CMD)</i>	V9	.68	.54
	V10	.55	.70
	V13	.63	.60
	V14	.65	.57
	V17	.42	.83
	V21	.57	.68
	V23	.59	.66
	V25	.64	.59
	V28	.46	.79
	V32	.32	.90
	V33	.45	.80
V34	.55	.70	
<i>Personal Standards (PS)</i>	V4	.42	.83
	V6	.51	.75
	V12	.78	.40
	V19	.67	.55
	V24	.56	.69
	V30	.65	.57
<i>Organization (O)</i>	V2	.77	.41
	V7	.78	.40
	V8	.66	.56
	V27	.63	.61
	V29	.74	.45
	V31	.78	.40

Note. Error covariance of V22 and V35 = .29

Table 3

Correlations Among Latent Constructs

Factor	PEC	CMD	PS	O
PEC	-			
CMD	.60**	-		
PS	.29**	.40**	-	
O	-.08	-.04	.33**	-

Note. PEC = Parental Expectations & Criticism; O = Organization; PS = Personal Standards; CMD = Concern over Mistakes & Doubts

** $p < .01$

First-order ‘positive’ PS and O factors were specified as equally contributing indicators for a latent ‘positive perfectionism’ factor, and first-order PEC and CMD factors specified as equally contributing indicators for a latent ‘negative perfectionism’ factor. Intercorrelations were freely estimated and robust maximum likelihood was again used.

The nested CFA which assessed the validity of higher-order ‘healthy’ and ‘unhealthy’ perfectionism factors showed marginal model fit and converged in 34 iterations (normal theory weighted least squares chi-square = 1402.49 df=491, RMSEA=.07, NFI=.89, NNFI=.93, GFI=.83, AGFI=.81). Cronbach alpha measures of internal consistency were $\alpha=.45$ for the healthy and $\alpha=.66$ for the unhealthy higher-order factor. Table 4 shows first-order factor

loadings and measurement errors, and higher-order factor loadings and uniquenesses from the nested CFA. While these fit indices aid in the evaluation in model fits, there is ultimately a degree of subjectivity and professional judgment in the selection of ‘best’ models. Inspection of interrelations among ‘healthy’ PS and O components (.33) and ‘unhealthy’ CMD and PEC components (.60, see Table 3), shows these were no stronger often than across-construct correlations, and for the healthy perfectionism factor the correlation was not strong in any case. This was also the case in the Stumpf and Parker (2000) study, despite their conclusion favoring two higher-order positive and negative factors.

In evaluating hierarchical CFA models, it has been argued by Marsh and colleagues that weak correlations among first-order factors imply a weak hierarchy (Marsh, 1987; Marsh & Hocevar, 1985) since most of the reliable variance in the first-order factors is unexplained by the higher-order factors. This is an important consideration in deciding whether to summarize data using higher-order constructs, or to rely on the greater number of first-order factors. As shown in Table 3, PS correlated most strongly with CMD, one of the ‘negative’ perfectionism factors (.40), and correlated similarly with PEC, the other ‘negative’ factor (.29) and O, a ‘positive’ factor (.33). Based on the weak correlations within proposed higher-order factors relative to across-construct correlations, as well as the marginal model fit, the presence of two higher-order healthy (PS and O) and unhealthy (CMD and PEC) factors was rejected.

Table 4

Nested CFA: First-Order Factor Loadings (LY) and Measurement Errors (TE), and Higher-Order Factor Loadings (GA) and Uniquenesses (PSI) (Completely Standardized Solution)

Higher-Order Factor	Scale/item	LY	TE	GA	PSI
Negative perfectionism	<i>Parental Expectations and Criticism</i>			.74	.46
	V1	.65	.58		
	V3	.50	.75		
	V5	.44	.80		
	V11	.70	.51		
	V15	.72	.49		
	V20	.77	.41		
	V22	.59	.65		
	V26	.61	.63		
	V35	.65	.59		
	<i>Concern over Mistakes and Doubts</i>			.78	.39
	V9	.64	.59		
	V10	.52	.73		
	V13	.61	.63		
	V14	.63	.60		
	V17	.40	.84		
	V21	.54	.71		
	V23	.57	.68		
	V25	.62	.62		
	V28	.44	.80		
	V32	.31	.91		
	V33	.43	.82		
	V34	.52	.73		
Positive perfectionism	<i>Personal Standards</i>			.95	.10
	V4	.31	.91		
	V6	.50	.75		
	V12	.79	.38		
	V19	.68	.54		
	V24	.56	.69		
	V30	.65	.58		
	<i>Organization</i>			.72	.48
	V2	.86	.26		
	V7	.86	.27		
	V8	.77	.41		
	V27	.74	.46		
	V29	.84	.30		
	V31	.86	.27		

Note. Error covariance between V22 and V35 = .30

Perfectionist Typology

In order to examine whether individuals could be classified into healthy (P+), unhealthy (P-), and non-perfectionist (Pn) groups, cluster analysis was employed. This is a multivariate data analytic technique that is useful for identifying homogenous subtypes within a complex data set (Borgen & Barnett, 1987). Individuals' responses for the four FMPS subtest scores were analyzed using hierarchical cluster analysis, employing Ward's method, designed to optimize the minimum variance within clusters (Ward, 1963). Based on prior research (Kornblum, 2001; Parker, 1997; Parker et al., 2001; Rice & Dellwo, 2002; Rice & Lapsley, 2001; Rice & Mirzadeh, 2000; Slaney et al., 2002), visual inspection of the dendrogram, and inspection of relative change in the fusion coefficient with increasing number of clusters (see Figure 2), three clusters were identified. Mean scores for the three clusters on the four first-order perfectionism factors are presented in Figure 3.

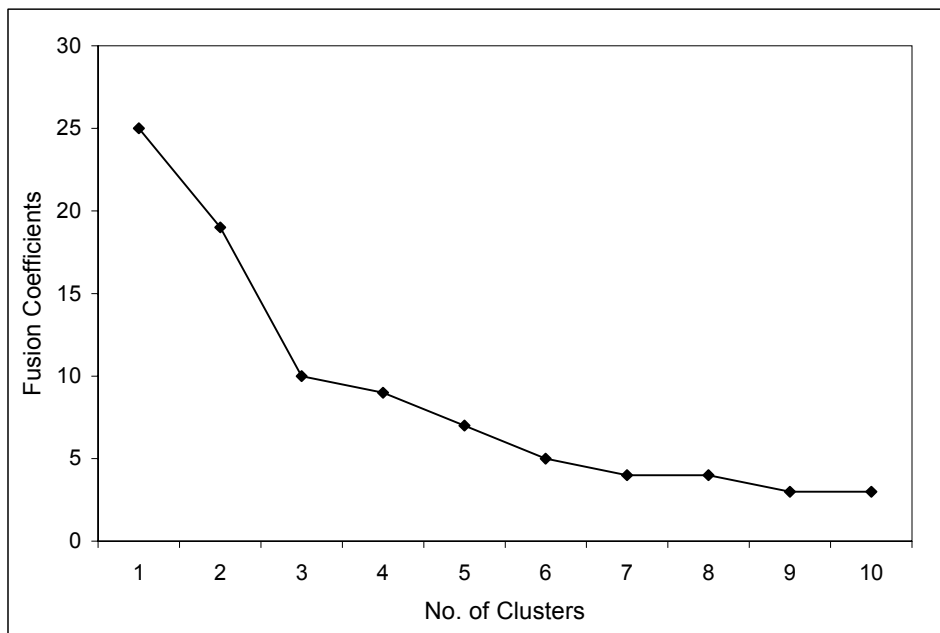


Figure 2. Fusion coefficients plotted by number of clusters.

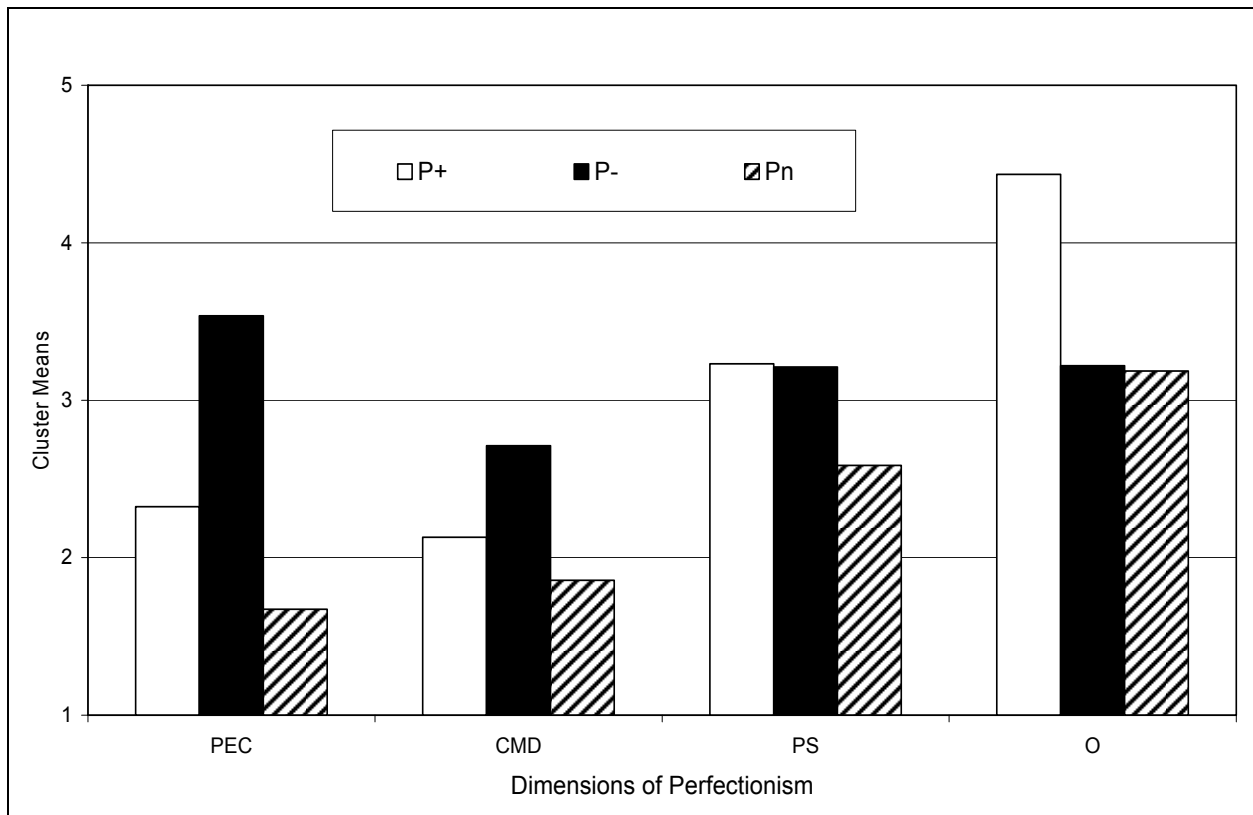


Figure 3. Mean perfectionism scores for healthy, unhealthy, and non-perfectionist clusters.

Note. P+ = healthy type, P- = unhealthy type, Pn = non-perfectionist

PEC = Parental Expectations & Criticism, CMD = Concern over Mistakes & Doubts,

PS = Personal Standards, O = Organization

As shown in Figure 3 cluster 1 students (n=96) were characterized on the FMPS by having the highest scores on *Parental Expectations and Criticism*, and *Concern over Mistakes and Doubts*. Since both these factors were associated with negative forms of perfectionism, this cluster was termed *unhealthy* perfectionists (P-). Cluster 2 students (n=106) exhibited the lowest scores of the three clusters, and this cluster was labeled *non-perfectionists* (Pn). Cluster 3 students (n=207) demonstrated low scores on the two negative factors (*Parental Expectations and Criticism*,

Concern over Mistakes and Doubts), high scores on *Personal Standards*, and the highest scores on *Organization*. Cluster 3 was therefore labeled *healthy* perfectionists.

To validate the three-cluster solution, MANOVA was performed on the dependent set of perfectionism subscale scores (*Parental Expectations and Criticism, Organization, Personal Standards, Concern over Mistakes and Doubts*), with cluster membership as the grouping variable, and Tukey *a* post hoc tests for paired comparisons using Bonferroni adjustment for experimentwise $p < .05$. There was a statistically significant multivariate effect of cluster membership on perfectionism dimensions ($F(8,806)=110.22, p < .001$) by the Pillai's Trace Criterion which is the most robust in samples with unequal n 's (Tabachnick & Fidell, 1996).

Univariate tests showed significant cluster effects on each of the four perfectionism factors (PEC: $F(2,406)=264.96, p < .001$, CMD: $F(2,406)=49.64, p < .001$, O: $F(2,406)=180.25, p < .001$, PS: $F(2,406)=25.10, p < .001$). For PEC and CMD, the P- cluster scored significantly higher than P+, and P+ scored significantly higher than Pn (PEC: P- $M=3.54, SD=.66$, P+ $M=2.32, SD=.62$, Pn $M=1.67, SD=.40$; CMD: P- $M=2.71, SD=.74$, P+ $M=2.13, SD=.62$, Pn $M=1.86, SD=.51$). For PS, P- and P+ ratings were similar, and each scored significantly higher than the Pn cluster (P- $M=3.21, SD=.84$, P+ $M=3.23, SD=.74$, Pn $M=2.59, SD=.88$), suggesting high personal standards may be a characteristic of *both* types of perfectionists. For O, the P+ cluster had significantly and substantially higher scores than both the P- and Pn clusters, whose ratings were similar to each other (P+ $M=4.43, SD=.37$, P- $M=3.22, SD=.97$, Pn $M=3.19, SD=.74$) (indicated by Tukey *a* post hoc tests, see Figure 3), which may suggest *Organization* is the positive characteristic which distinguishes healthy from unhealthy perfectionists, along with both negative PEC and CMD factors. The similarity of P+ and P- scores on *Personal Standards*

supports the notion that high PS is a dominant characteristic of perfectionism and common to both healthy and unhealthy perfectionists.

Summary

The findings of this study support previous assertions that the FMPS is more stable with four, not six, underlying dimensions. The loading pattern of the present analysis is in concurrence with Stöber (1998), Stumpf and Parker (2000), Hawkins et al. (2000), and Kornblum (2001), in which the CM and D subscales combined to form a new subscale CMD (*Concern over Mistakes and Doubts*), and the PE and PC subscales together formed a second new subscale PEC (*Parental Expectations and Criticism*).

Higher-order healthy and unhealthy perfectionism factors were not found to provide valid summaries for these four first-order factors. The higher-order CFA analysis demonstrated marginal fit, weak within-construct correlations, and sizeable across-construct correlations. Higher-order positive and negative perfectionism factors were therefore not supported in our study.

Results of the cluster analysis indicated that scores on the FMPS could be used to distinguish two types of perfectionist and a third, non-perfectionist type of student in this sample of Australian girls. The first type was those for whom perfectionism may provide a healthy stimulus (P+). The second type were characterized by unhealthy Concern over mistakes and doubts and high levels of parental expectations and criticism (P-). The third group of students were those for whom perfectionism may be quite irrelevant (Pn). The clarity of the present four factor solution, together with support for three cluster types of perfectionist students provides a useful cross cultural comparison with existing examinations of the FMPS (Parker, 1997; Parker

et al., 2001; Parker & Stumpf, 1995; Purdon et al., 1999; Rice & Dellwo, 2002; Rice & Lapsley, 2001; Rice & Mirzadeh, 2000; Stöber, 1998).

Discussion

The Multidimensional Perfectionism Construct

The aim of this study was to investigate the psychometric properties of the FMPS as a measurement of perfectionism in Australian female secondary school students, and to determine whether there was an empirically identifiable typology for perfectionist students. A combination of exploratory and confirmatory factor analysis established the presence of four underlying dimensions of perfectionism. This result is consistent with the findings of Stöber (1998) who suggested that the Frost Multidimensional Perfectionism Scale was 'more perfect' with four dimensions than the original six as theorized by Frost et al. (1990).

It has been argued that previous studies of perfectionism have emphasized negative effects and that researchers interested in its positive aspects should continue to include the Organization subscale in their analyses (Stöber, 1998; Terry-Short et al., 1995). This subscale was originally dropped by Frost et al. (1990) because of its weak correlation with the other subscales. In our study there was a significant relationship between *Organization* (O) and *Personal Standards* (PS), (0.33). A number of researchers have included the FMPS subscales of O and PS into measures of healthy perfectionism (Frost, Heimberg, Holt, Mattia, & Neubauer, 1993; Parker & Stumpf, 1995; Rice, Ashby, & Slaney, 1998), whilst others include *Personal Standards* only (Dunkley, Blankstein, Halsall, & Williams, 2000; Lynd-Stevenson & Hearne, 1999). The results of our study support the retention of the *Organization* subscale, for a number

of empirically and theoretically driven reasons. Most importantly, this was the positive factor which discriminated between healthy and unhealthy perfectionists. Anecdotal claims that perfectionists emphasize precision, order and organization (Frost et al., 1990; Hollender, 1965; Kerr, 1991), would therefore appear to relate to characteristics of healthy perfectionists. Indirect support for this hypothesis comes from another Australian study, involving a sample of university students, which found that high organizational perfectionism was associated with low levels of distress (Lynd-Stevenson & Hearne, 1999). This would be consistent with our interpretation that holding a high level of organization is a key variable in distinguishing healthy perfectionists from their unhealthy counterparts. In addition, a prime factor in developing the FMPS was the incorporation of the full range of dimensions most commonly cited in the literature when referring to perfectionism. Because emphasis on order and orderliness has often been associated with perfectionism, retention of the *Organization* dimension acknowledges both the positive and negative qualities of perfectionism (Lynd-Stevenson & Hearne, 1999).

Our nested confirmatory factor analysis assessed whether there was any support for extant theories about the duality of the perfectionism construct in being either a positive force in the drive for achievement, or a debilitating precursor to fear of failure and underachievement. Our findings did not support a dichotomy between healthy and unhealthy higher-order perfectionism factors, with PS and O comprising the healthy and PEC and CMD the unhealthy higher-order factors. This was due mainly to a low correlation between the 'healthy' dimensions of PS and O, and the substantially higher across-construct correlations between PS and CMD. Correlations between PS and PEC were similar to the within-construct correlation between PS and O. When substantial reliable variance in first-order factors cannot be explained by higher-order factors, the practicality of the parsimony they offer is outweighed by more substantive

considerations. Higher-order factors in such cases do not provide valid descriptions of information provided in the first-order factors. Within-construct correlations in Stumpf and Parker's (2000) study were not particularly strong either (0.28 for healthy and 0.42 for unhealthy perfectionism), although there were no strong across-construct correlations in their study. It will be important for further studies in diverse student samples to continue to explore the validity of a healthy versus unhealthy dichotomy for the multiple dimensions of perfectionism measured by the FMPS.

Perfectionist Typology

Our results confirmed our expectation that high personal standards would be common to students in both the healthy (P+) and unhealthy (P-) perfectionist groups both of which were higher than the non-perfectionist (Pn) group. The P- group was characterized by the highest scores on negative evaluative Concern (as represented in the PEC and CMD subscales), and the P+ group by the higher scores on Organization. Our data indicated that the differences between healthy and unhealthy perfectionists were attributable to differing patterns of scores across four dimensions of the FMPS measurement of perfectionism. High scores on any combination of the four dimensions of the FMPS could then be used as the precursor to the development of a perfectionist profile, based on similarly high scores on any combination of positive O or negative CMD and PEC perfectionism factors.

Perfectionist typologies have also been identified in a number of studies across a range of samples. Parker and his colleagues found empirical support for two clusters of perfectionists and one non-perfectionist cluster in a nationally gathered sample of 820 academically talented sixth graders at the Center for Talented Youth of Johns Hopkins University (Parker, 1997). Similar

results were found in a number of North American studies using college samples (Rice & Dellwo, 2002; Rice & Lapsley, 2001; Rice & Mirzadeh, 2000; Slaney et al., 2002), in a study of mathematically gifted and typical Czech students (Parker et al., 2001), in a study of Australian secondary school adolescents (Hawkins et al., 2000), and in Kornblum's (2001) study of Australian gifted school students. Taken collectively, the findings of these studies support the existence of a typology of healthy, unhealthy and non-perfectionist students across diverse samples (Cox, Enns, & Clara, 2002), although the actual structure of the perfectionist clusters is somewhat varied. The slight differences may have occurred as a result of the number of dimensions of perfectionism being analyzed in the clustering procedure. The Parker and Rice groups incorporated the six original subscales of the FMPS, while Hawkins et al. (2000), Kornblum (2001), and the present authors examined four reformulated dimensions of the measure of perfectionism in line with Stöber's (1998) four factor solution. The second variation to the cluster structure across the cluster analytic studies supported our empirical finding that holding high personal standards was common to both healthy and unhealthy perfectionists (e.g., Kornblum, 2001; Rice and Lapsley, 2001). An additional empirical confirmation of our interpretation that healthy perfectionists are further characterized by their highest scores on the *Organization* subscale was evidenced in the results of all of the cluster analytic studies of the FMPS that we have reviewed (Hawkins et al., 2000; Kornblum, 2001; Parker, 1997; Parker et al., 2001; Rice & Dellwo, 2002; Rice & Lapsley, 2001; Rice & Mirzadeh, 2000; Slaney et al., 2002).

Future Directions and Recommendations

The present study was conducted with female students only, which poses a limitation to the generalizability of our findings. Although no significant gender differences have been

reported in previous studies using the FMPS (Ablard & Parker, 1997; Adkins & Parker, 1996; Parker & Adkins, 1995; Rice & Lapsley, 2001; Rice & Mirzadeh, 2000; Slaney et al., 2002), with significant, albeit small effect sizes for gender differences reported by Parker et al. (2001), it is important that future research extend our findings using a sample which includes male and female Australian secondary students. Our findings support the use of the reformulated FMPS with four factors: *Personal Standards (PS)*, *Organization (O)*, *Parental Expectations and Criticism (PEC)*, and *Concern over Mistakes and Doubts (CMD)*, in our sample of Australian secondary school girls which may be used to identify healthy, unhealthy and non-perfectionist student types. Our findings do *not* support a simple dichotomy between healthy and unhealthy perfectionism factors defined in terms of PS/O and CMD/PEC respectively. Additional research is needed to further explore the validity of such higher-order factors as proposed by Stumpf and Parker (2000).

We concur with Stumpf and Parker (2000) that a fruitful direction for future research would be to focus on correlates for each of the multiple dimensions of perfectionism. Given the multidimensionality of the perfectionism construct it would appear not to be useful or informative to base investigations of correlates, antecedents or consequences on a single global perfectionism score. Equally, we believe investigations using higher-order summary 'healthy' and 'unhealthy' perfectionism scores should proceed with caution, particularly given our findings and those of Stumpf and Parker (2000) which demonstrate different correlates for first-order component factors of their proposed higher-order constructs.

Our study provides empirical evidence to support a typology for healthy, unhealthy and non-perfectionist students, who display different profiles across the four first-order dimensions of perfectionism which can be reliably measured by the FMPS. There is sufficient evidence from

the cluster analytic studies that have been reported in the literature that perfectionism is a variable that can be reliably measured, yielding a typology of healthy, unhealthy and non-perfectionist students.

In the context of schooling, which is of particular interest to the present authors, studies focusing on the investigation of cognitive and motivational consequences for learning and performance of healthy and unhealthy perfectionists, and of non-perfectionists, will be of specific concern and importance to those engaged in the teaching and learning process. From a school counseling perspective, it would seem imperative that unhealthy perfectionist types be supported in overcoming any psychological distress associated with their perfectionism in order to maintain healthy levels of emotional well-being and achieve successful learning outcomes.

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