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The Frost Multidimensional Perfectionism Scale Revisited: More Perfect with Four (Instead of Six) Dimensions

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Summary

The Frost Multidimensional Perfectionism Scale (FMPS; Frost, Marten, Lahart, & Rosenblate, 1990, Cognitive Therapy and Research, 14, 449-568) provides six subscales for a multidimensional assessment of perfectionism: Concern over Mistakes (CM), Personal Standards (PS), Parental Expectations (PE), Parental Criticism (PC), Doubts about actions (D), and Organization (O). Despite its increasing popularity in personality and clinical research, the FMPS has also drawn some criticism for its factorial instability across samples. The present article argues that this instability may be due to an overextraction of components. Whereas all previous analyses presented six-factor solutions for the FMPS items, a reanalysis with Horn's parallel analysis suggested only four or five underlying factors. To investigate the nature of these factors, item responses from N = 243 participants were subjected to principal component analysis. Again, parallel analysis retained only four components. Varimax rotation replicated PS and O as separate factors, whereas combining CM with D as well as PE with PC. Consequently, the present article suggests a reduction to four (instead of six) FMPS subscales. Differential correlations with anxiety, depression, parental representations, and action tendencies underscore the advantage of this solution.

Keywords

perfectionism, factorial validity, anxiety, depression, parent child relations, procrastination

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The study of perfectionism has a long history both in clinical research and personality psychology (see Hewitt & Flett, 1991). Whereas early conceptualizations suggested perfectionism to be a unidimensional concept (Burns, 1980), recent views have alternatively stressed that perfectionism is multidimensional in nature (Frost, Marten, Lahart, & Rosenblate, 1990; Hewitt & Flett, 1991; Terry-Short, Owens, Slade, & Dewey, 1995). In this line of research, the multidimensional conception by Frost et al. (1990) has rapidly gained acceptance by researchers interested in perfectionism and its correlates.

Setting excessively high standards is the most prominent feature of perfectionism (Pacht, 1984). In addition, Frost et al. (1990) emphasized that these high standards are accompanied by tendencies for overly critical evaluations of one's own behavior, expressed in overconcern for mistakes and uncertainty regarding actions and beliefs. Moreover, Frost and co-authors have pointed out that perfectionists place considerable value on their parents' expectations and evaluations. Finally, perfectionists have been described to overemphasize order, organization, and neatness. To assess these various dimensions of perfectionism, Frost et al. (1990) designed a multidimensional scale, the Frost Multidimensional Perfectionism Scale (FMPS).* In line with their theoretical formulation, the FMPS has the following six subscales:

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*The scale of Frost et al. (1990) and the one of Hewitt and Flett (1991) have both been referred to as the "Multidimensional Perfectionism Scale" (MPS). To avoid possible confusion between these two scales, the present article follows the suggestion by Flett, Sawatzky, and Hewitt

Concern over Mistakes (CM), Personal Standards (PS), Parental Expectations (PE), Parental Criticism (PC), Doubts about actions (D), and Organization (O). Whereas the first five scales represent the core dimensions of the FMPS, Organization was found to be only loosely related to the other scales. Therefore, Frost et al. recommended not to include O when calculating the total score.

The FMPS was quickly adopted by researchers in personality and clinical psychology. Scores on the FMPS have been related to a variety of problems such as competition anxiety in athletes (Frost & Henderson, 1991), evaluation anxiety in college students (Frost & Marten, 1990), insomnia (Lundh, Broman, Hetta, & Saboonchi, 1994), social phobia (Juster, Heimberg, Frost, Holt, Mattia, & Faccenda, 1996), obsessive-compulsive symptoms (Rhéaume, Freeston, Dugas, Letarte, & Ladouceur, 1995), anorexia nervosa (Bastiani, Rao, Weltzin, & Kaye, 1995) and suicidal preoccupation (Adkins & Parker, 1996). In all these studies, problematic outcomes were most closely related to the FMPS subscales assessing evaluation concerns (CM, PE, PC, and D). In contrast, the other two subscales (PS and O) have shown relations with more desirable outcomes such as success orientation (Frost & Henderson, 1991), achievement motivation (Adkins & Parker, 1996), and goal commitment (Flett, Sawatzky, & Hewitt, 1995).

With the increasing popularity of this measure, a close inspection of the psychometric properties of the FMPS is warranted. Because the FMPS is multidimensional, its factorial structure is of paramount importance. Previous investigations of the factor structure, however, have arrived at divergent solutions in which several items did not load on their respective

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(1995) in referring to Frost et al.'s scale as the "Frost Multidimensional Perfectionism Scale" (FMPS).

factor. Already in the scale's construction, Frost et al. (1990, p. 454) noted that the factor analysis with a second sample of participants replicated the initial six-factor solution, but several of the 36 items of their preliminary version showed higher loadings on a different factor than in the solution for the first sample. After replacing two items and dropping another item to attain the final 35-item version, several items from the PE scale were still loading on the PC factor. Similar problems were reported by Rhéaume et al. (1995) as the six-factor solutions of two independent data sets produced quite different loading patterns: When analyzing pilot data, PE and PC items loaded on one single factor, whereas Organization items loaded on two factors (p. 790, Footnote). In their main analysis, PE and PC produced separate factors, but all PC items showed salient loadings (absolute values ≥ .30) on a second factor. Moreover, some items were clearly misplaced (p. 790, Table 4). Substantial secondary loadings were also found by W. D. Parker and Adkins (1995). When rotating their six factors to a Procrustes solution (Schönemann, 1966), all but one FMPS item showed a salient loading on the targeted factor. However, 32 items displayed salient loadings on a second factor; and for 5 items, these loadings were higher than the target-factor loadings (W. D. Parker & Adkins, 1995, Table 5). Thus, a salient empirical question has been raised in terms of where the responsibility for these inconsistent findings lie.

In exploratory factor analysis, the question of how many components to retain is crucial for the final factor solution (Gorsuch, 1983, Chapter 8). To find the "correct" number of components, Horn's (1965) parallel analysis is a highly recommended strategy. In two comprehensive studies empirically comparing five different guidelines for determining the number of components to retain (Hubbard & Allen, 1987; Zwick & Velicer, 1986), parallel analysis unequivocally produced the best results. Zwick and Velicer (1986) used Monte Carlo simulations to compare five popular "stopping rules": Kaiser's eigenvalue greater than one rule, Bartlett's chi-square test, Cattell's scree test, Velicer's minimum average partial (MAP), and Horn's parallel analysis (PA). The Kaiser criterion performed worst of all, consistently overestimating the number of components. Bartlett's test produced more variable results, but demonstrated overall low reliability. Cattell's scree test (i.e., subjective visual inspection of eigenvalues) demonstrated low variability and moderate overall reliability, however, only when the mean of two raters was used. Moreover, the scree test showed a marked bias to overestimate the number of components. Only MAP technique and PA produced satisfactory results, with PA being somewhat more accurate across different levels of factorial complexity. On average, PA found the criterion number of factors in 92% of cases and was within ± 1 of the criterion in 98% of cases. When it was incorrect, however, PA also had a slight tendency to overextract (in 66% of incorrect cases). PA, however, does not only work in simulated data with artificially controlled degrees of "noise." Also in a comparative study with real data sets, "Horn's test acquitted itself with distinction, and warrants greater attention from applied researchers" (Hubbard & Allen, 1987, p. 173).

The principle of PA is quite simple. PA requires that eigenvalues extracted from an empirical correlation matrix be compared to criterion eigenvalues that have been calculated from a large sample of random correlation matrices of the same size (same number of variables and participants). Only components with eigenvalues larger than the corresponding criterion eigenvalue should be retained (Horn, 1965). In the meantime, generation of random matrices has become obsolete, as criterion values can be easily obtained by use of computer programs, interpolation tables, or regression equations, with all methods producing about equally accurate results (Cota, Longman, Holden, & Fekken, 1993). For the present analysis, the regression equation provided by Lautenschlager, Lance, and Flaherty (1989) was used to compute mean criterion values. For this, only sample size N and number of variables j is needed.*

A further advantage of PA is that it readily lends itself to the reanalysis of published data--even when publications do not provide eigenvalues, but only the percentage of variance explained by each factor. Because the variance explained by a factor is a simple function of its eigenvalue (Rummel, 1970, Table 6.3), eigenvalues can be calculated by the formula "eigenvalue = percentage of variance × j ÷ 100" and then be compared to the criterion eigenvalues produced by PA with j variables and the N of the respective study.

A literature research was conducted using the PsycINFO® database, covering January 1984 to March 1997. This resulted in the retrieval of three publications that provided exploratory factor analysis data for the FMPS. For these, the aforementioned reanalysis-procedure was implemented. Table 1 presents the results. For each study, the percentages of variance for the first six factors are given (first row). As the FMPS has j = 35 items, multiplying by 35 and dividing by 100 produced the respective eigenvalues (second row). Calculating PA using the formula of Lautenschlager et al. (1989) for a random matrix with 35 items and the N of the respective studies produced the criterion values (row 3). The results of the reanalysis showed that all previous factor analyses have retained too many components. In

*In the literature on parallel analysis, the number of variables is usually denoted by p (e.g., Cota et al., 1993; Lautenschlager et al., 1989; Zwick & Velicer, 1986). In the present article, however, j is used instead (cf. Gorsuch, 1983) to preserve for p the more common meaning as the error probability in significance tests.

no study, the sixth eigenvalue surpassed the critical value provided by PA. Instead of six, only four or five factors should have been retained.

One may criticize this reanalysis because the percentages of variance are reported only with (maximally) one decimal place, leading to substantial rounding errors when computing eigenvalues. Rounding errors, however, run in both directions. If six was the "correct" number of components, the reanalysis should have found that, in some cases, too few factors were extracted. However, PA indicated that all three analyses extracted too many factors.

Overextraction retains minor factors that are both uninterpretable and unlikely to replicate (Zwick & Velicer, 1986). Extracting fewer components might therefore present a solution to the problem of the FMPS's factorial instability. Whereas the reanalysis has suggested fewer factors for the FMPS, it cannot determine which factors would have emerged if fewer factors had been extracted and rotated. Inspecting the literature on the FMPS, three expectations can be formulated: First, CM and D items might converge under one factor as both subscales consistently show correlations in the same order of magnitude with other measures. Second, PE and PC might converge for the same reason. In addition, previous factor analyses have found PE and PC items to load on the same factor (Frost et al., 1990; W. D. Parker & Adkins, 1995; Rhéaume et al., 1995). Third, PS and O might converge because both relate to more positive aspects of perfectionism and both have been demonstrated to load on one factor when a two-factor solution was forced (Frost, Heimberg, Holt, Mattia, & Neubauer, 1993). The primary aim of the present study was therefore to inspect the factorial structure of the FMPS with two questions in mind: (a) How many reliable factors underlie the FMPS, and (b) which subscales are obtained when extracting and rotating less than six components?

A second objective of the present analysis was to extend previous findings with the FMPS with respect to the differential validity of the subscales. For this, three groups of questionnaires were examined: (1) Scales measuring anxiety and depression because previous research has indicated a strong relation to the evaluation scales of the FMPS, particularly to CM and D; (2) scales measuring parental presentations to provide additional validity data for the two parental representation scales of the FMPS (cf. Frost, Lahart, & Rosenblate, 1991); and (3) scales measuring action tendencies to investigate positive strivings as expressed in the PS and O scale.

Method

Participants

For the present analysis, data from two studies (Stöber & Joormann, 1997; Scholderer, 1996) in which the FMPS was administered were combined, forming a total sample of N = 243 participants (161 women) with an average age of 26.3 years (SD = 5.7). All participants were students of the Free University of Berlin, Germany.

Measures

Sample 1. In the one study (Stöber & Joormann, 1997), participants received a translation of the Frost Multidimensional Perfectionism Scale (FMPS) with a five-point response scale ranging from "strongly disagree" to "strongly agree" (Frost et al., 1990). As measures of anxiety and depression, participants filled out the 20-item trait scale of the State-Trait Anxiety Inventory (STAI; Spielberger, Gorsuch, & Lushene, 1970; German version by Laux, Glanzmann, Schaffner, & Spielberger, 1981). In addition to the STAI that is a rather broad measure of negative affectivity (Watson & Clark, 1984), two worry questionnaires were included because worry can be expected to be closely related to concerns about mistakes and doubts about actions (e.g., Tallis, Eysenck, & Mathews, 1991). These were the Worry Domains Questionnaire (WDQ; Tallis, Davey, & Bond, 1994; German version by Stöber, 1995), a 25-item measure of nonpathological worry, and the Penn State Worry Questionnaire (PSWQ; Meyer, Miller, Metzger, & Borkovec, 1990; German version by Stöber, 1995), a 16-item measure of pathological worry as experienced by patients diagnosed with generalized anxiety disorder (cf. American Psychiatric Association, 1994, pp. 432-436). Finally, to assess depressive symptoms, the 13-item short form of the Beck Depression Inventory (BDI; Beck, Ward, Mendelson, Mock, & Erbaugh, 1961; German version by Kammer, 1983) was included.

As a measure of parental representations, participants received a translation of the Parental Bonding Instrument (PBI; G. Parker, Tupling, & Brown, 1979). In the PBI, participants rate their parents' behavior for the time when they were children. The PBI has two orthogonal bipolar scales: Care versus indifference/rejection (12 items) and Overprotection versus allowance of autonomy/independence (13 items). As mother and father are rated separately, the PBI arrives at four scores: PBI-C-M (maternal care), PBI-C-P (paternal care), PBI-OP-M (maternal overprotection), and PBI-OP-P (paternal overprotection). Factor analysis of the PBI translation arrived at two-factor solutions both for mother ratings and for father ratings, with all items clearly loading on their respective factor (C or OP). Reliability of the four scales was between .89 and .91 (Cronbach's alpha). All psychometric properties of the translation were well in line with the original (G. Parker, 1989).

As a measure related to action tendencies, a translation of the Tuckman Procrastination Scale (TPS; Tuckman, 1991) was included. The TPS is a 16-item measure of the tendency to overly delay starting and finishing tasks and duties. With factor analysis arriving at a clear one-factor solution and Cronbach's alpha at .91, the psychometric properties of the translation were well in line with the numbers provided by Tuckman (1991).

Sample 2. Participants of the other study (Scholderer, 1996) also received the translation of the FMPS. As a measure of anxiety, the revised version of the Test Anxiety Inventory (TAI-G; Hodapp, 1991) was included, a 30-item measure of the tendency to experience emotional arousal, worry, interference, and lack of confidence when confronted with test situations.

As measures of action tendencies, two subscales of the Action Control Scale (ACS) by Kuhl (1994) were included: Preoccupation (ASC-P), a 12-item measure of rumination about past failures in goal attainment, and Hesitation (ASC-H), a 12-item measure of decision-related state orientation as expressed in the inability to terminate a decision process. Furthermore, the two 8-item scales of the Questionnaire on Action Styles (QAS) by Frese, Stewart, and Hannover (1987, Table 1, Study 2) were administered, with Goal Orientation (QAS-GO) measuring the tendency to stay focused on attaining a selected goal and Planfulness (QAS-P) measuring the individual's tendency to carefully plan his or her actions. [German versions of the four scales were provided by the authors.]

Results and Discussion

Factor Analysis and Subscale Reformulation

The correlation matrix of the FMPS item responses was subjected to principal component analysis. The first six components yielded eigenvalues of 8.45, 4.02, 3.34, 2.57, 1.39, and 1.19, respectively. Using the Lautenschlager et al. (1989) formula with N = 243 and j = 35 produced the following PA criterion values for the first six components: 1.77, 1.66, 1.57, 1.50, 1.43, and 1.37. Comparing empirical eigenvalues and criterion eigenvalues left only the first four components to be retained. With this, the present analysis converged with the reanalysis of W. D. Parker and Adkins' (1995) and Rhéaume et al.'s (1995) factor analysis for which PA also suggested four components (Table 1).

After varimax rotation, the following pattern emerged (Table 2): Factor I subsumed all Concern over Mistakes (CM) and Doubts about actions (D) items, with the exception of CM Item 18. Factor II subsumed all items about parental representations, that is Parental Expectations (PE) and Parental Criticism (PC) items. Factor III subsumed all Personal Standards (PS) items, but also showed salient loadings for three CM items and four PE items. Finally, Factor IV subsumed the Organization (O) items. Whereas Factors I, II, and IV were clearly separated, Factor III displayed substantial overlap with Factors I and II. Only the O items formed a factor without any overlap.[*]

Two items displayed problematic properties in the present analysis: Item 16 (PS) and Item 18 (CM). Item 16 ("I am very good at focusing my efforts on attaining a goal") displayed a negative loading (–.39) on the CM/D factor and a negative correlation (r_{it} = –.15) with the FMPS total score. This does not seem to be a singular finding, as W. D. Parker and Adkins' (1995, Table 5) solution also displayed a negative loading (–.25) on the CM factor and Rhéaume et al. (1995, Table 4) report unsatisfactory item-total correlation (r_{it} = .10) for this item. Therefore, the problem might lie in the item content. Whereas all other PS items focus on

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[*]Performing oblimin rotation ($\delta = 0$) yielded a solution with four significant correlations: one moderate correlation of CM/D factor with PE/PC factor (r = .25) and three small correlations of PS factor with CM/D factor (r = .19), with O factor (r = .15), and with PE/PC factor (r = .14). However, the loading pattern was essentially identical to the varimax solution. Therefore, only the latter is presented here.

expecting high performance from oneself, Item 16 makes a statement about the successful attainment of good performance. Because perfectionists never consider themselves as being "very good" at anything (Pacht, 1984), this statement would be rather uncharacteristic of perfectionism. Hence, the low item-total correlation of Item 16 is not surprising.

In comparison, Item 18 ("I hate being less than the best at things") appeared to be misplaced. Whereas displaying a salient loading on the CM/D factor, Item 18 loaded higher on the PS factor (Factor III). This is in line with previous findings, as both W. D. Parker and Adkins' (1995) solution and Rhéaume et al.'s (1995) solution showed about equal factor loadings on the CM and the PS factor for Item 18. Whereas the present analysis suggested a reformulation of the PS subscale by replacing Item 16 with Item 18, the original scale formulations were retained for the consecutive analyses to warrant comparability of results with the literature. Still, future research should carefully observe Items 16 and 18 and eventually consider a respective reformulation.

In sum, results of the present factor analysis supported the assertion that previous studies have extracted too many factors and added to the evidence that FMPS has only four (instead of six) underlying dimensions. Moreover, the loading pattern of the present analysis suggests to aggregate the CM and D subscale on the one hand and the PE and PC subscale on the other hand, forming two new subscales: CMD (Concern over Mistakes and Doubts) and PEC (Parental Expectations and Criticism).

Subscale Correlations

Table 3 displays intercorrelations of the old and new FMPS subscales together with descriptive statistics and Cronbach's alphas. The new "core" subscales (CMD, PEC, and PS) showed significant, but moderate interrelations between r = .31 (PEC with PS) and r = .44

(CMD with PS), as would be expected from scales measuring different facets of one construct, whereas O displayed only one significant correlation (r = .24, with PS). As CMD and PEC showed correlations with their components in the range of .79 to .96, future studies using the reformulation would still be comparable with previous results. Moreover, with Cronbach's alphas of .88 and .89, respectively, CMD and PEC displayed reliabilities well above the .80 value that Carmines and Zeller (1979) recommended as the lower boundary for widely-used scales. Also, O displayed a satisfactory internal consistency, whereas PS did not. The reformulation of the PS subscale suggested above, however, might solve this problem (see Table 3, Footnote a). Analyzing gender differences for all scales revealed only one significant difference (t[241] = 2.37, p < .05): Women displayed higher PE scores (M = 12.11, SD = 5.00) compared to men (M = 10.56, SD = 4.43). For the aggregate PEC, however, the gender difference was not significant (p > .16).

Inspecting the correlations of FMPS scores with other measures (Table 4) shows that (a) all significant relationships of the original scales were also significant for the new subscales (with the one exception of goal orientation with which D showed a significant correlation) and (b) the new subscales did not obscure differential correlations of the original subscales (with the one exception of the PBI scores with which PC shows significantly stronger relations than PE; Zs ≥ 3.60, ps ≤ .001, two-tailed). Moreover, the present study corroborated previous findings with the Frost et al. perfectionism measure: First, the results showed high relationships of overall perfectionism with anxiety, worry, and depression. This was particularly the case for the maladaptive evaluative concerns components of the FMPS (CMD and PEC), whereas the positive strivings component (PS and O) showed only low correlations with these measures (cf. Frost et al., 1993). For test anxiety, only the CMD component of the Frost measure displayed a significant correlation, corroborating earlier formulations that negative reactions to tests relate predominantly to concern over mistakes and doubts (see Frost, Turcotte, Heimberg, Mattia, Holt, & Hope, 1995). Second, the correlations with the Parental Bonding Instrument (PBI) were also in line with previous findings. The PEC scale showed substantial convergent correlation with the PBI scales, particularly in the inverse relationship with ratings of maternal care. Whereas Frost et al. (1991) demonstrated a relation between perceived parental harshness and overall perfectionism, the present findings suggest that a combination of parental indifference/rejection and overprotection, termed "affectionless control" (G. Parker et al., 1979), related to overall perfectionism, with maternal scores being more influential than paternal scores. Third, the present results confirmed previous findings with respect to action tendencies, showing negative effects of the CMD facet (higher procrastination, preoccupation, and hesitation) and positive effects of the PS and O subscales (higher goal orientation and planfulness as well as lower procrastination). However, Tables 3 and 4 demonstrate that the FMPS total score is dominated by the CMD and PEC facets. Emphasizing negative effects, the overall perfectionism score mainly captured negative perfectionism (cf. Terry-Short et al., 1995). Researchers interested in positive perfectionism should therefore continue to include the Organization subscale in their analyses.

Conclusions

With the Frost Multidimensional Perfectionism Scale (FMPS) displaying factorial instability and a pattern of low correlations, Rhéaume et al. (1995, p. 791) questioned the need for this multidimensional measure of perfectionism. However, the factorial instability may be due to the fact that previous factor analyses retained too many components. Instead of six, the FMPS apparently has only four underlying factors. These can be labeled Concerns over

Mistakes and Doubts (CMD), Parental Expectations and Criticism (PEC), Personal Standards (PS), and Organization (O). Moreover, in the present study, the FMPS subscales displayed a pattern of substantial correlations with related variables, thus demonstrating the usefulness of Frost et al.'s multidimensional conception of perfectionism.

In addition to the promise of greater robustness of factor solutions, the conceptualization of the FMPS as a multidimensional scale with only three core scales (CMD, PEC, and PS) and one related scale (O) would provide greater parsimony in the presentation and interpretation of results. Moreover, Frost et al.'s perfectionism theory is not (yet) so differentiated as to provide specific predictions with respect to differential correlations of concern over mistakes as compared to doubts about actions. The same holds for parental expectations versus parental criticism.

While this applies to the majority of studies, there may well be exceptions. In a recent study on perfectionism and obsessive-compulsive disorder (OCD), for example, Frost and Steketee (1997) found Doubts about actions to differentiate patients diagnosed with OCD from patients diagnosed with panic disorder. Concern over Mistakes did not differentiate between these two groups. Furthermore, Parental Criticism was found to differentiate panic disorder patients from controls whereas Parental Expectations did not show any significant between-group differences. These findings, however, were unpredicted and thus warrant further replication. Consequently, their interpretation proves difficult. On the one hand, the results may reflect only peculiarities of the specific sample. On the other hand, they may indicate that the original FMPS subscales do measure important distinctions, at least in clinical samples. Patients may distinguish more clearly between instances of concerns and doubts and between parental expectations and criticism whereas these differentiations seem to play a minor role in nonclinical samples, as is suggested by the number of underlying factors in the present study as well as in the reanalysis of the previous factor analyses.

In conclusion, future research may bring about further theoretical and empirical differentiation. In the meantime, the Frost Multidimensional Perfectionism Scale is likely to be more perfect with four (instead of six) dimensions.

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Table 1

Parallel Analysis for the Number of Components Retained in Previously Published Factor Analyses of the Frost Multidimensional Perfectionism Scale (FMPS)

			Factor					
Study	N	Value	I	II	III	IV	V	VI
Frost et al. (1990, Sample 2)	178	% variance	25.0	15.7	8.6	7.1	4.6	3.5
		Eigenvalue	8.75*	5.50*	3.01*	2.49*	1.61*	1.23
		Criterion value	1.90	1.77	1.66	1.57	1.49	1.42
W. D. Parker & Adkins (1995)	278	% variance	37.8	17.3	5.2	4.9	3.1	3.0
		Eigenvalue	13.23*	6.06*	1.82*	1.72*	1.09	1.05
		Criterion value	1.72	1.62	1.54	1.47	1.41	1.35
Rhéaume et al. (1995)	245	% variance[a]	26	12	9	6	4	3.5
		Eigenvalue	9.10*	4.20*	3.15*	2.10*	1.40	1.23
		Criterion value	1.76	1.65	1.60	1.50	1.43	1.37

Note. Eigenvalues with asterisk (*) surpass the criterion value of parallel analysis (Lautenschlager et al., 1989). According to parallel analysis, only these factors should have been retained.

[a]Rhéaume et al. provided no decimals, except for Factor VI.

Table 2

The Frost Multidimensional Perfectionism Scale (FMPS). Items, Subscales, Item-Total Correlations, and Factor Loadings of the Four-Factor Solution with Varimax Rotation

			Factor			
Item number and wording	Subscale	r_{it}^a	I	II	III	IV
9. If I fail at work/school, I am a failure as a person.	CM	.54	.69			
10. I should be upset if I make a mistake.	CM	.29	.43			
13. If someone does a task at work/school better than I, then I feel like I failed the whole task..	CM	.56	.59		.46	
14. If I fail partly, it is as bad as being a complete failure.	CM	.56	.55		.35	
18. I hate being less than the best at things.	CM	.56	.43		.60	
21. People will probably think less of me if I make a mistake.	CM	.61	.67			
23. If I do not as well as other people, it means I am an inferior human being	CM	.54	.69			
25. If I do not do well all the time, people will not respect me.	CM	.61	.70			
34. The fewer mistakes I make, the more people will like me.	CM	.52	.71			
17. Even when I do something very carefully, I often feel that it is not quite right.	D	.41	.56			
28. I usually have doubts about the simple everyday things I do.	D	.50	.63			
32. I tend to get behind in my work because I repeat things over and over.	D	.38	.62			
33. It takes me a long time to do something "right."	D	.29	.56			
1. My parents set very high standards for me.	PE	.45		.63	.36	
11. My parents wanted me to do the best at everything.	PE	.58		.69	.40	
15. Only outstanding performance is good enough in my family.	PE	.60		.74	.30	
20. My parents have expected excellence from me.	PE	.61		.83	.36	
26. My parents have always had higher expectations for my future than I have.	PE	.34		.68		

(Table 2, <u>continued</u>)

3. As a child, I was punished for doing things less than perfect.	PC	.48		.69		
5. My parents never tried to understand my mistakes.	PC	.35		.52		
22. I never felt like I could meet my parents' expectations.	PC	.53		.81		
35. I never felt like I could meet my parents' standards.	PC	.47		.75		
4. If I do not set the highest standards for myself, I am likely to end up a second-rate person.	PS	.49	.43		.43	
6. It is important to me that I am thoroughly competent in everything I do.	PS	.38			.53	
12. I set higher goals than most people.	PS	.48			.78	
16. I am very good at focusing my efforts on attaining a goal.	PS	–.15	–.39		.38	
19. I have extremely high goals.	PS	.54			.75	
24. Other people seem to accept lower standards than I do.	PS	.42			.66	
30. I expect higher performance in my daily tasks than most people.	PS	.51			.63	
2. Organization is very important to me.	O	–				.67
7. I am a neat person.	O	–				.81
8. I try to be an organized person.	O	–				.82
27. I try to be a neat person.	O	–				.67
29. Neatness is very important to me.	O	–				.83
31. I am an organized person.	O	–				.77
	% variance:		24.1	11.5	9.5	7.3
	Eigenvalue:		8.45	4.02	3.34	2.57

<u>Note.</u> <u>N</u> = 243. CM = Concern over Mistakes, D = Doubts about actions, PE = Parental Expectations, PC = Parental Criticism, PS = Personal Standards, O = Organization. Items taken from Frost, Marten, Lahart, and Rosenblate, 1990, <u>Cognitive Therapy and Research, 14,</u> 449-568. Only factor loadings with absolute values ≥ .30 are displayed.

[a]Corrected item-total correlation (total score does not include Organization).

Table 3

Correlations of the FMPS Scales. Original Formulations and New Aggregates

		Scale								
Scale	Description	CM	D	CMD	PE	PC	PEC	PS	O	P
CM	Concern over Mistakes									.83***
D	Doubts about actions	.58***								.60***
CMD	CM + D	.96***	.79***							.83***
PE	Parental Expectations	.31***	.16*	.29***						.69***
PC	Parental Criticism	.34***	.26***	.34***	.61***					.64***
PEC	PE + PC	.36***	.22***	.35***	.92***	.87***				.74***
PS	Personal Standards	.48***	.23***	.44***	.37***	.16*	.31***			.68***
O	Organization	.11	.00	.08	–.03	.01	–.01	.24***		.11
M		20.35	10.23	30.58	11.59	8.53	20.12	21.25	20.92	71.94
SD		6.98	3.31	9.31	4.86	3.96	7.93	5.25	4.85	17.23
Cronbach's alpha		.87	.73	.88	.88	.81	.89	.78[a]	.86	.90

Note. N = 243. FMPS = Frost Multidimensional Perfectionism Scale; CM = Concern over Mistakes, D = Doubts about actions, CMD = Concern over Mistakes and Doubts (sum of CM and D), PE = Parental Expectations, PC = Parental Criticism, PEC = Parental Expectations and Criticism (sum of PE and PC), PS = Personal Standards, O = Organization; P = overall perfectionism (total score does not include Organization).

*$p < .05$, ***$p < .001$; two-tailed tests.

[a]Cronbach's alpha was .83 when Item 16 was replaced with Item 18.

Table 4

Correlations of the FMPS Subscales with Other Variables

			FMPS scale								
Sample[a]	Scale	Description	CM	D	CMD	PE	PC	PEC	PS	O	P
1 (n = 184)	STAI trait	Trait anxiety	.40***	.53***	.50***	.23**	.26***	.27***	.17*	–.08	.43***
	WDQ	Nonpathological worry	.53***	.58***	.61***	.22**	.25**	.26***	.17*	–.04	.49***
	PSWQ	Pathological worry	.43***	.52***	.51***	.09	.20**	.15*	.16*	.02	.38***
	BDI	Depression	.34***	.35***	.38***	.25***	.28***	.29***	.11	–.08	.37***
	PBI-C-M[b]	Maternal care	–.18*	–.19*	–.20**	–.34***	–.65***	–.52***	–.07	.11	–.38***
	PBI-C-P[c]	Paternal care	–.23**	–.17*	–.23**	–.11	–.44***	–.29***	–.04	–.02	–.27**
	PBI-OP-M[b]	Maternal overprotection	.16*	.19*	.19*	.26***	.47***	.39***	.23**	.08	.35***
	PBI-OP-P[c]	Paternal overprotection	.17*	.15	.18*	.20*	.45***	.35***	.08	.04	.28***
	TPS	Procrastination	.30***	.40***	.37***	.11	.10	.12	–.13	–.36***	.21**
2 (n = 59)	TAI-G	Test anxiety	.29*	.37*	.33*	.01	.07	.05	–.15	.12	.22
	ACS-P	Preoccupation	.44***	.51***	.49***	.28*	.23	.30*	.18	.02	.47***
	ACS-H	Hesitation	.39**	.56***	.46***	.04	.23	.15	–.05	–.12	.33*
	QAS-GO	Goal orientation	–.18	–.27*	–.21	.12	–.14	.00	.36**	.12	–.03
	QAS-P	Planfulness	.28*	.17	.26*	.00	.09	.05	.33*	.29*	.28*

Note. FMPS = Frost Multidimensional Perfectionism Scale (cf. Table 3). Sample 1: STAI trait = State-Trait Anxiety Inventory (trait scale); WDQ = Worry Domains Questionnaire; PSWQ = Penn State Worry Questionnaire; BDI = Beck Depression Inventory; PBI = Parental Bonding Instrument with C = Care and OP = Overprotection and M = maternal and F = paternal scores; TPS = Tuckman Procrastination Scale. Sample 2: TAI-G = Test Anxiety Inventory; ACS = Action Control Scale with ACS-P = Preoccupation and ASC-H = Hesitation (both scores are inverted to be in accord with the scale descriptions); QAS = Questionnaire on Action Styles with QAS-GO = Goal orientation and QAS-P = Planfulness.

*$p < .05$, **$p < .01$, ***$p < .001$; two-tailed tests.

[a]Sample 1 from Stöber and Joormann (1997), Sample 2 from Scholderer (1996). [b]$n = 181$. [c]$n = 160$.