

Title: Confirmatory Analyses of Perfectionism on High School Students in Taipei

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Researchers have addressed the theoretical construction of perfectionism and empirically investigated perfectionism domains, which are inconsistent in the literature to date. Hamachek (1978) conceptualized perfectionism into two categories: normal and neurotic perfectionists. Normal perfectionists, according to Hamachek, set high standards that may be adjusted based on circumstances. Neurotic perfectionists, on the other hand, rigidly hold high standards and never have a sense of satisfaction in their accomplishment. Frost, Marten, Lahart, and Rosenblate (1990) considered Hamachek's theoretical perspective along with other literature on perfectionism to investigate domains of perfectionism. As a result, they developed the Frost Multidimensional Perfectionism Scale (FMPS). The FMPS includes six dimensions: concern over mistakes (CM), personal standards (PS), parental expectations (PE), parental criticism (PC), doubts about actions (D), and organization (O) (Frost et al., 1990, p.455). In addition to the FMPS, Hewitt and Flett (1991) identified three other factors of perfectionism and generated another Multidimensional Perfectionism Scale (HMPS). The three factors of the HMPS are self-oriented perfectionism (SO) (setting and using high standards to evaluate oneself), other-oriented perfectionism (OO) (expecting others to perform perfectly), and socially prescribed perfectionism (SP) (an individual believing others expect him/her to behave perfectly). Applying confirmatory factor analysis to examine dimensions of the FMPS and HMPS, Bieling,

Israeli, Smith, and Antony (2004) suggested a two-factor model of perfectionism: adaptive and maladaptive perfectionism. They combined the FMPS and HMPS to construct the Positive Striving/Personal Standards Perfectionism measure ($PSP = SO + OO + PS + OR$) for assessing adaptive perfectionism, and the Maladaptive Evaluative Concerns Perfectionism measure ($MECP = SP + CM + PC + PE + DA$) for evaluating maladaptive perfectionism.

Research on perfectionism has been primarily related to academic performance and mental health. In academic performance, both adaptive and maladaptive perfectionists tended to set high standards for exams, receive scores lower than their standards, plan to study more after mid-term exams, and continuously hold high standards for their future exams (Bieling, Israeli, Smith, & Antony, 2003). Adaptive perfectionists, compared with their classmates, tended to perform better on exams (Bieling, et al., 2003), have higher GPAs (Brown, Heimberg, Frost, Makris, Juster, & Leung, 1999; Rice & Slaney, 2002), and feel stronger positive affects about exams (Bieling, et al., 2003; Rice & Slaney, 2002). Maladaptive perfectionism, in contrast, was neither significantly associated with exam performance (Bieling, et al., 2003) nor GPA results (Brown, et al., 1999). Higher maladaptive perfectionism was significantly associated with higher frequency of study, greater course difficulty, and higher test anxiety (Brown, et al., 1999). Maladaptive perfectionists themselves also perceived lack of preparation for exams (Bieling, et al., 2003) and experienced negative moods about exams (Brown, et al., 1999; Bieling, et al., 2003). Overall, adaptive and

maladaptive perfectionism share several common characteristics, but at the same time possess their own distinctive characteristics in an individual's academic learning process.

Besides exploring academic behaviors, several studies on perfectionism have investigated the relationship between perfectionism and mental health. Perfectionism is associated with clinical depression (Blatt, 1995), social phobia (Juster, Heimberg, Frost, Holt, Mattia, & Faccenda, 1996), eating disorders (Goldner, Cockell, & Srikameswaran, 2002), and obsessive-compulsive disorder (Frost & Steketee, 1997). An empirically supported causal model constructed by Enn, Cox, and Clara (2002) showed that maladaptive perfectionism increased tendency toward depression. Sumi and Kanda (2002) also reported that neurotic perfectionism was a significant predictor for depression and psychosomatic symptoms. Maladaptive perfectionism was associated with several Axis I disorders and appeared to explain the comorbidity of mental illness (Bieling, Summerfeldt, Israeli, & Antony, 2004).

Thus, studies on perfectionism have been developed in various areas such as anxiety and depression. However, the participants of these studies are primarily college students in Western countries. Rice and Slaney (2002) suggest that culturally diversified and non-college populations need to be recruited in studies of the dimensions of perfectionism. Although some researchers have examined perfectionism in Asia (e.g., Chen, Chong, & Wong, 1999; Sumi, & Kanda, 2002), the number of studies exploring cultural differences on perfectionism is relatively few. Studies on

personality traits and mental health are required to take cultural impact into consideration, since behaviors and emotions are perceived to be based on cultural contexts (Angel, & Williams, 2000). More research on perfectionists in different age groups and cultural backgrounds will explore the generalization of current literature on perfectionism.

The purpose of this study was to investigate the goodness-of-fit of four factor structures of the FMPS in the West to adolescents in Taipei. Four models of factor structures based on items in the FMPS were examined with confirmatory factor analysis. The four models were Frost's six-factor, Stöber's four-factor, Stumpf's four first-order, and Stumpf's two second-order models. Frost's six factors of perfectionism (CM, PS, PE, PC, D, O) were generated from the study of female undergraduates in the United States (Frost, et al., 1990). Stöber (1998) recruited German college students and suggested that the FMPS had four factors instead of six. In Stöber's study, CM was combined with D as one factor (named concerns over mistakes and doubts); similarly, PE combined with PC as one factor (named parental expectations and criticism); PS and O remained two separate factors. Stumpf's four first-order and two second-order models were both derived from FMPS scores of sixth-grade talented students and college students in the United States (Stumpf & Parker, 2000). According to Stumpf and Parker (2000), the four first-order factors were Concerns and Doubts, Organization, Personal Standards, and Parental Pressure; the two second-order factors included healthy and unhealthy perfectionism. These four models of

perfectionism reflect the instability of factors derived from the FMPS among participants in Western countries. The contribution of this study is to evaluate the appropriateness of current Western models of perfectionism on adolescents in Taipei.

Method

Participants

283 high school students ranging from 15 to 18 years old from urban areas in Taipei were recruited.

Instruments

The Multidimensional Perfectionism Scale has 35 items for evaluating 6 dimensions of perfectionism (Frost, Marten, Lahart, & Rosenblate, 1990). The subscales of the MPS are: Concern Over Mistakes (9 items), Personal Standards (7 items), Parental Expectations (5 items), Parental Criticism (4 items), Doubts About Actions (4 items), and Organization (6 items). Using a 5-point Likert-type format, respondents were asked to rate their perfectionism in various situations. The Cronbach α coefficients are .88, .84, .81, .78, .78 and .92, respectively (Frost, Lahart, & Rosenblate, 1991).

The original English-language questionnaires were translated into Chinese and then translated back into English by a panel of bilingual psychologists. The process of back translation ensured the accuracy of Chinese and English versions. The questionnaires were then given to groups of students to confirm the questions' comprehensibility.

Procedure

The sample was recruited from classes at several senior high schools in Taipei. Participation was anonymous, voluntary, and took about 40 minutes. The participants were provided with notices and complete information regarding the purpose, benefits, and possible risks of the study. Participants completed questionnaires in their classrooms. Subjects did not receive incentives for participation.

Results

The four different factor structure models presented previously were compared: Frost's six-factor model (1990), Stöber's four-factor model (1998), Stumpf's four-order model (2000), and Stumpf's two second-order model (2000). The proposed models were analyzed with EQS software (Bentler, 1995). Maximum likelihood (ML) was used to estimate free parameters. A chi-square test was used to examine the level of fitness of proposed models. Previous research indicated that the χ^2 test is sensitive to sample size, and that the proposed models were likely to be rejected when large sample size was applied (Bentler & Bonett, 1980; Fan, Thompson, & Wang, 1999; Fan & Wang, 1998; Fornell, 1983). Therefore, several other criteria were also included, such as the root mean square error of approximation (RMSEA) (Steiger, 1990; Steiger & Lind, 1980), the comparative fit index (CFI) (Bentler, 1990), goodness-of-fit index (GFI; Jöreskog & Sörbom, 1981), and the adjusted goodness-of-fit index (AGFI; Jöreskog & Sörbom,

1981).

The results indicated that none of the previous models provided a very good fit. The fit indices for each model were as follows: Frost: $\chi^2_{(546)} = 1568.026$, CFI= .708, GFI= .739, RMSEA= .081; Stöber: $\chi^2_{(554)} = 1713.284$, CFI= .669, GFI= .718, RMSEA= .081; Stumpf four first-order: $\chi^2_{(458)} = 1464.549$, CFI= .692, GFI= .731, RMSEA= .088; Stumpf two second-order: $\chi^2_{(462)} = 1512.360$, CFI= .678, GFI= .730, RMSEA= .090. Nevertheless, Frost's 6-factor, 35-item model seemed to be superior to others.

Discussion

Factor structures of Frost's MPS were investigated in an adolescent population in Taipei. Four models of factor structure were examined with confirmatory factor analysis. Confirmatory analyses of the four models on perfectionism showed that the dimensions of perfectionism suggested in Western populations may not provide appropriate factor structures for perfectionism in Taipei adolescents. It appears that dimensions of perfectionism differ between Western and Eastern populations. Perfectionism may be seen as a different construct among culturally diversified groups. Further studies of the dimensions of perfectionism in Asian populations are warranted.

In addition to the dimensions of perfectionism, perceptions of behaviors associated with perfectionism may be significantly different in various cultures. For example, adolescents in

Hong Kong may perceive parental criticism as a way in which their parents express their love and care (Chen, et al., 1999), whereas parental criticism in Western countries may be considered a negative parenting style, and may relate to maladaptive perfectionism. Components related to maladaptive perfectionism in Western countries may not be perceived the same way in Asia. Cultural perspectives on behaviors related to perfectionism need to be incorporated with strategies for assisting perfectionists, such as Shore's (2004) strategies: setting up a non-critical environment; informing perfectionists that errors are unavoidable in learning processes; assisting perfectionists in setting reasonable goals and confronting unrealistic beliefs,; clearly stating teachers' expectations; and setting measurable assignments. Educators and counselors may enhance their interventions for perfectionists by becoming familiar with cultural influences on perfectionism.

Many researchers indicate that maladaptive or unhealthy perfectionism is negatively associated with mental health. The components of maladaptive perfectionism in Eastern populations, however, have not been validated. Before deciding if perfectionism is a factor of the comorbidity of mental illness for human beings around the world, it is necessary to clarify the components of maladaptive perfectionism in Asia and conduct research by recruiting Asians with mental illnesses.

The results of this study imply that culture plays a significant role in defining factor

structures of perfectionism. Developing a culturally validated measure of perfectionism is essential for investigating it in relation to academic performance, as well as to mental health. Cross-cultural comparative studies of perfectionism are also valuable for international educators and counselors who must tailor their interventions for perfectionists in culturally diversified settings.

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