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Confirmatory factor analysis of the Hewitt- multi-dimensional perfectionism scale

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Various studies on the conceptual framework of perfectionism construct use Hewitt Multi-dimensional Perfectionism Scale (HMPS), as a basic approach. The measure has a prominent role with respect to the theoretical considerations of perfectionism dimensions. This study aimed to evaluate the psychometric properties of the Turkish version of the scale. 479 undergraduate volunteers participated in this study. In this study, demographic questionnaire, Hewitt Multi-dimensional Perfectionism Scale (HMPS), Padua Inventory (PI_R), Obsessive Beliefs Questionnaire (OBQ-44) were administered. The original three factor structure was tested for the Turkish version of the scale by using confirmatory factor analysis. Convergent validity of the measure was evaluated. Internal consistency and 15- day temporal stability were computed in order to assess reliability of the measure. The confirmatory factor analysis replicated the validity of the three factor structure for the data obtained from Turkish sample. The measure has adequate reliability and validity in Turkish students.

Key words: Perfectionism, validity, factor analysis, compulsive symptoms, obsessive beliefs.

INTRODUCTION

Primarily, perfectionism is generally defined as an adverse feature, having significant role in psychopathology (Adler, 1956; Hollanda, 1965). Afterwards, it has been suggested that perfectionism represents two positive and negative dimensional structures (Terry-Short et al., 1995; Hamachek, 1978). Many psychometric studies have been carried out to evaluate the dimensions of perfectionism. The scales of perfection have been reconsidered, some of which are Perfectionism Scale(6), Burns' Perfectionism Scale (7), Positive and Negative Perfectionism Scale(Terry-Short et al., 1995), Neurotic Perfectionism Scale (Mitzman et al., 1994), and Adaptation-oriented or Adaptation-disturbing Perfectionism Scale (Rice and

Preusser, 2002).

In these studies, two instruments remarkably assisted the researchers in processing the features of the structure, as well as the positive and negative associated psychological results. One of those instruments is Frost Multidimensional Perfectionism Scale (Frost et al., 1990; Kağan et al., 2011) and Multidimensional Perfectionism Scale (HMPS) which is developed by Hewitt and Flett (Hewitt et al., 1991). The most distinctive feature of HMPS than other devices is that perfectionism has been described in an interpersonal context. The three sub-dimensions of the scale, including self-oriented perfectionism, others-oriented perfectionism and socially

prescribed perfectionism contain overvaluation related-to-expectations from other individuals. Frost reported the fact that there are drastically similarities between the structures of measurements of two psychometric devices. In this study, it is revealed that socially prescribed perfectionism is especially related to negative emotions (Frost et al., 1993).

The first translation of HMPS into Turkish was done by Oral (1999). In this first study, factorial structure of the scale was evaluated by using factor analysis, and a factor similar to the original structure with three factors has been obtained. However, it is thought that the new translation is needed because of the academic-demand for the modification of HMPS in terms of some terminology. The sub-meters of Self-oriented, Others-oriented perfectionism, socially prescribed perfectionism have been calculated with internal consistency quotients as 91, 73 and 80, respectively.

Perfectionism is an important psychological construct. However, increased levels of perfectionism are found in anorexia nervosa (Bastiani et al., 1995), bulimia nervosa (Vohs et al., 1999), social phobia, panic disorder (Saboonchi and Lundh, 1999), anxiety (Klibert et al., 2005; Stober, 1998), depression (Rice and Dellwo, 2001), chronic insomnia (Vincent and Walker, 2000), suicidal ideation (Hamilton and Scheitzer, 2000), and obsessive-compulsive disorder (Frost et al., 1990). Currently, the construct of perfectionism is defined and measured in different ways by different researchers. It appears to suffer from both jingle and jangle fallacies (Block, 1995). The Hewitt Multidimensional Perfectionism Scale (HMPS), the measure of perfectionism developed by Hewitt and Flett (1991), is composed of three subscales. Self-oriented perfectionism refers to the tendency to set high standards, strictly evaluate behavior, and to have motivation to attain perfection. There is, of course, some covariation between scores of measures of these two instruments. Self-oriented perfectionism appears similar to the personal standards and organization subscales of the FMPS (Shafran and Mansell, 2001), and has been found to have large correlations with personal standards (.61 to .62). But, it has only small correlations with organizations (.26-.29) (Flett et al., 1995; Frost et al., 1993).

In many studies, HMPS has been applied to evaluate the level of perfectionism and to reveal the relationship between different psychological structures and perfectionism. The fact that psychometric features of the scale are not taken into consideration enough, in this study, psychometric features of HMPS are modified in this sense. Researchers show that perfectionism is related to the fear of making mistakes, and getting criticism has an important role in obsessive compulsive disorder. Cognitive features play role in Obsessive Compulsive Disorder (OCD). A number of researchers define perfectionism as a cognitive distortion that should not be underestimated (Ashby and Bruner, 2005; Freestone et al., 1996; Obsessive-Compulsive Cognitions

Working Group Assessment of Obsessive-Compulsive Disorder, 1990; Obsessive-Compulsive Cognitions Working Group, 2005). Although perfectionism from different approaches has been scrutinized in different manners, we confront this cognitive feature foreboding with the efforts of taking precautions to avoid ambiguity and negative statements in OCD as a leading factor (Frost et al., 2003). In order to evaluate the validity of HMPS together, sub-meters of the instruments were regarded with the indication of obsessive compulsion and beliefs. The reliability, internal consistency and sustainability for 15 days of the device are evaluated by calculations.

METHODS

Research questions

1. Are psychometric features of HMPS aimed to be modified in this sense?
2. Are the psychometric features of multi-dimensional perfectionism scale related to item statistics measured?
3. Is the total-item correlation for self-oriented perfectionism sub-scale high?

Participants

479 undergraduate students studying at Ondokuz Mayıs University (OMU) were involved in this research. 72.86% of the participants were female students (n=349). The participants come from low income class (n=22), middle income class (n=413), and high income class (n=44) families, which are respectively 4.59, 86.22 and 9.19%.

Educational background of the fathers of the participants is distributed as: 0.42%, illiterate (n=2); 2.71%, literate (n=13); 27.97%, graduated from primary school (n=134); 16.91%, graduated from secondary school (n=81); 26.93%, graduated from high school (n=126), and 25.05% fathers who have bachelor or master degree (n=120); educational background of the mothers of the participants are distributed as: 7.93% illiterate (n=38), 5.85% literate (n=28), 49.69% graduated from primary school (n=238), 12.73% graduated from secondary school (n=61), 16.49% graduated from high school (n=79), and 7.31% fathers have bachelor or master degree (n=35). 39.67% of the participants' residents were rural areas.

Instruments

Hewitt Multidimensional Perfectionism Scale (HMPS)

HMPS developed to measure the level of perfectionism and having 45 items for self-evaluation has three sub-meters: Self-oriented perfectionism, others-oriented perfectionism and socially prescribed perfectionism. The consistencies of the device for self-oriented perfectionism, other-oriented perfectionism, and socially prescribed perfectionism are between 86-88, 74-82, and 81-87, respectively (Hewitt et al., 1991).

Padua Inventory Revise (PI-R)

It is a scaling device with a test composed of 41 questions. It is

Table 1. Descriptive statistic of item.

	Individualistic			Extrovertness			Socially Attributed	
	r	λ		R	λ		r	Λ
ITEM 1	.60	.65	ITEM 2	.24	.20	ITEM 5	.18	.09
ITEM 6	.69	.75	ITEM 3	-,03	-,01	ITEM 9	.25	.22
ITEM 8	.50	.52	ITEM 4	.01	-.06	ITEM 11	.38	.57
ITEM 12	.62	.62	ITEM 7	.38	.50	ITEM 13	.45	.45
ITEM 14	.72	.79	ITEM 10	.33	.22	ITEM 18	.38	.62
ITEM 15	.80	.85	ITEM 16	.32	.51	ITEM 21	.20	.06
ITEM 17	.72	.80	ITEM 19	.37	.36	ITEM 25	.20	.21
ITEM 20	.34	.36	ITEM 22	.35	.48	ITEM 30	.12	-,09
ITEM 23	.30	.34	ITEM 24	.35	.27	ITEM 31	.48	.64
ITEM 28	.75	.80	ITEM 26	.43	.71	ITEM 33	.39	.49
ITEM 32	.52	.53	ITEM 27	.45	.64	ITEM 35	.56	.67
ITEM 34	.38	.37	ITEM 29	.42	.58	ITEM 37	.23	.26
ITEM 36	.45	.42	ITEM 38	.23	.21	ITEM 39	.48	.60
ITEM 40	.61	.62	ITEM 43	.24	.24	ITEM 41	.53	.65
ITEM 42	.60	.64	ITEM 45	.23	.15	ITEM 44	.18	-,01

r=total item Correlations; λ=item factor loadings

developed for evaluating the intensity of the indication of Obsessive compulsive disorder (Sanavio, 1988).The scaling device has 5 sub-groups as drives, cleanliness, control, contemplation and certainty. It is declared that Turkish form of the device has high applicability and reliability (Besiroğlu et al., 2005).

Obsessive Beliefs Questionnaire (OBQ-44)

It is a scaling device composed of 44 questions and developed to evaluate cognitive features, which play an important role in revealing the indication of obsessive compulsive (Obsessive-Compulsive Cognitions Working Group, 2005). The device has three sub groups as; expectation of responsibility/danger, perfectionism/certainty, and control of importance/thoughts. It is declared that Turkish form of the device has high applicability and reliability (Besiroğlu et al., 2005).

Statistical analysis

Illustrations concerning descriptive statics have been calculated. Afterwards, total item correlations related to the sub-groups of scaling devices were acquired. The validity of the structure of original factor with three factors on data, acquired from Turkish students, was evaluated by using verification of factor analysis. The sub-factors of scaling device were regarded together with obsessive compulsive and obsessive beliefs whether it is valid. Reliability of the device was evaluated by calculating internal consistency and the correlation between two applications, which were done with fifteen days break.

Process

The translation of the scaling device into Turkish has been done by two full-fledged academic having sufficient knowledge of English.

This ongoing study was announced to students with the help of professors at different faculties of Ondokuz Mayis University. Willing

students participated in the research after class time, and after that the aim of the study and general context were explained. Applications were done after students gave their written permission. Duration of the application lasted for 35-45 min.

RESULTS

In order to evaluate the psychometric features of multi-dimensional perfectionism scale, related item statistics were measured. According to the sub-scale of the instrument total item correlations were gathered in instrument, total-item correlations for self-oriented itself. The total-item correlation for self-oriented perfectionism sub-scale is found to be high.

The correlation for other-oriented perfectionism sub-scale is sufficient. It was found that the distinct active level of 3rd and 4th items is low. Although the social implied perfectionism is low, the level of coefficients of the other- items are acceptable. Total-ITEM correlations are given in Table 1.

After item correlations, the validity of the originals of the three-itemed structure of the assessment instrument in Turkish sample was tested by confirmatory factor analysis. The x2 Satorra-Bentler value scale of degrees of freedom of 941 is 3098.23; which was calculated for the original structure with three factors. The square root related to the mode is 0.69 (confidence interval, 067-0.72); increasing fit index is 89; comparative fit index is 89 and standardized square root of error mean square is 82. For the model, 3 errors covariance was added by the result of the statistics of Wald using Ligrel package. Between items 30 and 44 (Q=33; p<01), items 3 and 43 (Q=50 p<01) and 8 and 12 (Q=29; p<01) error covariance

Table 2. Pearson correlations.

	Individualistic	Extrovertness	Socially attributed
Urges	-.02	.09	.17**
Cleaning	.18**	.21**	.17**
Control	.16**	.15**	.31**
Thoughts	.11*	.16**	.33**
Certainty	.18**	.12**	.18**
Responsibility/danger expectation	.25**	.21**	.34**
Perfectionism/certainty	.60**	.42**	.37**
Importance/controlling thoughts	.18**	.18**	.26**

*:p<.05; **:p<.01.

was added. Scale x2 value of 930 degrees of freedom related to the estimated model is 2927.47 with three parameters added. The square root of error mean square of the calculated proximity related to the model is 0.67 (90% confidence interval 064-069); increasing fit index is 90, comparative fit index is 90 and standardized square root of error mean square is 81. The gathered results reveal that the three-factor structure of HMDPS is convenient for the data gathered from Turkish (Hu and Bentler, 1999). The likelihood predictions gained for the items are given in Table 2.

The inter-validity of the assessment instrument was measured by calculating the person product – moment correlation coefficient measured by Pandus inventory and sub-scale of obsessive beliefs scale as the correlation coefficients of the criterion was considered. There is no strong correlation between self-oriented perfectionism and others-oriented perfectionism sub-scales of the multi-dimensional perfectionism scale. On the other hand, it was found that it is inter-relating with the levels from lowest level to average level. Some correlation coefficients of the criterion in various levels from middle to high are calculated between the subscales of multi-dimensional perfectionism scale and obsessive cognitive belief areas. Particularly, strong correlation between perfectionism and subscale of multi-dimension perfectionism scale is enabled. Obtained person product-moment correlation coefficients are given in Table 2.

The correlations between the sub-scale of HMDPS are measured as such: r=54 (p<01) between self-oriented perfectionism and other-oriented perfectionism and other-oriented perfectionism, r=35 (p<01) between self-oriented and socially Implied perfectionism and lastly, r=29 (p<01) between other-oriented and socially implied perfectionism.

The test-rested correlations between the two implications applied to 36 people (with 15-days break between the two applications and Cronbach Alfa coefficients related to three subscales of the scale in order to make evaluations about reliability of the respective psychometric instrument. Although the measure of inter-reliability and stability coefficients of other-oriented perfectionism subscale were acceptable.

Table 3. Internal consistency and test retest reliability.

	Internal consistency	Equilibrium
Individualistic	.84	.82**
Extrovertness	.70	.60**
Socially Attributed	.73	.76**

**:p<.01.

The results show that the assessment instrument has a satisfactory level of reliability coefficient of HMDPS (Table 3).

DISCUSSION

In recent years, the researchers placed more emphasis on perfectionism day by day which is considered as an important personality trait. It is accepted that negative perfectionism is related to psychopathology (Shafran and Mansell, 2001). Different researchers who focus on perfectionism suggest different models about this concept (Bieling et al., 2003; Steober and Otto, 2006). It is suggested that the development of perfectionism attitude is related to family relationships and communicational types (Frost et al., 1991; Flett et al., 2002; Soenens et al., 2005). High performance standards set the stage for some problems related to inter-personal relation and psychosocial functionality (Flett et al., 1996; Hill and Zrull, 1997). There are some researchers who suggest that perfectionism is a personal trait that carries inter-personal properties (Alden et al., 1994). In this context, Hewitt multidimensional perfectionism scale is an important instrument that enables researchers make evaluations about the subject, which is practical assessment instrument that helps with the evolution of perfectionism level in intrapersonal and interpersonal context. In these studies, the aim is to evaluate the psychometric features of HMDPS.

The study started with the item, and analysis of the sub-scales of the instrument. When the total-item

correlations are considered it was found that the overall total- item correlation is at a demanded level. After item analysis the validity of the original three factors was created in Turkish form. Among the three items in the error Covariance analysis conducted after it has been added to the original three-factor structure validity, the scale model compliance values were obtained. So far many studies that have been used for the first time on ÇBMO which is made of confirmatory factor analysis results by the proposed Tri-factor instrument developers.

The correlation coefficients of the scale about the obsessive-compulsive symptoms that were calculated to evaluate the overall validity of the assessments instrument show that there are low correlation among variables. The socially implied perfectionism sub-scale has high correlation which is similar to obsessive-compulsive beliefs. The results show that the socially implied perfectionism sub-scale has relations with negative evaluations and symptoms, in accordance with literature findings (Obsessive-Compulsive Cognitions Working Group, 2005; Flett et al., 1998). Flett and Hewitt state that socially implied perfectionism is component of the characteristic of negative perfectionism (Flett and Hewitt, 2006). Besides, perfectionism/certainty sub-scale of obsessive beliefs scale has high correlations with all the sub-scale of HMDPS. The gathered finding supports the structural validity of the scale.

The coefficient of the inter-consistence which was used to evaluate the reliability levels of the assessment instruments was found to be high. The 15-days stability factor calculated for the sub-scales of the instrument is at a demanded level and the lowest test results were gained for other oriented perfectionism. Similar findings were obtained in previous studies, as well.

This study has similar limitations. Firstly this study was conducted on university students and only different age groups were not included in the study. Besides, the validity of the assessment instrument together with obsessive-compulsive symptoms was examined in the study. However, a clinical group was not included in the study to evaluate the discriminant validities. While interpreting the findings these limitations should be taken into account. It can be stated that the Turkish version of multi-dimensional perfectionism scale with the original three factorial model has a satisfying level of validity and reliability.

Statics of the item related to the device has been calculated for evaluating psychometric features of multidimensional perfectionism scale. According to the three sub-meters of the device, substance total correlation in itself was acquired. It is observed that item total correlation calculated for sub-meters of self-oriented perfectionism is high. Although correlations calculated for sub-meters of other-oriented perfectionism is on enough level, distinctive level of 3rd and 4th items is found to be very low. Although item total correlation of 5th and 30th items is low when we consider sub-meters of socially prescribed perfectionism, quotients at an acceptable level

were found for other items. Item total correlations are shown in Table 1.

Conflict of Interests

The author has not declared any conflicts of interest.

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