



Evaluation of Psychometric Properties of Beck Personality Beliefs Questionnaire

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ABSTRACT

The purpose of this study is to evaluate the psychometric questionnaire of Beck et al. (1990) personality beliefs. This tool is a 65-item self-report questionnaire to assess beliefs related to personality disorders. In the study of psychometric properties of this instrument the mean internal scale reliabilities (Cronbach's alpha) for both clinical and non-clinical populations (n=630) was 0.791 and for the clinical population (N=115) was 0.790. The mean test-retest reliability (two-week) of this instrument was 0.795. There was a good convergent validity between these tools and short form of the Coolidge Axis II Inventory. In addition, the results of structural validity showed that this tool has a suitable structural validity. This tool has good reliability and validity for both clinical and non-clinical samples.

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1. Introduction

Dysfunctional beliefs are deep, general, and proven views that people have about themselves, their lives, society, others, and the future. These dysfunctional beliefs are formed in the early years of life and act against the individual, preventing the individual from achieving peace, happiness, and hope. These beliefs are unrealistic, distorted, very inflexible, inefficient and uncompromising (Choudhury, 2012). These beliefs about oneself, the world and others play an important role in one's behavior (Corr and Matthews, 2009). For example, one of these dysfunctional beliefs is: "I cannot tolerate unpleasant feelings and emotions" (Huprich, 2015). Beliefs like this can affect how a person behaves and interacts with others and cause disruption in social, personal, occupational performance and the occupation of various problems. These reasons make it necessary to examine the beliefs in the treatment process, because these beliefs are one of the factors affecting a person's behavior.

On the other hand, various psychological therapies such as cognitive therapy place special emphasis on individual factors such as uncompromising beliefs. These dysfunctional beliefs play an important role in cognitive theories. From a cognitive point of view, dysfunctional beliefs are one of the most important reasons for the continuation of many uncompromising and dysfunctional behaviors (Lenzenweger and Clarkin, 2005). Accordingly, cognitive-behavioral therapy emphasizes the impact of dysfunctional and uncompromising beliefs and attitudes on people's behavior (Leahy, 2006).

These beliefs are involved and related to many disorders such as specific phobias, social anxiety, post-traumatic stress disorder (Paunovic, 2014), borderline personality disorder, and addiction (Graham, 1998) (Andrasik, 2005). These beliefs are positively related to suicidal ideation, depression, hopelessness, social functioning (Gaudiano and Miller, 2007) and the symptoms of manic (Atuk and Richardson, 2020).

According to research, beliefs are not only effective in the formation of disorders, but can also affect the other problems by influencing various other factors such as well-being, satisfaction and marital conflict. Accordingly, beliefs have the ability to predict (positive and negative) indicators of well-being (Ciarrochi, 2004). In addition, dysfunctional beliefs are associated with marital satisfaction and marital conflicts (Jones and Stanton, 1988; Hamamci, 2005). In addition, dysfunctional beliefs have been considered in many studies as mediating factors that shape personality disorders. For example, dysfunctional beliefs can play a mediating role in the relationship between traumatic events and the symptomatology of borderline personality disorder (Arntz, Dietzel and Dreesen, 1999). This shows the importance of uncompromising beliefs on the individual and social life of individuals.

One of the major disorders in which dysfunctional beliefs play a role is personality disorder. According to Beck's cognitive theory, dysfunctional beliefs form the primary pathology of personality disorder (Beck et al. 2003). The cognitive model of personality disorder predicts that behavioral problems are likely to become apparent when dysfunctional beliefs are activated (Davidson, 2007). These beliefs are interpersonal and immutable cognitive cycles (Beck et al., 2001). This inflexibility and pervasiveness multiplies the importance of these beliefs.

Emphasizing the role of dysfunctional beliefs in personality disorder cognitive theory states that the nature of personality disorders is determined and established by dysfunctional beliefs (Beck and Freeman, 1990). Accordingly, the basic foundations of cognitive therapy are based on the principle that the individual's perception and interpretation of situations, behavioral and emotional responses of the individual. Cognitive therapy believes that the pathology of many mental disorders can be found in systematic errors, biases, and distortions (Lenzenweger and Clarkin, 2005).

There is a lot of emphasis in cognitive models on the role of dysfunctional beliefs in the formation of mental disorders (Antony and Barlow, 2011). Core dysfunctional beliefs in personality disorder are the main data that the therapist seeks to change. These dysfunctional beliefs affect a person's core perceptions of themselves and others (Davidson, 2007). Cognitive therapies are also used to challenge dysfunctional beliefs and to promote realistic thinking (Engler, 2014).

The role of these dysfunctional beliefs in the pathology of mental disorders has attracted the attention of researchers. Given the importance of these beliefs in various disorders, especially personality disorders as well as the impact of these beliefs and personality disorders on individual and social life of people, it is very important to examine these beliefs. Various tools have been developed to examine these beliefs, including the following:

Smith Irrational Beliefs Inventory:

Smith irrational beliefs inventory is a 24-item self-report questionnaire. This inventory contains a wide range of irrational beliefs. Smith irrational beliefs inventory items are compiled from a complete list of irrational beliefs from various sources, such as Ellis (1985), ...

Dysfunctional Attitudes Scale (DAS):

One of the tools that is related to measuring beliefs and helps the researcher to measure these beliefs is the dysfunctional attitudes scale. This scale is self-reporting and is more of a general testing tool than measuring errors and cognitive distortions, and special situation.

Irrational Beliefs Inventory (Koopmans, Sanderman, Timmerman, and Emmelkamp, 1994):

This tool is a 50-item self-report inventory to measure irrational beliefs related to emotional distress. This inventory includes 5 scales for irrational beliefs.

Beck Personality Beliefs Questionnaire:

One of the questionnaires for measuring dysfunctional beliefs is Beck Personality Beliefs Questionnaire.

This questionnaire is of great importance because of its ability to measure dysfunctional beliefs in psychiatric patients and ordinary people in the community. In addition, the beliefs measured by this tool have a high correlation with personality disorders; Based on this correlation, beliefs that lead to the formation and persistence of personality disorders can also be examined. Accordingly, the present study was conducted to investigate the psychometric properties of this instrument.

2. Materials and Experimental Methods

2.1. Participants and Methods

Participants in this study included two clinical and non-clinical groups. The first group consisted of non-clinical people with 630 members and in the age range of 22 to 47. This group consisted of students from different faculties who were selected and tested by sampling clusters of stages. The second group of this study were clinicians with a history of disease. The number of these people was 115, of which 67 were women and 48 were men. The age range of these people was 22 to 47. Also for the tool retest test, 110 people (18% of the total population tested) were selected and re-evaluated after 2 weeks. All participants in this study participated in this test with their personal consent.

2.2. Research Tools

2.2.1. Short form of Beck Personality Beliefs Questionnaire

The Beck Personality Beliefs Questionnaire is a 65-item self-report tool that examines beliefs associated with personality disorders. The answer to each item is based on a

5-point Likert scale (from 0= I do not believe at all to 4= I completely believe). This tool is made for clinical and research purposes.

2.2.2. Short form of the Coolidge Axis (II) Inventory

This inventory is a 70-item tool for measuring and evaluating the 5 main criteria for 14 personality disorders according to DSM -5 (10 personality disorders), DSM-IV-TR (aggressive personality disorders, passivity and depression) and DSM-III-R (sadistic and self-sufficient personality disorders). There are 3 usable versions of this inventory, including a self-reporting version and 2 other important versions (one for reporting on an adult male and the other for reporting on an adult female). The short form of the Coolidge axis II has been designed and standardized for adults age of 15 and older and has also shown good validity and reliability.

The average internal validity coefficient of this tool in the clinical population is equal to 0.82 and in the clinical and non-clinical population is 0.79. In addition, the average retest of this tool after two weeks was 0.80, which indicates that the tool has good validity and reliability for use in clinical and non-clinical population (Darban, Yazdian and Ahmadi, 2020). Also, the mean correlation of this instrument with the Coolidge Axis II Inventory tool (2005) was 0.77 (Coolidge, Segal, Cahill and Simenson, 2010), which indicates a good number.

In various studies, the validity and reliability of this tool has been reviewed and confirmed. In Butler, Beck and Cohen's study, in 2007 the alpha coefficient of this tool in the scales of avoidant (0.84), dependent (0.89), passive aggressive (0.86), obsessive compulsive (0.90), antisocial (0.80), narcissistic (0.83), histrionic (0.89), schizoid (0.79) and paranoid (0.91) were indicative of good internal consistency. This tool has been translated into different languages and its validity and reliability in different cultural societies have been examined (Taymur, Türkçapar, Örsel, Sargın and Akkoyunlu (2011); Leite, Lopes, E. J. and Lopes, R. F. F (2012); Park, Kim and Hwang (2016)).

3. Results and Discussion

Out of 630 participants in this study, 354 (equivalent to 56.1%) were female and 276 (equivalent to 43.9%) were male. The age of these people is in the range of 22 to 47 with an average age of 34.82 and a standard deviation of 7.44.

The results showed that the collected data have a normal distribution ($P > 0.05$). However, due to the large sample size, using the central limit theorem in statistics, it can be said that the data have a normal distribution to some extent and there is no need to test this hypothesis. Therefore, Pearson correlation test was used to analyze the data.

The validity of the components of the Belief Questionnaire was assessed using Cronbach's alpha coefficient. Cronbach's alpha coefficient for avoidant is 0.805, for dependent is 0.80, for passive aggressive is 0.785, for obsessive-compulsive disorder is 0.754, histrionic is 0.793, schizoid is 0.823, paranoid is equal to 0.780, antisocial is equal to 0.788 and for narcissistic is equal to 0.811. Accordingly, the highest internal correlation coefficient belonged to the schizoid scale and the lowest internal correlation coefficient belonged to the obsessive-compulsive scale. If the internal consistency coefficient is higher than 0.7, it is suitable and acceptable for most numerical researchers. Therefore, the results of the internal consistency coefficient test showed that the personality beliefs questionnaire has a good validity.

Internal consistency coefficient is the average correlation between test items; But this fixed test does not evaluate the measurement of an instrument over time, it only examines the correlations between test items. Other methods are used to evaluate the measurement constant of a test, which one of these methods is retesting (Frick, Barry and Kamphaus, 2009). For this purpose, the retest method is used to evaluate measurement constant of the instrument. For most researchers the relatively good time to retest is about 14 days or two weeks. Accordingly, after the initial sampling, 110 participants in this test were randomly re-selected and asked to be tested again. Participants actively participated in all stages of this study with their consent.

The average reproducibility of this tool was 0.795, the highest of which was 0.883 for antisocial personality beliefs and the lowest of 0.707 for avoidant personality beliefs.

The results of Cronbach's alpha tests (clinical and non-clinical population), the difference between the means of the

two populations test (clinical and non-clinical) and the ability to retest the research can be seen in Table 1.

Convergent validity refers to the expected relationships with criteria that should theoretically be relevant to the target structure (Butcher, 2009). Convergent validity is an evaluation criterion for how a test or technique relates to other tests and techniques in similar structures (Weiner and Greene, 2017).

Accordingly, in order to assess the convergent validity of this tool, the correlation between the short form of the Coolidge Axis II Inventory and Beck's personality beliefs questionnaire was examined. Both of these tools measure the structures associated with personality disorder. The correlation results between the scales of these two instruments can be seen in Table 2.

4. Conclusion

In this section, we review the results obtained and interpret the information. According to the results of the research, Beck Personality Beliefs Questionnaire has good

PDS	Alpha(N=630)	Mean(SD)	Re test (N =110)	T (N=630)	Alpha clinical (n=115)
A	788	14.473(6.98)	.883	17.072	0.881
Av	805	13.025(7.09)	.707	30.650	0.747
B	775	14.181(6.83)	.739	23.610	0.811
Dep	804	13.347(7.08)	.728	30.501	0.733
H	793	13.03(7.02)	.841	32.568	0.794
N	811	14.568(7.29)	.795	20.520	0.780
O	754	14.109(6.57)	.870	26.255	0.781
P	780	13.454(6.90)	.770	26.371	0.809
Pas	785	13.196(6.81)	.838	31.037	0.743
S	823	13.792(8.39)	.787	21.129	0.829

S, ST, PAS, P, O, N, H, DEPRES, DEP, B, AV, A= (short form of the Coolidge Axis II Inventory SCATI ITEM)
 A(ANTISOCIAL)AV(AVOIDANT)B(BORDERLINE)DEP(DEPENDENT)DEPRES(DEPRESSIVE)H(HISTRIONIC)N(NASSISTI
 C)O(OBSESSIVECOMPULSIVE)P(PARANOID)PAS(PASSIVEAGGRESSIVE)SAD(SADISTIC)SELF(SELFDEFEATING)ST(S
 CHIZOTYPAL)S (SCHIZOID)

Correlations

	AV	D	PAS	O	H	S	P	AN	N	B
AVc	.850									
DPc	.812	.852								
PASc	.696	.702	.871							
Oc	.628	.610	.782	.849						
Hc	.726	.728	.760	.692	.882					
Sc	.604	.610	.769	.774	.595	.877				
Pc	.666	.650	.800	.797	.699	.748	.865			
ANTic	.464	.462	.638	.651	.570	.583	.698	.872		
Nc	.607	.625	.764	.788	.593	.832	.761	.618	.857	
	.625	.591	.650	.490	.670	.602	.541	.560	.623	.820
BC										

(short form of the Coolidge Axis II Inventory SCATI ITEM): ANTic (ANTISOCIAL) AVc (AVOIDANT)Bc(BORDERLINE)DEPc(DEPENDENT)Hc(HISTRIONIC)Nc(NASSISTIC)Oc(OBSESSIVECOMPULSIVE)Pc(PA
 RANOID)PASc(PASSIVEAGGRESSIVE)Sc(SCHIZOID)

validity and reliability and can be used as a suitable tool in other studies for clinical and non-clinical populations. Past studies such as Butler, Beck, and Cohen in 2007; Londoño, Calvete and Palacio in 2012; and Ferrer, Londono and Calvete in 2018 have shown similar results. In the present study, the internal validity coefficient (Cronbach's alpha) of this instrument was obtained for the non-clinical population in the range of 0.754 to 0.823, and for the clinical population in the range of 0.733 to 0.881. Cronbach's alpha is accepted in most studies in the range between 0.7 and above (Emerson, 2019). In the present study, the range of Cronbach's alpha in each clinical and non-clinical population is in the acceptable range. The lowest alpha coefficient in the clinical population belonged to the depressive personality beliefs scale; Also, the lowest Cronbach's alpha coefficient in the non-clinical population was related to obsessive-compulsive personality beliefs. The mean Cronbach's alpha coefficient in the clinical population was not significantly different from the non-clinical population. In general, it can be said that this tool has a good internal consistency coefficient for both clinical and non-clinical populations.

The retest method was used to evaluate the stability coefficient of the instrument. A retest is performed to check and determine the stability of a test over a specified period of time. In this method, testers are tested twice in a specific period. The results obtained by individuals are examined at different times to determine whether the test has had good stability over different times. In the retest test, the main point is that the scores of the individuals are largely similar during the two tests. These results can be subject to many changes under various factors. One of these factors is the stability of the property being evaluated. Given that personality is considered as a relatively stable trait over time so beliefs associated with personality disorders should also be relatively stable (Darban, Yazdian and Ahmadi, 2020). The results of the tool retest test showed that the retest of this tool is in an acceptable range. The responses of the subjects who were retested after two weeks had a good correlation with their initial responses. This correlation indicates the stability of the results of this tool over time.

To assess the convergent validity, the correlation between this tool and the short form of the Coolidge Axis II Inventory was used. The results showed that this tool has good convergent validity. The personality beliefs in this tool showed a good correlation with the personality beliefs in the short form of the Coolidge Axis II Inventory.

In order to evaluate the divergent validity t-test was used for two different population groups (clinical and non-clinical population). According to the definition of divergent validity, the instrument should not overlap with other scales in measuring one scale. In other words, the tool must be able to distinguish between one scale and other scales. One method is to differentiate a comparison scale between the two groups and examine the statistical differences between the two groups. Therefore, in this study, the known groups' method was used to assess the construct validity.

Whenever the known variables in the target community are different for a particular result or in a questionnaire structure, the construct validity can be shown in this questionnaire. To assess the validity of the structure using the known groups' method, the questionnaire is divided into 2 groups or more that have different levels of the structure (Jomori et al., 2017).

In this study, to evaluate the validity of the structure through known groups (clinical and non-clinical groups), the difference between the means was examined using the test. According to the known groups' method, there should be a significant difference between people who have a characteristic or history and those who do not have that characteristic or history. Based on this, t-test was performed and the results showed a significant difference between clinical and non-clinical groups. This difference indicated a higher score in the clinical group than in the non-clinical group in the Beck Personality Beliefs Questionnaire. Thus, the validity of the structure was confirmed in the Beck questionnaire.

Based on the results in the present study, this tool has good validity and reliability for use in clinical and non-clinical populations and can be used as a useful tool in future researches. Despite of being brief, this tool can provide a good indicator of personality disorders in different groups.

The study also had limitations, including limitations on the number of participants and limitations on access to a higher number of people with a clinical history.

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