



Credit to the Psychometric Properties of the Short Form of the Coolidge Axis (II) Inventory in the Clinical and Non-Clinical Population

Mohammad Darban, Fahimeh Yazdian and Mehrnaz Ahmadi

Department of Psychology, Faculty of Psychology and Educational Science, Islamic Azad University, South Tehran Branch, Tehran, Iran.

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ABSTRACT

The aim of this study is to validate the psychometric properties of the short form of the Coolidge axis II inventory in clinical and non-clinical populations. The short form of the Coolidge axis II inventory is a 70-item self-reporting tool for measuring personality disorders based on DSM book criteria. In the study of the psychometric properties of this instrument the mean internal scale reliabilities (Cronbach's alpha) was obtained for both clinical and non-clinical population ($n = 630$) 0.79 and for clinical population ($N = 120$) 0.82. The average retest reliability (two weeks) of this instrument was 0.80. There was good convergence validity between these tools with the personality diagnostic questionnaire 4 (PDQ 4). In addition, the structural validity results showed that this tool has a good structural validity. This tool has good validity and reliability in both clinical and non-clinical samples.

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1. Introduction

Personality disorders are common and chronic disorders with a prevalence of 10 to 20 percent in the general population. These disorders are the underlying cause of other psychiatric disorders such as substance abuse, suicide, emotional disorders, inhibited arousal disorders, eating disorders, and anxiety disorders (Sadock B. J., Sadock V. A., Ruiz P.). Personality disorders are among the most resistant clinical problems that therapists face (Young, J. 1999). These disorders are a set of disorders that are associated with a wide range of mental health consequences (Dixon-Gordon, K. L., Whalen, D. J., Layden, B. K., & Chapman, A. L., 2015) and are in contact with severe symptoms of anxiety disorders, mood disorders, eating disorders as well as a wide range of interpersonal problems and the choice of coping styles (2000) (Dimaggio, G., Popolo, R., Montano, A., Velotti, P., Perrini, F., Buonocore, L., ... & Salvatore, G., 2017). As a result, these disorders not only affect the lives of patients, but also the lives of others in the community. The inner turmoil of people with personality disorders makes it difficult for them to make the right and wrong diagnosis and makes others suffer (Marcovitz, H., 2009).

It is also widely accepted that personality disorders are the basis of interpersonal disorders (Haslam, Reichert, & Fiske, 2002). According to what has been said, personality disorders are very debilitating and have a great impact on people's functioning and interpersonal relationships. However, despite this importance, there are many differences among researchers about personality disorders, the least of which can be considered in the definition of personality disorders. But there are other problems and shortcomings,

such as differences in the severity of personality disorders, problems in identifying key dimensions of personality disorders, significant discrepancies between people with similar personality disorders, and lack of research on most personality disorders (Haslam, Reichert, & Fiske, 2015). On the other hand, progress in conceptualizing personality disorders has slowed despite the limitations of personality disorder assessment. As progress slows in conceptualizing personality disorders, the treatment of these disorders has also diminished (1997). As a result, we need the right tools to measure personality disorder to better understand and treat personality disorders. Research on personality disorders emphasizes the need for credible and effective tools to identify personality disorders in both clinical and non-clinical groups. Questionnaires are one of the effective tools for identifying personality disorders. Self-report questionnaires can be a quick, effective and convenient tool for screening and initial assessment of personality disorders (Scarpa, A., Luscher, K. A., Smalley, K. J., Pilkonis, P. A., Kim, Y., & Williams, W. C., 1999). The importance of correct assessment of personality disorders is that the therapist can only identify the parameters related to the patient through proper assessment and have an effective intervention for his treatment as well as examine the outcome of treatment through the assessment tool. As the selection and use of therapeutic methods requires valid confirmatory research, for using the various assessment tools and techniques, it is necessary to measure the validity and validity of that tool (Antony, M. M., & Barlow, D. H., 2011).

For this reason, personality assessment is a very important and serious task for psychologists, and the validity

and reliability of a tool is one of the main components of personality research. When we are going to study a concept, we need to be able to evaluate that concept accurately (Burger, J. M., 2018). One of the main problems in measuring and evaluating personality disorders is the use of a tool that is simple enough to save time and so complex that it can provide a complete clinical representation of personality disorders (RENTOUL, R., 1997).

There are still significant problems in conceptualizing and defining personality disorders, separating them from other disorders, and designing tests with appropriate internal and external validity (Chiesa, Bateman, Wilberg, & Friis, 2002) which complicates personality disorders more and more. This complexity has led to the need for research to describe more accurately and completely the personality disorders among researchers. One of the researches that help to recognize personality disorders is research on the tools that describe personality disorders. Various tools have been designed to measure personality disorders. One of these tools is the short form the Coolidge axis II inventory. This tool has many advantages over other tools.

There are no other personality disorder measures like the SCATI. First, it covers 14 personality disorders from the last 3 versions of the DSM. No other current measure does that. Second, in order to create a short form, only the top five items measuring the top five criteria from the DSM were chosen, creating a more reliable short form. Third, the SCATI can be used as a screening device when personality disorders are strongly suspected. There are no other short screening devices that measure so many personality disorders. The reasons for the DSM dropping four personality disorders was completely theoretically specious and unwarranted psychometrically. Fourth, because personality disorders are so often comorbid in other major types of psychopathology in clinical settings, a comprehensive screening device like the SCATI is invaluable (Coolidge, 2019).

In addition to the above advantages, there is not enough research on this tool in the clinical community. According to researchers, the study of the prevalence and relationship of mental disorders in the general population should be repeated in the clinical population to be able to provide more clinical information to clinical specialists (Zimmerman, M., Chelminski, I., & Young, D., 2008).

It is true that the short form of the Coolidge axis II inventory is designed to measure personality disorders based on DSM book criteria, but not enough research has been done on this tool in clinical populations, and most researches are on non-clinical samples (Coolidge, F. L., Segal, D. L., Benight, C. C., & Danielian, J., 2004; ... 2007; ... 2010; Fiala, J. A., Mansour, S. A., Matlock, S. E., & Coolidge, F. L., 2020). The comparison between clinical and non-clinical samples in this tool has not been done to check and confirm the validity of this tool in clinical samples. Therefore, in the present study we examine this tool on clinical and non-clinical population.

2. Materials and Experimental Methods

2.1. Participants and Methods

Participants in the study included two clinical and non-clinical groups. The first group was non-clinical, with 472 members. 320 members of this sample were women and 152 of them were men. People ranged in age from 25 to 57. The non-clinical group included students from different faculties who were selected and tested through systematic cluster sampling. The second group of this study was clinical

subjects with a clinical history of 163, of whom 95 were women and 68 were men. The age range of these people was 27 to 43. In addition, 120 people (19% of the total population tested) were selected for the instrument retesting test and were re-evaluated after 2 weeks. All participants in this study participated in this test with their personal consent.

2.2. Instruments

2.2.1. Short Coolidge Axis (II) Inventory

The SCATI is a 70-item inventory that assesses five primary criteria for 14 personality disorders, according to DSM-5 (10 personality disorders), DSM-IV-TR (passive-aggressive and depressive personality disorders), and DSM-III-R (sadistic and self-defeating personality disorders). There are three versions: a self-report form, and two significant other forms (one for reporting about a male adult and one for reporting about a female adult). The SCATI has demonstrated reliability and validity, and it has been designed and normed on adults ages 15 and older. The SCATI can be used to assess the presence of personality disorders and differentiate among 14 personality disorders.

Coolidge, Segal, Cahill and Simenson (2010) obtained this instrument for 14 personality disorders with a coefficient of internal validity of 0.66. The highest Cronbach's alpha coefficient in this instrument was 0.74, which belonged to the dependence-personality disorder scale and the lowest alpha of this instrument was 0.58, which belonged to the obsessive-compulsive personality disorder scale. In the same study, the retesting coefficient of this tool was 0.83. In addition, the correlation between the scales of the short form of the two Coolidge axis II inventory (2001) with the five-dimensional personality test in this study was appropriate.

In another study, Cronbach's alpha for cluster A was 0.82, 0.77 for cluster B and 0.79 for cluster C. Also, the retesting ability of this instrument obtained as 0.92 for cluster A, 0.87 for cluster B and 0.88 for cluster C, that displayed the sufficient validity of the instrument (Coolidge, F. L., Segal, D. L., Benight, C. C., & Danielian, J., 2004). In another study, Cronbach's alpha coefficient of this instrument averaged 0.62 for ten subscales in the elder adults (Marty, M. A., 2011).

2.2.2. Personality Diagnostic Questionnaire 4 (PDQ-)

The PDQ-4+ (Hyler, 1994) is a self-report questionnaire with 99 true/false items, which represents a completely revised version of PDQ and PDQ-R self-report questionnaires and is designed to measure the 10 PDs included in DSM-IV Axis II and the two PDs (passive-aggressive and depressive) proposed for further research. And The Personality Diagnostic Questionnaire-Version 4 is widely used to screen for the presence personality disorders.

This tool is based on the diagnostic criteria of the DSM book. This tool is suitable for use in clinical and non-clinical research. The validity and reliability of this tool in various studies has been reviewed and approved. Examples include the researches of Abidin, E., Koh, K. G., Subramaniam, M., Guo, M. E., Leo, T., Teo, C., & Chong, S. A (2011); Fonseca Pedrero, E., Paño Piñeiro, M.D.L.M., Lemos Giráldez, S., & Muñiz Fernández, J. (2013). The instrument is also accurate enough to diagnose personality disorder in different populations (Davison, S., Leese, M., & Taylor, P. J., 2001; Bouvard, M., Vuachet, M., & Marchand, C., 2011), which makes it suitable for this study.

2.2.3. Research Design Overview

Participants in this study were generally in both clinical and non-clinical populations (630 individuals) who completed the short form of the Coolidge axis II inventory personality

diagnostic questionnaire 4. The data of these participants were used in the analysis and using this data, internal reliability, convergent validity, retest, and structural validity were examined. 120 samples were randomly selected from the sample group and were retested after two weeks.

3. Results and Discussion

The reliability of an instrument means the stability of the scores of a test. A reliable instrument is the tool in which a person obtains similar scores over different times. The most common method for validating a tool is the retest and reliability scale method (Hilsenroth, M. J., & Segal, D. L., 2004). In this study, two tests of Cronbach's alpha and retesting were used to evaluate the reliability of the instrument.

The internal scale reliabilities average (according to Cronbach's alpha method) was 0.69 for non-clinical population scales for 14 personality disorder scales. The highest among alpha was 0.79 for dramatic personality disorder and the lowest Cronbach's alpha was 0.610, which was on the scale of the Schizoid personality disorder. In addition, internal scale reliabilities average (according to Cronbach's alpha method) was 0.82 in clinical population for 14 personality disorder scales. The highest alpha level was 0.88 for antisocial personality disorder scale and the lowest Cronbach's alpha was 0.63 for passive aggressive personality disorder scale.

One of the hallmarks of a tool's ability to validate is the ability to measure tools over time. This means that every time a person uses that tool, they get a similar score on that tool. Several factors can cause this test score not to be the same over time. One of those factors is the individual's ambiguous scoring method or different personal mood at different times.

Since personality is assumed a relatively stable pattern, the scores of a personality assessment tool should be approximately the same over time (... , 2018). Number of 120 test participants were randomly selected and reassessed for retesting. They came in two weeks later. The average retrieval ability of this tool for 14 personality disorder scales was 0.80, the highest was 0.86 for obsessive-compulsive disorder and the lowest was 0.7 for the depressed personality disorder.

The results of Cronbach's alpha (clinical and non-clinical population), test of the difference between the means of the two populations (clinical and non-clinical) and the ability to retest the research is displayed in Table 1.

The validity of a tool is the amount that the instrument measures the characteristics for which it was made for. There are different ways to measure the validity of an instrument (Hilsenrot and Segal, 2004). One of the most important types of validity is the validity of the structure. In this study, the validity of the instrument structure was calculated with the help of correlation between the two instruments and the difference between the known groups.

The convergent validity of this tool was investigated using the correlation coefficient between these tools with personality diagnosis questionnaire 4. The correlation between the 12 scales of this tool with the short form of the Coolidge axis II inventory can be seen in Table 2. According to the results of the table, all the scales of the short form of the Coolidge axis II inventory have a good correlation with the scale of the personality diagnosis questionnaire 4, which shows that both tools measure the same concept.

PDS	Alpha(N=630)	Mean(SD)	Re test (N =120)	T (N=630)	Alpha clinical (n=163)
A	0.722	8.59(2.97)	817	-2.484	0.887
Av	0.706	9.05(2.90)	805	2.154	0.855
B	0.705	9.08(3.1)	835	2.066	0.868
Dep	0.703	8.80(2.89)	854	3.804	0.786
Depres	0.736	9.29(3.03)	701	4.404	0.837
H	0.799	9.41(2.98)	761	5.753	0.831
N	0.788	10.77(3.51)	803	13.032	0.758
O	0.677	9.70(2.96)	868	5.486	0.846
P	0.706	9.44(3.08)	816	3.977	0.850
Pas	0.645	9.44(2.76)	747	8.647	0.635
Sad	0.653	9.17(2.91)	820	3.718	0.856
Self	0.645	7.78(2.74)	829	2.840	0.812
St	0.655	9(2.83)	833	4.287	0.843
S	0.610	9.15(2.77)	805	4.037	0.851

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 between personality diagnostic questionnaire 4 and the SCATI personality disorder scales.

S	ST	PAS	P	O	N	H	DEPRES	DEP	B	AV	A	
											803	A SCATI
										788	236	AV SCATI
									826	0.193	198	B SCATI
								850	0.184	0.268	289	DEP SCATI
							784	0.271	0.132	0.248	136	DEPRE SSCATI
						829	0.253	0.170	0.139	0.141	140	H SCATI
					796	0.418	0.239	0.134	0.082	0.170	0.066	N SCATI
				889	0.375	0.235	0.263	0.207	0.169	0.245	0.06	O SCATI
			859	0.313	0.325	0.256	0.331	0.212	0.156	0.303	157	P SCATI
		847	0.333	0.297	0.361	0.311	0.308	0.250	0.260	0.307	176	PAS SCATI
	797	0.218	0.256	0.167	0.180	0.208	0.254	0.235	0.173	0.194	0.168	ST SCATI
820	0.125	0.223	0.172	0.285	0.174	0.08	0.115	0.087	0.057	0.204	-0.005	S SCATI

S, ST, PAS, P, O, N, H, DEPRES, DEP, B, AV, A= (PDQ -4 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)

One way to show the validity of an instrument is to differentiate the instrument for groups that are theoretically different. The results of Table 1 show that the difference between the meanings associated with the short form of the Coolidge axis II inventory and its components in all cases in the clinical and non-clinical population is significant compared to the critical T values.

4. Conclusion

In general, the results of the present study showed that with the short form of the Coolidge axis II inventory has good validity and reliability and can be used as a suitable tool in other studies for clinical and non-clinical populations. Past researches, such as that of Coolidge, F. L., Segal, D. L., Cahill, B. S., & Simenson, J. T (2010); Watson, and Sinh (2007), have shown similar results in non-clinical populations. In the present study, the internal scale reliabilities (Cronbach's alpha) of this instrument was obtained for non-clinical population in the range of 0.610 to 0.799 and for clinical population in the range of 0.635 to 0.887. Extensive descriptions of the Cronbach's alpha have been used by the authors, one of which is the interpretation of Taber (2017) that Cronbach's alpha of 0.58 and above is considered a satisfactory alpha (Tabar, 2017). However, for most researchers, the limit for Cronbach's alpha is between 0.70 and 0.90, and the lowest Cronbach's alpha acceptance is 0.60. In the present study, the lowest Cronbach's alpha was obtained in the non-clinical population of 0.610. The Cronbach's alpha is relatively low but is still considered an acceptable Cronbach's alpha but it seems that one of the reasons why Cronbach's alpha is so low in this study is the size of the study population. The unacceptable range for Cronbach's alpha is below 0.50. The results of Cronbach's alpha of the present study showed that all scales are within acceptable range for Cronbach's alpha. Accordingly, it can be said that the short form of the Coolidge axis II inventory has good internal scale reliabilities. Cronbach's alpha for the clinical population was also investigated and calculated. The mean alpha of this instrument was 0.82 for the clinical population. The lowest Cronbach's value was 0.758 which was for dependent-personality disorder scale; Also, the highest Cronbach's alpha was 0.887 in the clinical population for antisocial personality disorder. In general, Cronbach's alpha of this tool was within acceptable range for the clinical population.

The retest method was used to check the stability scale of the tool. The retest is performed to determine the stability of a test over a period. In this method, test takers are tested in two different sessions with a specific time frame, then the results obtained from the two tests are compared. The main challenge in the retesting study is that the scores of the people during the two tests are largely similar. This test can be influenced by various factors that can change the results one of which is the mood and the other is the stability of the measurement feature. Given that we consider personality to be a relatively stable trait, the results of the retesting test must be consistently consistent with the initial results. The second factor influencing the results of the retesting test is time. If too much or too little time has passed since the retest, the results may change. In this study, the retest time was considered to be in two weeks, which according to Nunnally, J. C., & Bernstein, I. (1994) was the appropriate retest time. The results of the instrument-retesting test showed that the retest of this instrument was between 0.701 and 0.868, which are acceptable numbers. The lowest retest rate of 0.701 was

related to the scale of the depressed personality which is an acceptable number for the retest. The highest rate of 0.868 was related to obsessive-compulsive disorder. It seems that people's moods were more effective in lowering the results of retesting depressed personality disorder scales than other scales. Because one of the factors that can affect changes in the retest scale is people's mood, and one of the cases associated with depressive personality disorder is people's mood (Klein, D. N., Kotov, R., & Bufferd, S. J., 2011). As a result, if a person has a lower temperament in one test than the other, this coefficient is also affected by the lower temperament.

In this manner, the convergent validity of this tool was examined with Personality Diagnostic Questionnaire 4. One of the important points in the study of convergent narrative is that the two tools used for convergent narrative, test the same subject and both are based on similar theories. In this study both the Personality Diagnostic Questionnaire 4 tool and the short form of the Coolidge axis II inventory are based on the statistical diagnostic book of DSM 5 psychoanalytic disorders and both have the ability to measure personality disorders based on this book. As a result, these two tools were suitable for calculating convergent validity. Convergent validity results between these two tests were calculated and reported as correlation coefficient. Accordingly, the lowest correlation between the personality disorder scales in the Coolidge tool and the Personality Diagnostic Questionnaire 4 was on the depressed personality disorder scale. The appropriate correlation coefficient between the two instruments for measuring convergent validity in the test is considered to be higher than 0.70. According to Table 2, the lowest correlation coefficient between the two instruments belongs to the depressed personality disorder scale, which is in the acceptable range with the number 0.784. The highest correlation coefficient between the two instruments with the number 0.889 belongs to the scale of obsessive-compulsive personality disorder, which indicates the appropriate convergent validity between the two instruments.

In order to investigate divergent validity in this study, independent 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, tools must be able to distinguish between one scale and another. One method of distinguishing a scale is to compare it in two groups, and to examine the statistical difference between the two groups.

In this study, in order to measure the construct validity, the known groups method was used. This method is used when a group with a specific trait is examined with another group without that trait. In this study, in order to investigate the validity of the structure through known groups, two clinical and non-clinical groups using the test of differences between the means were examined. Accordingly, there should be a significant difference between the group of people in the clinical community who had a personality disorder and the people in the non-clinical community who had no clinical history. In this regards, independent t-test was performed between the two groups. The results showed that there are significant differences between clinical and non-clinical groups. This difference indicates that individuals who were in the clinical group scored higher than those in the non-clinical group in the short form of the Coolidge axis II inventory.

Thus, the validity of the short form of the Coolidge axis II inventory structure was confirmed.

In general, the results of this study are consistent with the results of other studies that examined the validity and reliability of the short form of the Coolidge axis II inventory (... , 2010; ... , 2007). According to the results of this study, this tool is suitable for use in clinical and non-clinical populations and can be used as a useful instrument in future researches. This instrument, despite its brevity, can be a good representation of provide personality disorders in different groups.

The present study also had limitations, including limitations on the number of clinical samples. We studied all clinical samples that we referred to our own clinic, but it is better to use this instrument in larger clinical samples as well; measure to provide more information to researchers. It is also a good idea to look at this research in different cultural contexts. It is suggested that future research examine the instrument's ability to differentiate between personality disorders.

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