The Validation of Solution Building Inventory in the Turkish Population

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Abstract

This study aims to adapt Solution Building Inventory (SBI) to Turkish and examine its psychometric properties. The study group consisted of 278 individuals (195 females and 83 males), whose age range was between 18 and 23 years old. Solution Building Inventory, Dispositional Hope Scale, and Positive and Negative Affect Scale were used as measurements. The results of the exploratory factor analysis showed the suitability of the data for factor analysis and revealed a two-factor structure explaining 49.38% of the total variance. Confirmatory factor analysis findings showed that the model had a good fit in the 11-item and two-dimensional structure of the scale. Besides, the correlation coefficients of the relationship between the SBI and other scales were expectedly provided equivalent and convergent validity. In reliability analyzes, the Cronbach alpha internal consistency coefficient of the scale was found to be .85 for the scale in general, while it was calculated as .78 for the supporting solutions sub-dimension and .85 for the creating solutions sub-dimension. As a result, SBI is a measurement tool with proven validity and reliability in Turkish.

Keywords: solution focused brief therapy, solution building inventory, validity, reliability, Turkish adaption

Introduction

Solution Focused Brief Therapy (SFBT; de Shazer et al., 1986), developed by Steve de Shazer, Insoo Kim Berg, et al. in the early 1980s, is an approach that is used effectively in many areas today. SFBT differs from other approaches by emphasizing the strengths, positive life exceptions, and the solution they build rather than focusing on individuals' problems (Arslan & Ulus, 2020; De Jong & Berg, 2013; De Shazer & Berg, 1997). This approach aims to help individuals discover and use their resources for positive changes (Grant et al., 2012). In SFBT, the relationship established between the client and the counselor is essential. The focus is on meeting positive feelings such as hope and well-being while seeking solutions to the client's problem (Kim & Franklin, 2015). Solution-focused thinking constitutes theoretical basis of SFBT, and the literature shows that SFBT makes it easier for individuals to experience positive emotions (Gingerich & Peterson, 2012).

In the problem-focused approach, the problem should be discovered to solve the problem (Grant, 2011). In other words, the essence of problem-solving is to analyze the problem and focus on the past. This approach seemed to be the only way until the postmodernist thought became effective (Haley, 1976). A postmodernist perspective suggests that excessive focus on the individual's problem may lead to overlooking solutions (Ergüner-Tekinalp & Terzi-Işık, 2013). It also suggests that solution-focused thinking can contribute to the individual in the counseling process. The idea that the solution may not be directly related to the problem lies in the logic of solution-focus thinking (De Shazer & Berg, 1997). In other words, the problem grows as it is put on the focus; on the other hand, the solution grows as the solution is

focused. This therapy adopted the approach of talking about the solution instead of the individual's problem (Arslan & Gümüşçağlayan, 2018; Murphy, 2008).

Problem-focused thinking involves the causes of the problem, whereas solution-focused thinking focuses on how the problem will end and how the change will be achieved (De Shazer & Berg, 1997; Grant et al., 2012). A solution-focused approach is a goal-oriented approach emphasizing that individuals should cope with difficulties, be resilient and experience positive change (Iveson et al., 2012). Being solution-focused in this approach addresses individuals' coping with stress and being psychologically resilient to survive (Seligman, 2002; Weiner-Davis & O'Hanlan, 2003). It can be said that a solution-oriented approach should be adopted in order to achieve the change faster and easier. Iveson (2002) states that the past is not important in solution-focused thinking; only the present and the future count. According to Murphy (2008), the assumptions of SFBF form the basis of solution-focused thinking. These assumptions are outlined in De Shazer and Berg's theory as follows (Murphy, 2008):

1. If it works, do more of it. If it does not work, do something different.
2. Every client is unique, resourceful, and capable of improving.
3. Cooperative relationships enhance solutions.
4. No problem is eternal, and change is inevitable.
5. Big problems do not always require big solutions (p. 43).

Solution-focused thinking helps individuals understand that their problems have a solution and they have their strengths. Individuals focusing on solution-focused thinking should change their perspective and directly address the solutions (Sparrer, 2012). A small step towards solution-focused thinking can bring significant results and solve big problems. Oliver and Charles (2015) emphasize that looking at problems from a different perspective will positively change many things. According to the literature, the empathy level (Şanal-Karahan et al., 2017), social communication, social skills, social support (Siyez & Tan-Tuna, 2014), life satisfaction, self-efficacy (Sarı et al., 2019), and psychological well-being (Arslan & Asici, 2021) and hope (Şanal-Karahan, 2016) of the individuals adopted a higher level of solution-focused thinking, are significantly higher. Besides, other studies in the literature show that the well-being, positive emotions, and sense of hope of the individuals adopting solution-focused thinking have higher (Grant & Spence, 2010; Kashdan & Rottenberg, 2010; Kim & Franklin, 2015; Simon et al., 2005; Theeboom et al., 2015). Theoretically, González-Suitt et al. (2016) stated that solution-focused thinking improves coping with depression and stress and positively affects psychological well-being. Individuals who adopted solution-focused thinking have increased their levels of hope and psychological well-being by acting towards goals, being practical against the problem, and focusing on the solution by eliminating the causes of their problems.

De Jong and Berg (2013) outlined three aspects that form the basis of solution-focused thinking. The first aspect is identifying the solution and finding functional techniques such as miracle questions ("what if the problem is gone"). The second is raising awareness; for example, focusing on exceptional events in an individual's life. Finally, instilling hope and courage to shape the future. In this direction, Smock et al. (2010) have developed the Solution Building Inventory (SBI) that measures these three components' effectiveness, evaluates the effectiveness of solution-focused thinking, and can be used in counseling sessions effectively. Adapting SBI to Turkish was thought to be necessary because school and mental health counselors in Turkey widely use SFBT in counseling. Accordingly, the purpose of this study is to adapt SBI (Smock et al., 2010) to Turkish and examine its validity and reliability.

Methodology

Participants

The workgroup of the study consisted of university students older than 18-year-old. The data was collected from two different randomly selected samples. The first study involving the scale's linguistic equivalence consisted of 51 participants, 38 women (74.5%) and 13 men (25.5%). In the second study, data were collected from 278 participants, 195 women (70.1%) and 83 men (29.9%), to perform confirmatory factor analysis, equivalent scale validity, and calculate Cronbach's alpha internal consistency/reliability coefficient. The age of the individuals participating in the study varied between 18 and 23 years, and the average age was 20.3 (SD = 0.9).

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Instruments

Solution Building Inventory

Solution Building Inventory (SBI) has been developed by Smock et al. (2010) to determine individuals' solution-focused thinking tendencies. SBI consists of items aiming to determine the extent of individuals' solution-focused thinking. The inventory, which has 14 items, is one-dimensional and scored on a 5-point Likert scale. Each item of the inventory is scored between 1-5, where 1 = Strongly disagree and 5 = Strongly agree. Higher scores indicate individuals with higher solution-focused thinking. Cronbach's alpha internal consistency coefficient of the original inventory was .84, and this value was found to be .85 in this study. The findings were parallel to the scores of the original inventory.

Dispositional Hope Scale

Dispositional Hope Scale (DHS), which had been developed by Snyder et al. (1991) to investigate individuals' dispositional hope levels, was adapted to Turkish by Tarhan and Bacanlı (2015). The scale is two-dimensional and has 12 items. Four of these items are filling items, and they do not play a role in the scoring. The scale's overall score is calculated by combining the total scores obtained from its sub-dimensions measured on an 8-point Likert scale. Confirmatory factor analysis of the scale showed that fit indices are adequate; reliability analysis indicated that both the sub-dimensions and the whole scale are reliable. Cronbach's alpha internal consistency coefficient of the original scale had been calculated as .84, and it was .85 in the study of Demirtaş and Baytemir (2019). In this study, this value was found to be .80, which shows that the reliability value is consistent with the literature.

Positive and Negative Affect Scale (PANAS)

The positive and Negative Affect Scale (PANAS), aiming to measure individuals' positive and negative emotions, had been developed by Watson et al. (1988) and adapted to Turkish by Gençöz (2000). There are 20 items, involving ten positive and ten negative emotions. These two sub-dimensions are independent of each other, and they can also be used as separate scales. The scale is scored on a 7-point Likert scale. Cronbach's alpha internal consistency value was found to be acceptable in the fit indices and reliability analysis of the scale. Watson et al. (1988) calculated the positive and negative affects' internal consistency of the scale as .83 and .86, respectively. In this study, these values were .81 and .83 for positive and negative affects, similar to the original scale.

Process

The study's ethics committee approval was granted by the Scientific Research and Publication Ethics Committee of Izmir Democracy University (Board Approval No: 2020 / 12-03). No additional permission was needed for the translation process because Dr. Sara Smock Jordan, one of the SBI developers, is also an author of this study. Data were collected in 2020 using online forms. Before starting the study, the participants were informed about participant rights, volunteerism, and confidentiality. Data were collected upon getting informed consent from the participant, and the duration was usually 10-15 minutes.

Translation Process

The back-translation method suggested by Brislin (1970) was used in the translation of the SBI. The experts who perform the translation process should know the population well and be well-versed in the study's subject (Tran, 2009). Two translation committee were formed to carry out the back-translation process; it consisted of seven English Language Teachers and three counselor educators with doctoral degrees proficient in English. Four English language teachers, two counselor educators in translation committee translated SBI into Turkish. During the translation, attention was paid to reflect the cultural characteristics of the people living in Turkey and the solution-focused thinking. Second, the resulting Turkish form was translated back into English by the translation committee's remaining members (three English language teachers and one counselor educator). Third, the back-translation was sent to one of the original authors (Dr.

Sara Smock Jordan) to check whether the translation reflects the original scale. Dr. Sara Smock Jordan confirmed that there is no difference between the meanings of the items. Fourth, the scale's linguistic equivalence study was conducted with 51 third-grade English language teaching students whose English and Turkish levels are good within a three-week interval. They first filled the form's English version and then the Turkish version. The linguistic equivalence of the scale was deemed appropriate regarding the participants' answers (r = .82).

Data Analysis

Before performing data analysis, a preliminary preparation was performed. First, erroneous/incomplete coding in the data and the participants with blank answers were checked using the frequency table. No missing data was found. Before analyzing the data, normality, which is a prerequisite, was tested. The one-way normality assumption test showed that kurtosis values were between -.015 and -1.07, and the skewness values were between 1.190 and -.936. The values in the (-2; +2) range indicate normal distribution (George & Mallery, 2010). The Scatter plot matrix was used to test the multivariate normality assumption. The distribution was in the form of an ellipse, and it was concluded that the normality assumption was met.

DeVellis (2014) underlined that even for the measurement tools having a theoretical basis, it is necessary to perform validity and reliability analyzes in adaptation studies conducted in different cultures. Accordingly, the scale's construct validity was examined by exploratory factor analysis and confirmatory factor analysis. Apart from this, the scale's relationship with the Dispositional Hope Scale and Positive and Negative Affect Scale, whose validity and reliability studies had been already performed, was examined with Pearson correlation analysis. Finally, the Cronbach's alpha internal consistency coefficient was calculated for the reliability of the scale. SPSS and MPlus statistics programs were used in data analysis, and the significance level was taken as $p < .05$.

<div align="center">

Results

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Structure Validity

A factor analysis was conducted to adapt the potential items of the scale to Turkish culture. Principal components analysis was used to measure the construct validity of the scale. Regarding the results, factor loads of SFI's three items (Item A [I am able to focus on times when my situation is not so overwhelming, even a little bit.] = .13, Item B [If I woke up tomorrow and a miracle happened in my life I would be able to notice differences in myself and others.] = .23, and Item C [Dwelling on my problems may not be the best way to find solutions] = .14) were found low. Researchers discussed removing these items, whose factor loads were below .32 (Büyüköztürk, 2002). After further investigations, it was found that: (a) Item A referred to an exception question, and it can be removed because Item 4 is also an exception question, (b) Item B referred to a miracle question, and this item can be removed because it is difficult to understand in Turkish culture and some other cultures (reference), and (c) Item C was coded in reverse; thus participants might not understand it properly, so this item was also decided to be removed. Consequently, these three items were not included in the Turkish version of the SBI.

In the exploratory factor analysis, the criterion of eigenvalues greater than one was considered, and the items were found to be groped in two sub-dimensions. They were named "Creating Solutions" and "Supporting Solutions." The scale items create solutions for existing problems (e.g., Item 1: I can generate solutions); or develop solutions regarding positive experiences in the past (e.g., Item 3: I can think about things that have made a positive difference for me). Dividing SFI into two dimensions was found to be compatible with Turkish culture and solution-focused thinking principles. Similarly, Şensoy and Siyez (2018) adapted a one-factor career distress scale addressing cultural expectations by dividing it into two sub-dimensions. In this context, the eigenvalues of the sub-dimensions were estimated as 4.38 and 1.05. The sub-dimensions explained 39.81% and 9.57% of the total variance, and they cumulatively explained 49.38% of the total variance. The next step was confirmatory factor analysis, in which fit indices between the data and the model were examined. These fit indices must be in line with the acceptable or perfect fit values specified in the literature. Analysis results are shown in Table 2.

The result of the confirmatory factor analysis shows that the fit between the model and the data is inadequate ($\chi2$ = 114.46, p = .000, sd = 43, $\chi2$ / df = 2.66, CFI = .91, TLI = .89, SRMR = .05, RMSEA = .08). The modifications that can be performed to bring the fit indices to an adequate level were reviewed. Accordingly, the most appropriate modifications were performed, and item error covariances were associated. In the literature, Çapık (2014) mentioned the modifications made to strengthen the model; in many studies, it was stated that the modifications should be compatible with the theoretical infrastructure (Çokluk et al., 2014; Diamantopoulos et al., 2000). Accordingly,

confirmatory factor analysis was repeated after creating a correlation between items 4 and 8. The resulting fit between the data and the model was adequate. ($\chi2 = 100.19$, p = .000, sd = 42, $\chi2$ / sd = 2.39, CFI = .93, TLI = .91, SRMR = .05, RMSEA = .07). These findings show that the fit index criteria specified in the literature were met (Keith, 2019; Şimşek, 2007; Tabachnick & Fidell, 2012). Standardized item estimation values of the scale's structural model are given in Figure 1.

Table 2

Fit values obtained from confirmatory factor analysis

Structural Models	$\chi2$	sd	$\chi2$/sd	CFI	TLI	SRMR	RMSEA
Model 1 First Level	114.456	43	2.66	.91	.89	.05	.08
Model 2 First Level Clause 4 and 8 errors Associated	100.187	42	2.39	.93	.91	.05	.07

Figure 1

Confirmatory Factor Analysis for Solution Building Inventory

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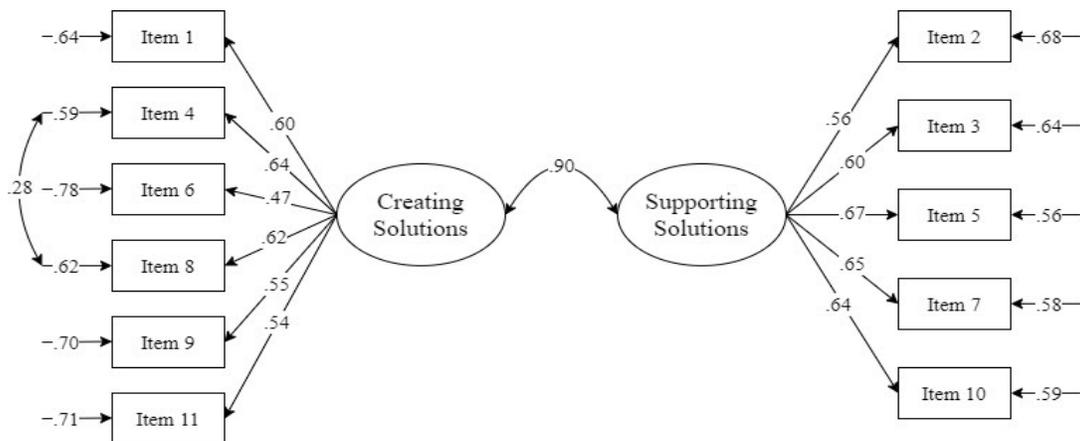
Regarding Figure 1, the items in both sub-dimensions of the SBI are significant in parameter estimation (p <.05). Item estimate values of 11 items of the scale are between .47 and .67. After correlating the error covariances of Items 4 and 8, the resulting correlation coefficient became .28.

Equivalent and Convergent Scale Validity

The equivalent scale validity of SBI was tested with scales whose validity and reliability had been proven in the literature. In this context, Dispositional Hope Scale and Positive Affect Scale (PANAS-P) were used as similar scales, and Negative Affect Scale (PANAS-N) was used as a convergent scale. First, the total scores were computed, and the normality assumption was tested. Kurtosis and skewness coefficients of the scales were between (-1;+1), and the data showed a normal distribution. Then, the relationships between these scales and SFI were analyzed by Pearson Product-Moment correlation. Findings are given in Table 3.

Table 3

Mean, Standard Deviation and Correlation Coefficients for Equivalent Scale Validity

	Mean	*SD*	SBI	SBI-CS	SBI-SS
SBI	42.30	6.97	-	.955*	.910*
SBI-CS	22.47	3.96	-	-	.748*
SBI-SS	19.84	2.82	-	-	-
DHS	47.78	7.67	.745*	.716*	.672*
PANAS-P	15.66	1.29	.191**	.168**	.193*
PANAS-N	14.39	1.39	-.376*	-.323*	-.393*

Note. SBI: Solution Building Inventory, SBI-CS: Solution Building Inventory-Creating Solutions, SBI-SS: Solution Building Inventory-Supporting Solutions, DHS: Dispositional Hope Scale, PANAS-P: Positive Affect Schedule; PANAS-N: Negative Affect Schedule, * p < .001, ** p < .01.

Regarding Table 5, the correlations of the overall SBI score and its sub-dimensions, SBI-CS and SBI-SS, with other scales are as expected. A positive and significant correlation was found between overall-SBI, SBI-CS, SBI-SS, and DHS and PANAS-P, whereas a negative and significant correlation was observed between them and PANAS-N. Besides, the correlations between SBI and its sub-dimensions were found to be significant and positive.

Reliability

SBI's reliability was derived from the Cronbach's alpha internal consistency coefficients, calculated from the data obtained from 278 participants and found to be .85 for the overall scale, .78 for the supporting solution, and .85 for the creating solution sub-dimensions. According to the literature, Cronbach's alpha values above .60 indicates sufficient reliability (Karagöz, 2017). Accordingly, it was concluded that the Turkish version of the SBI is reliable.

Discussion

This study aims to adapt Solution Building Inventory (SBI) to Turkish and examine its psychometric properties. For this purpose, the linguistic equivalence, construct validity, equivalent and convergent scale validity, and internal consistency of the inventory were computed. The exploratory factor analysis results showed that the factor loads of three items were lower than .32. According to the literature, the items below this value should be removed (Büyüköztürk, 2002). Besides, each of these three items has its specific reason to be removed from the inventory: being similar, not fitting Turkish culture, and intelligibility problems. The inventory's remaining items were grouped under two sub-factors and named "Creating Solutions" and "Supporting Solutions."

The researchers decided that the items of the creating solutions sub-dimension involve generating a solution in the face of a problem, whereas the items of the supporting solutions sub-dimension involve directing the existing situation to the better. This perspective also got the support of the original authors. Items grouped under these two factors explained 49.38% of the total variance. Afterward, confirmatory factor analysis was performed. Confirmatory factor analysis is a frequently used method in scale adaptation studies (Jackson et al., 2009) and examines the model's compatibility with the data (Graham et al., 2003). The analysis revealed that the fit indices were inadequate, and a modification was carried out. The findings obtained after the modification showed a good fit between the model and the data. This finding is consistent with the original form of the scale developed by Smock et al. (2010).

Regarding equivalent and convergent criterion validity, the following significant relationships were revealed: a positive, strong relationship with DHS, a moderate positive relationship with PANAS-P, and a moderate negative relationship with PANAS-N. These findings are consistent with the findings of Smock et al. (2010). Moreover, other studies proved that individuals with a high level of solution-focused thinking have high levels of hope and positive well-being (Kashdan & Rottenberg, 2010; Theeboom et al., 2015). In our study, there is no finding contradicting with the literature. Based on all these findings, it can be said that SFI's equivalent and convergent reliability was proven. Regarding the reliability analysis of the scale, Cronbach's alpha internal consistency coefficient was .89, which indicates that the scale is reliable (Karagöz, 2017). Besides, this finding is in line with the original study's reliability result (Smock et al., 2010).

It is concluded that SBI meets the needs of school counselors and other mental health professionals. Using this scale in the counseling process will permit to measure clients' solution-focused thinking and explain this thinking skill to them; thus, focusing on the solution rather than the problem could be ensured (Gündoğdu, 2020). This scale's main purpose is not trivializing the problem but developing solution-focused thinking (De Jong & Berg, 2013). It is believed that the acquisition of solution-focused thinking skills will bring a difference in the clients' lives.

Limitations and Recommendations

This study's limitation is that the number of female participants in the workgroup was higher than that of male participants. For future studies, it is recommended to perform the scale's validity and reliability analyses in different samples. The relationship between the concept of solution-focused thinking and other psychological and social factors should also be investigated. As a result, despite the limitations, it can be said that the SFI (Appendix) is a short, valid, and reliable measurement tool to measure solution-focused thinking in the Turkish population.

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Appendix

Solution Building Inventory-Turkish Version (Çözüm Odaklı Düşünme Ölçeği)

Aşağıdaki maddeler için, lütfen kesinlikle katılıyorum, katılıyorum, kararsızım, katılmıyorum veya kesinlikle katılmıyorum şeklinde yanıt veriniz.

5 = Kesinlikle katılıyorum
4 = Katılıyorum
3 = Kararsızım
2 = Katılmıyorum
1 = Kesinlikle katılmıyorum

MADDELER					
1. Hayatımdaki problemler için çözümler üretebiliyorum.	5	4	3	2	1
2. Çözüm üretebildiğim şeylere odaklanma yeteneğine sahibim.	5	4	3	2	1
3. Beni olumlu etkileyen şeyler hakkında fikir yürütebilirim.	5	4	3	2	1
4. Hayatımda zorluklarla iyi başa çıkabildiğim zamanlar vardır.	5	4	3	2	1
5. Kendimde ve etrafımda olan iyi şeyleri fark edebiliyorum.	5	4	3	2	1
6. Hayatın zorluklarıyla başa çıkabiliyorum.	5	4	3	2	1
7. Yaptığım küçük olumlu değişikliklerin farkındayım.	5	4	3	2	1
8. Zor durumlarla nasıl başa çıkabildiğimle ilgili, kendimle gerçekten gurur duyduğum anlar vardır.	5	4	3	2	1
9. Geçmişteki zorlukların başarıyla üstesinden geldim.	5	4	3	2	1
10. Yaşamımı geliştirmeye yönelik adımlar atıyorum.	5	4	3	2	1
11. İçinde bulunduğum durumun bazı kısımları içinden çıkılmaz gibi görünse de durumumda ki iyi şeyleri görebilirim.	5	4	3	2	1