



TECHNIUM
SOCIAL SCIENCES JOURNAL

www.techniumscience.com



Vol. 68/2025
A New Decade for Social Changes

PLUS
COMMUNICATION P



International
Communication & PR

An Azerbaijani Adaptation of the Lifespan Sibling Relationship Scale: Investigating Its Impact on Life Satisfaction and Psychological Resilience

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Abstract. The main purpose of this study is to adapt the Lifespan Sibling Relationship Scale for use in the Azerbaijani context and explore its association with psychological resilience and satisfaction with life. Data were gathered through a convenience sampling method, including a total of 367 individuals, aged 18 to 59 years ($M=25.04$, $SD=7.60$). The adaptation process of the Lifespan Sibling Relationship Scale involved Confirmatory Factor Analysis (CFA), Item Response Theory (IRT), and assessments of convergent validity and reliability (including Cronbach's α , McDonald's ω , and Guttman's λ_6). Furthermore, CFA supported the six dimensional structure of LSRS, despite one item of scale indicating factor loading above 0.30 and could not be taken into account in Azerbaijani context. IRT analysis was also conducted and results demonstrated that all items have excellent fit with the model. Additionally, results obtained from reliability analysis demonstrated that the Azerbaijani version of the LSRS presented sufficient reliability coefficient. Relationships between sibling relationships, life satisfaction and psychological resilience were investigated as well and the LSRS was found to be correlated with life satisfaction and psychological resilience. In summary, results of adaptation of Sibling Relationship Scale into Azerbaijani demonstrated excellent psychometric properties.

Keywords. sibling relationship, life satisfaction, psychological resilience, scale adaptation

Introduction

Interpersonal relationships are a critical determinant of human health and are intrinsically connected to overall health and well-being across the lifespan. Despite their significance, the specific mechanisms through which close relationships influence health, whether positively or negatively, are still not fully understood. These relationships represent a health factor that may be equally, if not more, influential than widely recognized health determinants such as smoking, body mass index, and physical activity (Holt-Lustand et al., 2010), underscoring the profound impact interpersonal relationships have on health.

Among various types of interpersonal relationships, family relationships are of paramount importance. The quality of family interactions is essential for sustaining well-being throughout life. Whether positive or negative, family relationships play a pivotal role in shaping an individual's health and well-being over time. As individuals grow older, their need for care increases, and as social connections in other domains, such as the workplace, diminish, the significance of family relationships for well-being may become even more pronounced (Milkie et al., 2008).

Family members maintain close bonds throughout different life stages, and these relationships are a vital source of social connection and influence (Umberson et al., 2010). Moreover, family ties can provide a sense of meaning and purpose, along with valuable social and material resources that contribute to overall well-being (Hartwell & Benson, 2007; Kawachi & Berkman, 2001; Alekseeva et al., 2016).

Sibling relationships, experienced by approximately 80% of individuals in Europe and the United States, are among the longest-lasting connections in a person's life (Dunn, 2023). While sibling relationships can lead to rivalry and conflict, they also represent some of the closest and most intimate bonds formed throughout childhood, adolescence, and adulthood (Buhrmester & Furman, 1990; Volling, 2003). Although extensive research has been conducted on parent-child and peer relationships, sibling dynamics have received comparatively less empirical attention, even though they are typically the most enduring relationships in an individual's life. Positive and supportive sibling relationships are essential for the development of children's social skills, their ability to resolve conflicts constructively, and their overall social and emotional understanding (Smorti & Ponti, 2018; Herrera & Dunn, 1997; Aliyev, 2024). A study conducted on schizophrenia has revealed that there is a strong association between the quality of sibling relationships and life satisfaction. Specifically, individuals with schizophrenia rated the quality of their relationship with their siblings highly, and it was also found that their life satisfaction levels were high (Smith et al., 2007).

Sibling relationships are frequently viewed as a context in which children develop both positive and negative social behaviors. Lam, Solmeyer, and McHale (2012) addressed this concept in their study, which gathered three annual measures on the levels of warmth and conflict between first- and second-born siblings during late childhood and early adolescence, alongside the children's self-reported empathy. Subsequent to controlling for variables such as parental sensitivity and marital quality, the authors predicted that higher levels of warmth and lower levels of conflict in sibling relationships would lead to increased empathy in the following year. They further suggested that the connection between sibling warmth and empathy would strengthen as children age. While adolescence is commonly seen as a period when young people distance themselves from their families and peers, this research suggests that siblings may play a progressively important role in shaping each other's empathetic growth during this critical developmental stage (Grusec & Hastings, 2015).

Research on family relationship dynamics has demonstrated that age differences play a significant role in shaping sibling interactions. As children transition into adolescence, these relationships tend to become more balanced and less emotionally intense (Buhrmester & Furman, 1990). However, recent studies indicate that this trend may reverse during the shift to young adulthood (Scharf et al., 2005; Whiteman et al., 2011). Additionally, sibling conflicts are more common among those of similar ages, likely due to increased competition for shared resources (e.g., clothes, friends) resulting from overlapping interests and social circles (Buhrmester & Furman, 1990). On the other hand, when siblings have a substantial age gap,

older siblings—especially older sisters—often assume a caregiving role, supporting their younger siblings (Brody et al., 1992).

The study on parental differential treatment (PDT) has demonstrated that siblings who receive less positive treatment from their parents tend to display an increased likelihood of externalizing behaviors over time (Richmond vø b., 2005). Moreover, differential care and warmth from mothers were found to have a greater influence on sibling conflict as reported by firstborn children, whereas differential warmth from fathers was more strongly associated with conflict reports from second-born children (Shanahan et al., 2008). A study investigating parental differential treatment (PDT) in young adulthood revealed that higher levels of maternal differential treatment were associated with diminished sibling intimacy. However, parental differential treatment was linked to lower intimacy only for the sibling who received less favorable treatment, with no such association observed for the favored sibling.

While the sibling relationship is recognized as a significant area of research in psychology, there is a limited number of quantitative tools available to assess the quality of these relationships. Furthermore, none of these tools have been formally validated in Azerbaijani. Among the existing questionnaires for evaluating sibling relationships, the Lifespan Sibling Relationship Scale (LSRS) by Riggio (2000) is one of the most commonly used self-report instruments. It effectively measures various aspects of sibling relationship quality and attitudes throughout both childhood and adulthood, demonstrating established reliability and validity. The LSRS measures 3 dimensions of sibling relationships: intensity and positivity of sibling-directed behavior in childhood and adulthood, sibling-directed feelings, and beliefs about the sibling relationship. The satisfaction of the sibling relationship, the closeness of the relationship, the role model approach of the sibling and the social support of the sibling are shown on the scale.

Lifespan Sibling Relationship Scale has been applied to determine the characteristics of sibling relationship among adults in Turkey (Oz Soysal et al., 2015), Korea (Jeong, 2013), Italy (Sommantico, 2019) and the psychometric properties of the translation of this scale into those languages were investigated.

The current study aimed to evaluate the psychometric properties of the Azerbaijani version of the LSRS, which can serve as a tool for assessing sibling relationship quality in psychosocial research.

Metod

Participants

Data were collected via online surveys using a convenience sampling method, targeting 367 adults living in Azerbaijan, ranging in age from 18 to 59 years, with a mean age of 25.04 years (Standard deviation = 7.60). Among the participants, 327 (89.1% of the total sample) were female, and 40 (10.9% of the total sample) were male. A significant portion of the participants achieved a higher level of education (n=315, 85.8%). Out of the participants, 53.4% (n=196) were unemployed, while 46.6% (n=171) were employed. A large majority of the participants (80.1%, n=294) in the study emphasized that their economic situation is moderate. Only 8.4 % (n=31) of individuals expressed satisfaction with economic status while the rest of participants (11.5%, n=42) stated dissatisfaction with economic status. While 44.7% (n=164) of the participants reported there are three children in their family, 40.3 % (n=148) stated that there were two children. Half of the individuals in the survey (50%) identified themselves as the first child of the family, while 33.8% of participants classified themselves as a

second child and rest 16.1% described themselves as a third or last child of their family. Comprehensive details about the participants are provided in Table 1.

Table 1. Descriptive information of the participants

Variable	Frequency	%
<i>Gender</i>		
Female	327	89.1
Male	40	10.9
<i>Marital Status</i>		
Single	271	73.8
Married	96	26.2
<i>Educational Status</i>		
High school	23	6.3
Vocational or technical secondary education	29	7.9
Higher education	315	85.8
<i>Economic Status</i>		
Poor	42	11.5
Moderate	294	80.1
Good	31	8.4
<i>The number of children in the family</i>		
One	12	3.3
Two	164	44.7
Three	148	40.3
Four and more	43	11.7
<i>The birth order in the family.</i>		
First	184	50.1
Second	124	33.8
Third or last	59	16.1
<i>Have brother or/and sister</i>		
Sister	72	19.6
Brother	151	41.1
Both	144	39.2

Ethics

The research was carried out in full compliance with the ethical guidelines set forth in the Helsinki Declaration of 1975. Ethical approval was obtained from the Ethics Committee of the Psychology Scientific Research Institute in Baku, Azerbaijan.

Measures

The Lifespan Sibling Relationship Scale was developed by Riggo in 2000 to study sibling relationships in 3 dimensions: intensity and positivity of sibling-directed behavior, sibling-directed feelings, and beliefs about the sibling relationship. The scale consists of 48 items ("My sibling and I do a lot of things together"). The questions are evaluated on a 5-point Likert scale (1: "strongly disagree", 5: "strongly agree") Each part of the 48 questions in the scale touches on certain topics: Adult affect (item 1-8), Adult behavior (item 9-16), Adult cognition (item 17-24), Child affect (item 25-32), Child behavior (item 33-40), child cognition (item 41-48)

Satisfaction with Life Scale was developed by Diener and colleagues in 1985. The purpose of the scale is to find out how satisfied people are with their lives. The scale consists of 5 items (example: I am satisfied with my life). Participants answer the scale questions on a 7-point scale:(1- I do not agree at all, 7-I completely agree)

The Brief Resilience Scale (BRS), developed by Smith et al. (2008), is designed to measure an individual's ability to recover or "bounce back" from stress. The BRS is a self-report instrument comprising six items (e.g., "It is hard for me to snap back when something bad happens"). Responses are scored on a 5-point Likert scale ranging from 1 ("Strongly disagree") to 5 ("Strongly agree"). The scale's internal consistency, as indicated by Cronbach's alpha, was found to be 0.87.

Data analysis

The current study aimed to evaluate the psychometric properties of the Lifespan Sibling Relationship Scale, including its structural validity, reliability, criterion-related validity, and predictive validity. To assess structural validity, Confirmatory Factor Analysis (CFA) was conducted through SPSS Statistics 29, using maximum likelihood estimation. Special focus was given to examining a range of goodness-of-fit indices, such as the chi-square (χ^2) to degrees of freedom (df) ratio, the Comparative Fit Index (CFI), the Normed Fit Index (NFI), the Relative Fit Index (RFI), the Incremental Fit Index (IFI), the Tucker-Lewis Index (TLI), and the Root Mean Square Error of Approximation (RMSEA). The internal consistency of the LSRS was evaluated using Cronbach's alpha (α), McDonald's omega (ω), and Guttman's lambda (λ_6) coefficients.

Additionally, we explored the associations between the sibling relationship and several psychological factors, including satisfaction with life and psychological resilience using correlation coefficients. Furthermore, a comprehensive network analysis was performed using JASP 0.18.01. to visually map the interconnections among dimensions of sibling relationship and psychological resilience and satisfaction with life.

Results

Azerbaijani Lifespan Sibling Relationship Scale structural validity was rigorously assessed, unveiling six dimensions: (a) adult affect, (b) adult behavior, (c) adult cognition and d) child affect, e) child behavior, f) child cognition. All dimensions of Azerbaijani dimensions Lifespan Sibling Relationship Scale have robust factor loadings (Figure 1).

Confirmatory Factor Analysis (CFA) was conducted to assess the factor structure of the Lifespan Sibling Relationship Scale-Azerbaijan version. The results of the CFA indicated that the fourteenth item of scale had factor loadings lower than 0.30. As a result, the 14th item of LSRS was deemed unsuitable for inclusion and was deleted from the scale. Prior to performing the exploratory factor analysis to examine the factor structures, item-total

correlations for the 48 items of the scale were evaluated to assess alignment with other items. Observed result indicated that the correlation coefficients for the fourteenth item ("My sibling and I borrow things from each other") with other items were below 0.30 and additionally, that item showed a negative correlation with several other items. The analysis indicated that removing this item from the scale led to an increase in the reliability coefficient.

As a result of the factor analyses, six dimensions of LSRS, consistent with its original version, were found. Factor loadings of 47 LSRS items given in Figure 1. ranged from .904 to .423. Factor loadings above .60 are deemed high, while those between .30 and .59 are categorized as "medium," which can be considered when determining whether to exclude a variable (Kline, 1994).

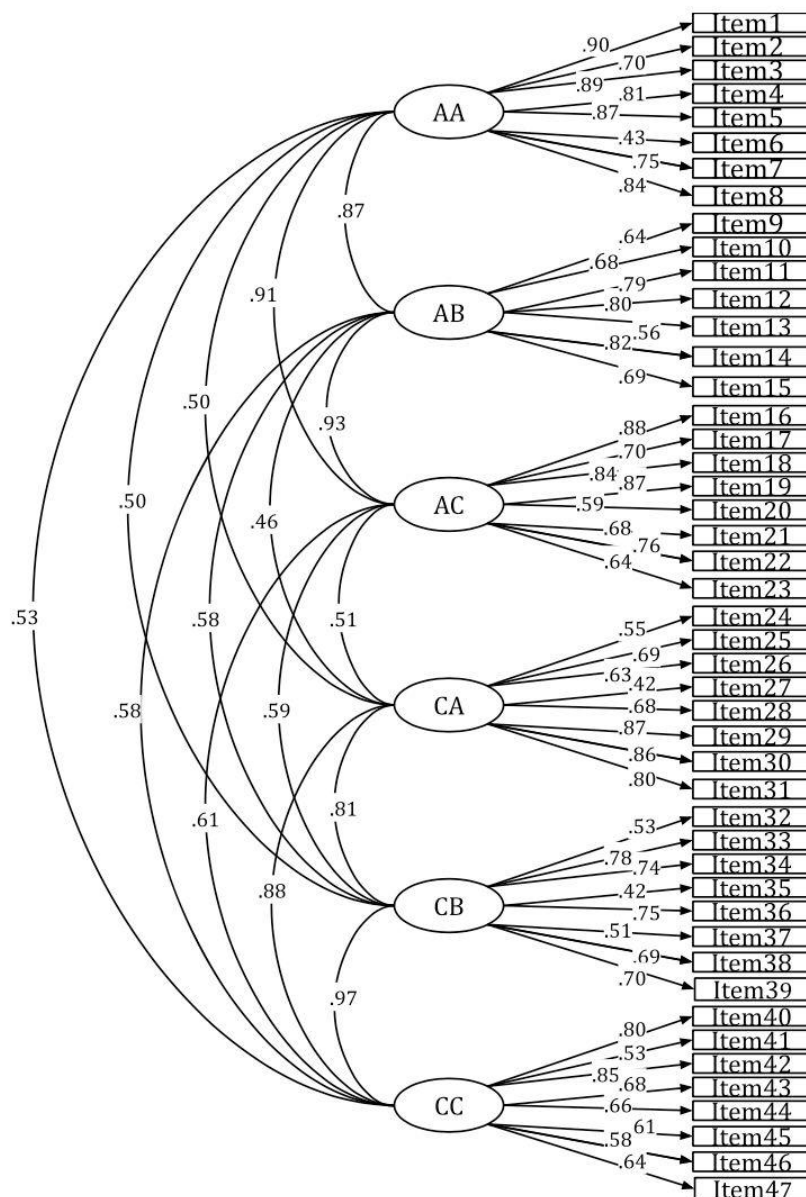


Figure 1. Confirmatory Factor Analysis of the LSRS

AA=Adult Affect; AB=Adult Behavior; AC=Adult Cognition; CA=Child Affect; CB=Child Behavior, CC=Child Cognition

Results of CFA also demonstrate that positive fit indices enhanced the reliability of the model: The chi-square statistic was $\chi^2(1019, N = 2980,371) = 2.925$, with a p-value $< .001$. Key fit indices were as follows: the Comparative Fit Index (CFI) = 0.837, the Relative Fit Index (RFI) = 0.749, the Normed Fit Index (NFI) = 0.773, the Incremental Fit Index (IFI) = 0.838, the Tucker-Lewis Index (TLI) = 0.819, and the Root Mean Square Error of Approximation (RMSEA) = 0.063. These values collectively suggest that the model demonstrates an adequate fit to the data (see Fig. 1).

Subsequent to the confirmation of the LSRS structural integrity, Item Response Theory (IRT) analysis was conducted using Graded Response Model (GRM). The results revealed that the discrimination parameter (α) values ranged from 0.918 to 3.587. Following Baker's (2001) framework, two items (Item 27, Item 35) were classified as having limited discriminative ability, while the remaining 45 items were categorized as exhibiting excellent discrimination. Item 1 (3.069), Item 5 (3.187), Item 7 (3.044) and Item 17 (3.587) demonstrated the highest discrimination value. These findings suggest that the 47 items of Lifespan Sibling Relationship Scale possess sufficient discriminative power to effectively differentiate between varying levels of lifespan sibling relationship.

Table 2. Reliability coefficients for LSRS

	Overall	Adult	Adult	Adult	Child	Child	Child
	l	Affect	Behaviou	Cognitio	Affect	Behaviou	Cognitio
			r	n		r	n
Cronbach α	.960	.927	.855	.917	.877	.845	.870
McDonald ω	.939	.920	.847	.908	.882	.839	.848
Guttman λ_6	.942	.924	.863	.910	.892	.865	.876

Following CFA and IRT analysis, the internal consistency reliability of the LSRS was thoroughly evaluated, shown in Table 3, using three distinct coefficients: Cronbach's alpha, McDonald's omega, and Guttman's lambda. All six factors of LSRS indicated strong reliability. Specifically, the Cronbach's alpha coefficient for overall scale (0.960) reflects the scale's solid reliability and reliability of six factors ranging from .845 to .927. Similarly, McDonald's omega coefficient also yielded a value of 0.939, further confirming the scale's dependability. McDonald's omega coefficient of six factors also ranges between .839 and .920. The Guttman's lambda coefficient, with a value of 0.814, provides additional evidence that the items within the scale measure a single underlying construct. Moreover, the lambda coefficient of six factors yielded values between .865 to .942. Obtained results indicate the strong reliability of Lifespan Sibling Relationship Scale.

Table 3. Criterion-related validity of the Lifespan Sibling Relationship Scale

Variables	Psychological Resilience	Satisfaction with life
Overall Lifespan Sibling Relationship Scale	.288**	.381**
Adult Affect	.189**	.235**
Adult Behavior	.218**	.272**
Adult Cognition	.205**	.320**
Child Affect	.213**	.208**
Child Behavior	.209**	.181**
Child Cognition	.224**	.249**

Note. ** $p < .001$

Lifespan Sibling Relationship Scale, Satisfaction With Life Scale and Psychological Resilience Scales were used to evaluate the criterion-related validity of six factors — adult affect, adult behavior, adult cognition and child affect, child behavior, child cognition — within the Azerbaijani Lifespan Sibling Relationship Scale (Table 3).

It is important to note that all analyses produced statistically significant correlations ($p < .001$). Six factors of the Lifespan Sibling Relationship Scale illustrate positive correlation with life satisfaction ranging from $r=.181$ to $r=.320$. Overall LSRS showed positive correlation with psychological resilience ($r=.288$, $p < .001$) and satisfaction with life ($r=.381$, $p < .001$) as well. Additionally, all six factors of LSRS produced positive correlation with psychological resilience ranging from $r= .189$ to $r=.224$.

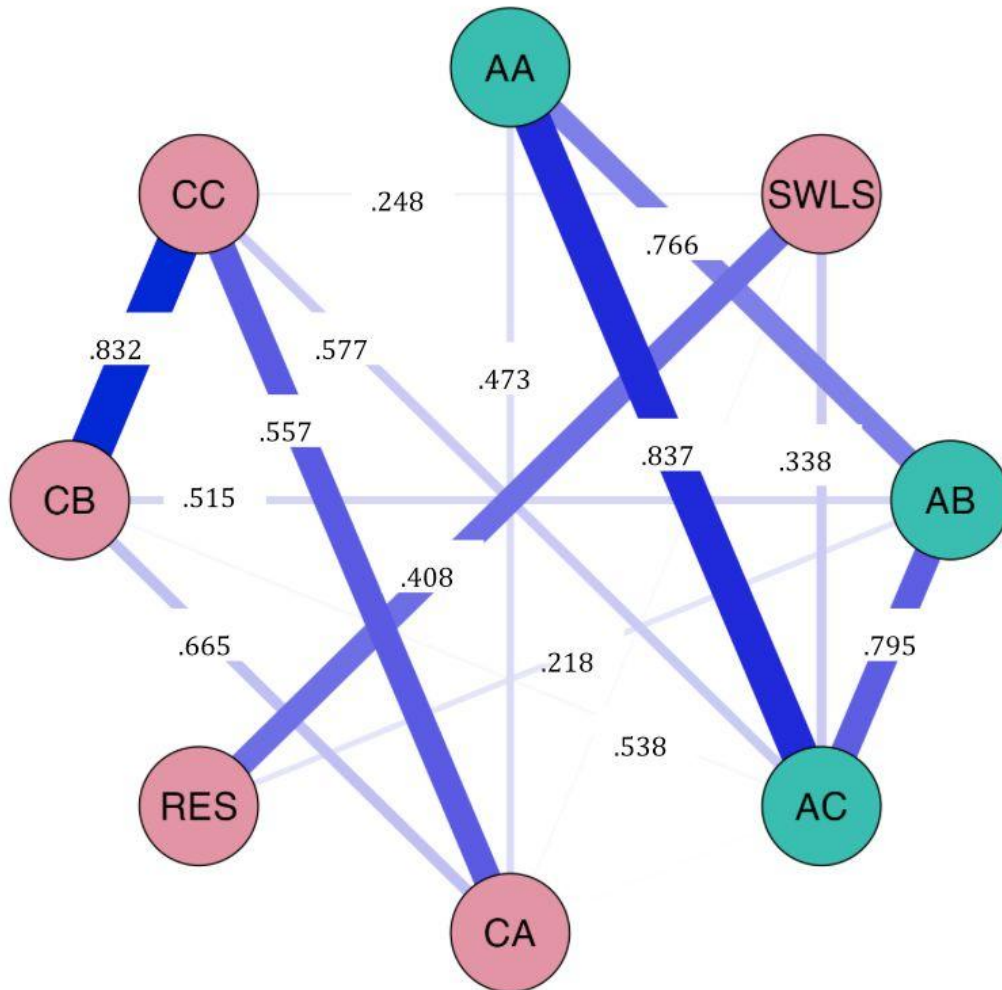


Figure 2. Network analysis results of the LSRS

Findings of the network analysis, shown in Figure 2, demonstrate the interrelationships between the dimensions of sibling relationship, adult affect, adult cognition, adult behavior, child affect, child cognition and child behavior, and other variables. Distinctly, dimensions of sibling relationship were correlated with each other and satisfaction with life, psychological resilience, highlighting the associations among these constructs.

Discussion

Sibling relationships, experienced by the majority of individuals, are frequently among the longest-lasting bonds in a person's life (Dunn, 2023). For more than a century, both clinicians and family theorists have emphasized the significance of siblings within family dynamics and their impact on individual well-being. Lifespan Sibling Relationship Scale is a useful tool to measure levels and psychological aspects of relationships between siblings. Therefore, current research aimed to assess the psychometric properties of LSRS in Azerbaijani siblings. Moreover, investigating the relationship between levels of sibling relationship and psychological resilience and satisfaction with life.

The confirmatory factor analysis (CFA) results for the Azerbaijani version of the Lifespan Sibling Relationship Scale confirmed a structure that somewhat differed from the

original version of scale (Riggio, 2000). Specifically, the fourteenth item of the scale, "My sibling and I borrow things from each other," exhibited very factor loadings, leading to its removal from the LSRS structure. The obtained results through CFA indicate that six-factors of LSRS align with both the original version of the scale (Riggio, 2000) and its adaptations in other languages (Jeong, 2013; Sommantico, 2019). The analysis showed that the 47-item scale assessing individuals' perceptions of their sibling relationships allows them to evaluate the levels of their sibling relationships based on their experiences up to the present time.

In the Item Response Theory (IRT) analysis, the reliability of all items was assessed, and their fit to the model was examined. This research represents the initial application of IRT analysis. For the Azerbaijani-adapted version of the Lifespan Sibling Relationship Scale, all item discrimination values were greater than 1.0. According to Baker (2001), a discrimination index above 1.0 signifies high discriminative power. The findings indicate that only one item showed a discrimination value below 1.0, while four items had values exceeding 3.0, highlighting exceptionally high discrimination. The IRT results suggest that the items in the Azerbaijani version of the LSRS demonstrate appropriate levels of item difficulty.

The Lifespan Sibling Relationship Scale (LSRS), consisting of 47 items, was psychometrically evaluated using a range of methods and samples. To assess the internal consistency of the Lifespan Sibling Relationship Scale, various analyses were conducted to determine whether the Azerbaijani version of the LSRS demonstrated adequate reliability. According to Nunnally and Bernstein (1994), a Cronbach's alpha value above 0.70 is considered acceptable. Findings showed that the estimated reliability level of the scale exceeded 0.70. In addition to Cronbach's alpha, another 2 distinct coefficients— McDonald's omega and Guttman's Lambda—also indicated satisfactory internal consistency for the items. In the present study, Cronbach's alpha was 0.960, McDonald's omega was 0.939, and Guttman's lambda was 0.942.

The criterion-related validity of the LSRS was assessed using the Satisfaction with Life Scale (SWLS) and the Brief Psychological Resilience Scale. Pearson's correlation coefficient was employed to examine the relationships between these scales and the six dimensions of the Lifespan Sibling Relationship Scale. The results indicated that individuals who have strong relationships with their siblings expressed high satisfaction from life (Smith & Greenberg, 2008). In contrast, adults who have bad relationships with their siblings, are more likely to express lower levels of satisfaction with life (Sethi, 2022). Furthermore, strong relationship siblings are associated with high levels of psychological resilience (Dirks et al., 2015). On the other hand, worst sibling relationships lead to decreased resilience of individuals who experience this (Buist et al., 2013).

Obtained results from criterion-related validity of the LSRS also illustrated that six dimensions of scale — adult affect, adult behavior, adult cognition and child affect, child behavior, child cognition — have positive association with life satisfaction and psychological resilience. People who experience higher levels of satisfaction with life are associated with positive adult and child behavior, cognition as well as affect towards siblings. These six aspects of relationships also have a huge impact on the psychological resilience of individuals.

Limitations

Despite the psychometric properties of the LSRS in Azerbaijani have been successfully examined, there are several limitations, in this study, that should be taken into account when explaining the research results. The first point in the research is that research data was conducted from participants through an online survey. Most of the participants in the study are identified

as female participants which generate another limitation for current research. Third limitation is that the study's target population primarily consisted of individuals residing in Baku and possessing a higher level of education. Despite all these limitations, important aspects have been taken into account in the methodology of the present study, and as a result, the psychometric properties of the Lifespan Sibling Relationship Scale have been tested in the Azerbaijani language.

Conclusion

Findings of the present study indicated that the Lifespan Sibling Relationship Scale is an appropriate, reliable, and valid tool for evaluating levels and psychological aspects of relationship between siblings within the Azerbaijani context. Revealed association between sibling relationship quality and resilience and life satisfaction will contribute to the development of preventive measures in this area.

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