



## RESEARCH ARTICLE

# Psychometric Properties of the Turkish Version of the Short Form of the Adult Sibling Relationship Questionnaire (ASRQ-SF) in Emerging Adults

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## ABSTRACT

A growing area of research examines the role of siblings in the family system, yet little is known about the characteristics of sibling relationships during emerging adulthood in Turkey. The aim of this study was to investigate the psychometric properties of the Turkish adaptation of the Adult Sibling Relationship Questionnaire-Short Form (ASRQ-SF). The study also examines the role of gender dynamics in Turkish emerging adult sibling relationships. The sample was comprised of 406 emerging adults (287 female and 119 male) aged between 18 and 25 who had at least one sibling and who were continuing their education at university. The construct validity of the ASRQ-SF was examined using exploratory and confirmatory factor analysis. The results confirmed the three-dimensional structure (warmth, conflict and rivalry) in the target sample. In the reliability study, internal consistency coefficients were determined to be .94 for warmth, .90 for conflict, and .91 for rivalry dimensions. Furthermore, gender-based results in the study showed that there was more warmth in sister-sister dyads. The findings of this study show that the ASRQ-SF is both a reliable and valid measurement tool that can be used to evaluate sibling relationship characteristics in Turkish emerging adults.

The relationships we have with our sibling relationships are among of the longest-lasting relationships humans experience and these relationships have a dynamic nature over time and may change depending on the family characteristics, environmental conditions, and the developmental stage the siblings find themselves in.. Studies indicate that in childhood and adolescence, characteristics of siblings and sibling relationship dynamics are related to personality development and mental health (Greer et al., 2015; Geerts-Perry et al., 2021; Jensen et al., 2023b; McHale et al., 2012). In addition, a broader literature emphasizes the importance of these relationships across the lifespan (Conger & Littler, 2010; Riggio, 2000; Scharf et al., 2005), and more research

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is examining sibling relationships, particularly in emerging adulthood (Cassinat & Jensen, 2020; Finan et al., 2018; Hamwey & Whiteman, 2021; Portner & Riggs, 2016). However, the examination of the qualities of sibling relationships in Turkish culture is quite new (Aytaç-Bakkaloğlu, 2021; Cilali et al., 2019; Ozbay & Aydoğan, 2020). There are common measurement tools for assessing sibling relationship characteristics in different cultures and evaluating sibling relationship characteristics from childhood to adulthood (Graham-Bermann & Cutler, 1994; Riggio, 2000; Stocker et al., 1997; Straus et al., 1996), yet the applicability of these measures in Turkish culture is limited, which constrains sibling research in Turkey. We aim to increase our understanding of emerging adults' sibling relationships in Turkish context by examining the psychometric properties of the Turkish adaptation of the Short Form of Adult Sibling Relationship Questionnaire (ASRQ-SF; Stocker et al., 1997). In addition, we also examine the role of gender plays in Turkish emerging adult sibling relationships.

### **Sibling Relationships in Emerging Adulthood**

Like other close relationships, sibling relationships also change across the lifespan. Emerging adulthood is seen as a period that includes 18-25 years of age with transition from adolescence to adulthood (Arnett, 2000; 2004). In emerging adulthood, family relationships are maintained more voluntarily than childhood and adolescence (Aquilino, 2006). Emerging adults need less parental support and guidance even if they are not yet completely independent (Arnett & Tanner, 2005) and there are changes in the qualities of interactions between emerging adult siblings (Milevsky, 2019; Milevsky & Heerwagen, 2013). However, at the end of adolescence and emerging adulthood, the bonds siblings, and especially those with warm sibling relationships, remain an important source of support (e.g., Ozbay & Aydoğan, 2020). Furthermore, it is found that even though siblings engage in less joint activities in adulthood compared to adolescence, the relationships become more intimate and warm (Scharf et al., 2005).

Relationships between siblings in emerging adulthood are defined by the amount of warmth, conflict and rivalry (Milevsky & Heerwagen, 2013; Stocker et al., 1997) displayed in the relationship. The Adult Sibling Relationship Questionnaire (ASRQ), first developed by Stocker et al. (1997), evaluates these three characteristics of sibling relationships in young, middle and late adulthood. Warmth includes siblings' intimacy, support, and being informed about each other's relationships and thoughts. Conflict refers to the arguments, antagonism and dominant behaviors experienced by the siblings with each other. Finally, rivalry refers to the perception of maternal and paternal favoritism by siblings. Thus, similar to childhood and adolescence, sibling relationships in adulthood are characterized with positive qualities reflected in warmth, as well as negative qualities such conflict and rivalry characteristics (e.g., Jensen et al., 2018; Milevsky et al., 2005; Plamondon et al., 2021; Scharf et al., 2005). However, since siblings in adulthood choose how to communicate or stay in contact with each other, the conflict between sibling dyads is mentioned less than in childhood (Stocker et al., 1997). In the same way, in the rivalry dimension, if siblings live separately from their parents and siblings in adulthood, rivalry is more rare (Stocker et al., 1997). However, the characteristics of these relationships that appear in adulthood are also influenced by relationships in adolescence (e.g., Tucker et al., 2019). A longitudinal study reported that emerging adults who were victims of aggression from a close sibling during adolescence had fewer close relationships with their siblings after four years and received less support from them (Tucker et al., 2019). Furthermore, there are studies focusing on the unique role of siblings in the development of empathy in childhood and adulthood (e.g. Gungordu & Hernandez-Reif, 2022). However, there may be changes in maintaining the relations of emerging adults with their siblings due to attending college, getting married, having romantic relationships and starting a family, and beginning more concentrated participation in the workforce (Aldrich et al., 2021; Jensen et al., 2018). Milevsky and Heerwagen (2013) found that emerging adults who are university students have more close relationships with their siblings despite their living apart from siblings. During these time siblings often move away from home, shifting from near daily contact, to entirely less regular contact via family visits for holidays or inter-semester breaks, or through technology-mediated communications such as message via mobile phones and other devices, or through social media applications (Hamwey et al., 2019).

Socio-demographic characteristics of sibling dyads, such as gender compositions, age difference, and birth order, are also related to sibling relationship quality (Milevsky et al., 2005; Weaver et al., 2003). For instance,

there are more close relationships between adult sisters, involving support and giving more positive feedback (Milevsky et al., 2005). The relationship between brother-sister dyads are more distant and protective than sister-sister dyads (Weaver et al., 2003), while the qualities such as teaching new skills and keeping confidentiality in each other are more common between brother-sister dyads (Doughty et al., 2013). While some studies, gender differences were not found in the relationship between siblings (e.g. Tucker et al., 2019) in some studies, women reported higher quality relationship with their siblings than men (e.g. Gungordu & Hernandez-Reif, 2022). There are changes in sibling relationships based on cultural norms and cultural practices (Cicirelli, 1995) For example, siblings' lives are closely intertwined throughout life in many nonindustrialized societies, with carefully defined duties and responsibilities (Cicerelli, 1995). Also the relationships between siblings are expected to continue closely throughout life in Turkey. Furthermore, the age gap between siblings and the gender of sibling can be effective in these relationship. For expamle, in non-industrialized societies, the eldest brother or sister is sometimes expected to obey them like a parent (Cicirelli, 1995). Although Turkey has predominantly collectivist cultural characteristics, it also attaches importance to individuation as well as collectivist socialization in its developed and urbanized regions (Atak & Çok, 2010). The socio-cultural context in Turkey has traditionally been defined as a culture in which social connectedness among immediate family, close and more distant relatives, neighbors and other social groups are crucial (İmamoğlu et al., 1993). Especially in the urban areas of Turkey, it has been observed that the traditional family lifestyle has been adopted and even the kinship relations, especially the ties between siblings, have retain an air of traditional family values that favor closeness and continuity of contact. Kağıtçıbaşı (2007) revealed that there are changes in the family, along with a cultural structure classification that brings together both "autonomy and relationality."

As a testament to the importance of sibling relationships in Turkey, a study of adults who left home to continue their university education in Turkey also found that sibling relationship quality in emerging adulthood, is a stronger predictor for their resilience than their relationship with their parents (Ozbay & Aydoğan, 2020). The bond between siblings lasts for a lifetime and the enduring nature of the relationship is a common belief in Turkey. Even when physical distance separates siblings in adulthood, the harmony of autonomous and relational traits in the Turkish cultural context (Kağıtçıbaşı, 2007) and the continuation of the ties can be explained by the continuation of inter-dependence behaviour patterns in the family. In another study conducted on a Turkish adult group, in-depth interviews were conducted with seven sibling couples aged 18-25 to understand the changes in sibling relationships from childhood to adulthood (Aytaç-Bakkaloğlu, 2021). In these interviews, it was reported that there were positive changes from childhood to emerging adulthood, and the frequency of conflicts decreased even though conflicts between siblings continued (Aytaç-Bakkaloglu, 2021). In addition, because of the influence of the cultural factor, behaviours such as offering more care and providing support to the younger sibling from the older one also persisted (Aytaç-Bakkaloğlu, 2021). Yet in spite of this finding, sibling relationships in this period, similar to studies conducted in Western societies (e.g., Lindell & Campione-Barr, 2017), also took on a more egalitarian structure like friendships (Aytaç-Bakkaloğlu, 2021). In emerging adulthood, competitive relationships between siblings may occur perhaps based on the favouritism of parents between siblings. One interesting recent qualitative study (Con et al., 2019) examined differences in parental differential treatment on sibling relations in Turkey and in the US found that gender played a different role in terms of understanding differential treatment. Mothers favored sons more than daughters in Turkey but in the US mothers favored their daughters. This gendered nature of favoritism also impacted the sibling relationships differently across the two contexts. Also, some studies revealed no significant differences in themes describing emerging adults' sibling-related memories between females and males, and between Turkey and U.S. (e.g. Kara et al., 2023). Another Turkish-based study showed that after the negative experience of the father's death, the roles and responsibilities between siblings changed and the brother was given a role as protector, caregiver, and more responsibility in the family, even when he was a minor (Özbay & Aydoğan, 2019). Considering the influence of cultural context on family relationships in Turkish society, where collectivist cultural characteristics are considered predominant, the need for cultural adaptation of a measurement instrument focused on the characteristics of sibling relationship of the emerging

adult group is important to help systematize current research on this important relationship in the rapidly evolving Turkish cultural context.

### **Measurement Tools for Adult Sibling Relationships**

There are a limited number of tools that measure sibling relationship characteristics in adulthood. One of these scales is the Brother-Sister Questionnaire developed by Graham-Bermann and Cutler (1994), which examines the sister or brother relationships of individuals with measured subscales that include empathy, similarity, boundary maintenance, and power/controlling behavior domains. Another scale sometimes used to examine sibling relationship quality, more focused on conflict between siblings, is the Revised Conflict Tactics Scale (Straus et al., 1996). This scale evaluates the sibling relationship characteristics remembered between the ages of 7-17 together with conflict styles by thinking of the siblings' conflicts at a given age. There is also the Lifespan Sibling Relationship Scale (LSRS) developed by Riggio (2000), which is also widely used in the recent relevant literature. The LSRS focuses on evaluating the attitudes of individuals towards sibling relationships in childhood and adulthood and consists of 48 items. The adaptation studies of the LSRS to Turkish culture were carried out by Oz-Soysal, Yurdabakan, Uz Bas, and Aysan (2016) and Cilalı, Erdur-Baker, and Bugay (2019) on emerging adults. The scale consists of a total of six sub-dimensions, three of which related to adulthood (adulthood emotions, childhood behaviors and childhood cognition). However, there are limitations on recalled sibling relationship experiences of the scales evaluating sibling relationships developed by Straus et al. (1996) and Riggio (2000). A new scale has been developed that measures the quality of sibling relationships in emerging adulthood. The Emerging Adults' Relationships with Siblings Scale, which consists of five sub-scales namely, closeness, conflict, Ill-Wishes, parent-mediated relationship, and upward comparison (Jensen et al., 2023a). Indeed, in retrospective studies, the scale scores may be limited due to difficulty in remembering the past or social desirability issues influencing the ratings obtained (Bell & Bell, 2018). Therefore, we focused our efforts on the ASRQ, specifically the short form, as it focuses on current behaviors toward, and feelings about, a specific sibling. Also, the ASRQ-SF was adapted for the following reasons: (I) The ASRQ long form is too long for many data collection efforts and the ASRQ-SF can be applied easily, (II) The ASRQ-SF provides ease of use in cross-cultural comparative studies.

### **Adult Sibling Relationship Questionnaire (ASRQ)**

The original ASRQ consists of 81 items and evaluates the quality of adult sibling relationships in the broad dimensions of warmth, conflict, and rivalry. The questionnaire includes 14 dyadic relationship subscales included under the three main dimensions; Intimacy, Affection, Knowledge, Acceptance, Similarity, Admiration, Emotional Support, Instrumental Support, Dominance, Competition, Antagonism, Quarrelling, Maternal Rivalry, and Paternal Rivalry. Several validation studies of the original ASRQ have been successfully conducted in different cultures (see Table 1). The 81-item form of the ASRQ was adapted in Turkish by Şahin (2017), and the CFA model was confirmed but 14 items were deleted as a result of EFA in the study suggesting some items may not be appropriate for the Turkish context. In addition, the 81-item ASRQ represents a significant item burden for researchers, especially when interested in broad dimensions of Warmth, Conflict, and Rivalry rather than the more numerous relationship subscales. Considering this situation, we thought it important to examine the psychometric properties of the short form of the scale in Turkish culture. The ASRQ-SF consists of 47 items spread over 8 subscales, which represents a 42% reduction in item load from the original ASRQ. The items on the 8 subscales are used to create 3 higher-order factors: Warmth (intimacy, affection, knowledge), Conflict (dominance, quarrelling, antagonism), and Rivalry (maternal and paternal rivalry). In addition to the US, successful validation studies of ASRQ-SF have been conducted in South Korea (Jang, 2009), France (Plesis, et al., 2020), and Poland (Wałęcka-Matyja, 2016). The ASRQ-SF is widely used in sibling studies (Milevsky, 2019; Ponti & Smorti, 2020; Scharf et al., 2005; Stewart et al., 2001). Considering that ASRQ is widely used in research in the field of developmental psychology and family studies, the ASRQ-SF was adapted for the following reasons: (I) The ASRQ long form is not very useful in the data collection process and the ASRQ-SF can be applied more systematically and understandably, (II) ASRQ- Short Form (ASRQ-SF) is the most suitable scale for cross-cultural studies.

**Table 1.** Summary of prior ASQR validation studies.

Citation	Language	Sample	Factorial structure	Construct validity	Analysis	Items
Şahin (2017)	Turkish	Emerging adults	3 / 3; warmth, conflict, rivalry	BES, SES	CFA, EFA	67 items, 14 items deleted
Tani et al. (2013)	Italian	Emerging adults	2 / 2; warmth, conflict	NRI	EFA, CFA	43 items
Wałęcka-Matyja (2016)	Polish	Adults	3 / 3; warmth, conflict, rivalry	GHQ-28, MHC-SF	EFA, CFA	61 items
Plesis, et al. (2020)	French	Adults	3 / 3; warmth, conflict, rivalry	•	-	44 items (3 items deleted from conflict subscale)
Jang (2009)	South Korea	College students	2 / 2; warmth, conflict	•	EFA	30 items
Heyeres, 2006	Germany	Adults	3 / 3; warmth, conflict, rivalry	•	EFA	81

*Note.* 3/1 = 3 factor and 3 structure; 2 / 2 = 2 factor and 2 structure; BES = Basic Empathy Scale; SES = Self-Esteem Scale; NRI = Network of Relationships Inventory; GHQ-28 = General Health Questionnaire; MHC-SF = Mental Health Continuum-Short Form; EFA = Exploratory Factor Analysis, CFA = Confirmatory Factor Analyses

## The Present Study

The aim of the current study is to adapt the ASRQ-SF (Stocker et al., 1997) to Turkish and to investigate the evidence for its validity and reliability, in so doing we will provide a comprehensive descriptive and structural examination of the ASRQ in a sample of Turkish emerging adults. In the current study, we translated and adapted the 47-item ASRQ-SF into Turkish to examine its psychometric properties. The results obtained from our study of the ASRQ-SF are expected to contribute to the understanding of emerging adult sibling relationship characteristics in the Turkish cultural context.

## Method

### Participants

Participants were recruited from a public university in western Turkey and a private university in the east. In this study a purposeful sampling method was used. We enrolled emerging adult participants who had a sibling who was at least 9 years of age. The final sample consisted of 396 emerging adult university students in Turkey (280 female, 70.7%; 116 male, 29.3%) Range 18-25, Mage = 20.56, SD =1.44). A large majority of the participants rated their socio-economic status as middle-income (n = 331, 83.6%). In addition, most participants' parents had a high school or higher education level (n=131, 33.0% of the mothers and n=191, 48.3% of the fathers).

The number of siblings of the study participants varied between one and nine and they have an average of three siblings. In the current study, those who had more than one sibling were asked to respond to the survey considering one target sibling older than nine years of age. Each of the participants shared information about their chosen sibling (see Table 2 for demographic info). The targeted siblings of participants were 204 male (51.5%) and 192 female (48.5%). Participants who reported on younger siblings (95 females, 117 males) that ranged between 9 and 22 years old with a mean age of 16.01 years (SD =2.81). Participants that rated on older siblings (93 females, 87 males) that ranged between 19-36 years old with a mean age of 25.81 years (SD =3.49). Most of the participants (n = 234, 59.1%) stated that they met face-to-face with their siblings quite

often, and the majority ( $n = 207$ , 52.1%) stated that they were more likely to call each other. In addition, siblings got together on special occasions ( $n = 351$ , 88.7%). 121 of the emerging adults who appeared in the study lived in the same city with their family (30.4%), while 179 participants (45.2%) lived in a dormitory, 56 participants (14.1%) lived with their housemates, and 40 participants (10.1%) lived elsewhere. In this study most participants ( $n = 232$ , 58.8 %) lived 100 km or further from their siblings at the time of the data collection. In addition, to obtaining information about the most shared topics and contents among siblings in emerging adulthood, the participants were asked to write the topics they shared the most with their siblings. The written answers were examined in terms of content and grouped into five themes: Education (university life, exams, education planning;  $n = 215$ ), family (family relationships, communication, sharing with parents, conflicts within the family;  $n = 84$ ), close relationships (friendship, romantic relationships, family relationships;  $n = 61$ ) future goals (career goals;  $n = 36$ ), daily conversation topics (interests, movies, music, cooking, social media, shopping, fun together;  $n = 55$ ).

**Table 2.** Participants' demographic descriptive statistics.

<b>Participants' profile</b>	<b>M <math>\pm</math> SD or % (n)</b>
Age (years)	20.56 (1.44)
Gender	
Male	29.3 (116)
Female	70.7 (280)
Perceived social-economic state	
Low income	9.3 (37)
Middle income	83.6 (331)
High income	7.1 (28)
Sibling's age (years)	20.54 (5.83)
Siblings' gender	
Male	51.5 (204)
Female	48.5 (192)
Birth order	
First-born	41.4 (164)
Second-born	31.6 (125)
Third	13.9 (55)
Forth	8.3 (33)
Fifth or later born	4.8 (19)
Sibling birth order	
First-born	29.0 (115)
Second-born	47.2 (187)
Third	14.6 (58)
Forth	4.8 (19)
Fifth or later born	4.3 (17)
Sibling dyads	
Sister-sister	37.4 (148)
Brother-brother	17.9 (71)
Sister-brother	44.7 (177)
Parents' marital status	
Together	95.2 (377)
Separate	1.8 (7)
Divorced	3.0 (12)
Mother education	
Primary	45.2 (179)
Secondary	21.7 (86)
High school	19.9 (79)
University	13.1 (52)
Father education	
Primary	30.6 (121)
Secondary	21.2 (84)
High school	22.5 (89)
University	24.0 (95)
Postgraduate (Master/PhD)	1.8 (7)



## Data Collection Tools

The participants completed the Short-Form Adult Sibling Relationship Questionnaire. In addition, the Lifespan Sibling Relationship Scale subscale of adulthood sibling relationship was used for convergent validity. Participants completed the Wellness Scale (Siyez et al., 2020) and the Autonomous-Related Self Scale (Kağıtçıbaşı, 2007; 2013) for discriminant validity. Finally, a Personal Information Form, created by the research team, was used to collect demographic information, as well as characteristics of the participants' family, and nature and extensiveness of contact between the participants and their targeted sibling.

**Personal Information Form.** This form consists of questions about the age, gender, socioeconomic status, current living situation, and parenting and sibling information. Specifically, we asked the participants about the number of siblings they had, the physical distance between them and their siblings, the frequency of face-to-face and telephone contact, information about their parents' sibling relationships, and their parents' current marital status.

**Adult Sibling Relationship Questionnaire- Short Form (ASRQ-SF).** ASRQ-SF was developed to evaluate the perceptions of adults of all ages about both their siblings' and their own feelings and behaviors towards them (Stocker et al., 1997). If a participant had multiple siblings appropriate for the study, the scale asks the person to choose a sibling that they see as more warm to him/her. The ASRQ-SF focuses on participants' relationships with only one of their siblings. The original version of the ASRQ consists of 81 items and the short form consists of 47 items, and has not been published (Stocker et al., 1997). However, the ASRQ-SF is used widespread in different countries such as France (Plesis et al., 2020), South Korea (Jang, 2009), the United States (Warner, 2017), and Poland (Walecka-Matya, 2017). The 47 items of the ASRQ-SF, which make up eight sub-scales grouped into the three composite factors of sibling relationship: Warmth, conflict, and rivalry. The warmth scale totals 18 items from three subscales: Intimacy (6 items, e.g., How much do you talk to this sibling about things that are important to you?), emotional support (6 items, e.g., How much does the sibling try to cheer you up when you are feeling down?) and knowledge (6 items, e.g. How much do you know about this sibling?). The conflict scale included 17 items from three subscales: quarrelling (5 items, e.g., How much does this sibling disagree with you about things?), antagonism (6 items, e.g., How much does this sibling put you down?), dominance (6 items, e.g., How much is this sibling bossy with you?). The rivalry scale included 12 items from two subscales: Paternal rivalry (6 items, e.g., Does this sibling think your father favors him/her or you more?) and Maternal rivalry (6 items, e.g., Does this sibling think your mother supports him/her or you more?). The warmth and conflict scores range from 1-5 (1 (hardly at all) to 5 (extremely much), and rivalry scores range from 0-2, with 0 indicating absence of rivalry and 2 indicating maximum rivalry. Cronbach's alpha estimates were .94, .90 and .91 warmth, conflict and rivalry scale, respectively in the Turkish sample.

**Lifespan Sibling Relationship Scale (LSRS).** The LSRS (Riggio, 2000) measures one's attitude towards sibling relationships in childhood and adulthood. The questionnaire includes 48 items and rated on a five-point Likert-type scale (1 = strongly disagree to 5 = strongly agree). The LSRS includes separate subscales for childhood and adult sibling relationship quality. In this study, the sub-scale of adult sibling relationship quality was used, which consists of affect, cognition and behavioral dimensions of the sibling relationship. The sub-scales each consist of 8 items: adult affect ("My sibling makes me happy"), adult behavior ("I presently spend a lot of time with my sibling"), adult cognition ("I know that I am one of my sibling's best friends"). Higher scores on the LSRS scales reflects more positive views toward the targeted sibling. In the present study, Cronbach's alpha estimates were .82, .86, .88 for adult affect, adult behavior, and adult cognition, and Cronbach's alpha coefficient for the 24-item LSRS was .93.

**Wellness Scale for Emerging Adults (WSEA).** This WSEA measures the psychological wellness of adults (Siyez et al., 2020). The WSEA consists of 12 items that are rated on 5-point Likert scale ranging from strongly dissatisfied to strongly satisfied. The scale items include current satisfaction with a variety of domains of life including: family life, relationships with others, love, career choice, world view, sexual life, sexual identity, physical health, spiritual life, life goals, and life in general. Higher scores indicate a higher level of wellness. In the present study, Cronbach's alpha for wellness was .81.

***Autonomous-Related Self Scale (ARSS).*** The ARSS was developed by Kağıtçıbaşı (2007/2013) to assess the self-perceptions of individuals in relation to others. The scale has three subscales which are autonomous self (e.g. item “I feel independent of the people who are close to me”), related self (e.g. item “I think often of those to whom I feel very close”), and autonomous-related self (e.g. item “A person can feel both independent and connected to those who are close to him/her”). The autonomous self scale measures the degree of autonomy in close personal relationships. The related self scale assessed the degree of relatedness in close personal relationships. Finally, the autonomous related self scale assessed the degree of autonomy and relatedness in close personal relationships. There are a total of 27 items on the scale and participants rate each item within a range of 1 (strongly disagree) to 5 (strongly agree). In the present study, Cronbach’s alpha estimates were .61, .62, .72 for relational self, autonomous self, autonomous-relational self subscales, respectively.

## Procedure

Written permission for the adaptation of ASRQ-SF to Turkish culture was obtained from Dr. Richard Lanthier and Dr. Clare Stocker via e-mail in February 2020. The scale was separately translated from English to Turkish by two of the authors of this study. Following these translations, the two authors of the study examined the items of the scale together and disagreements on translation were resolved by consensus. The original English and Turkish form of the scale was then shared with two experts working in the family counseling field. Experts examined the original and translation states of the scale together and evaluated whether the words in the items were used in the same sense in both cultures. Thus, the comprehensibility of the Turkish expressions of the items and the suitability of the items in the scale were examined. After the corrections made inline with the expert opinions, the Turkish version of ASRQ-SF the scale was ready for data collection.

IRB permissions were granted before the start of our data collection (Ethics committee date: 11.05.2020 and Ethics committee no: -804.01-E.2005110024). Data were collected through self-report instruments using Google Forms. The authors of the study made the following announcement by sharing the Google form link with the information about the study to the students at their university via e-mail and social media (Instagram and Facebook) accounts where the student communities are located: “This study focuses on understanding your relationships with your siblings. In order to take part in the study, you must have a sibling at least 9 years old. Your identity information is not requested in the study. Participation in the research is entirely voluntary. Your responses will only be seen by researchers and will not be shared with other people in any way. You can stop answering items in the research at any time. This study takes about 15 minutes. ”. Following the instructions given in this way, after the target group stated that they met the criteria required for the study, they answered the personal information form and ASRQ-SF. “I am participating in this study completely voluntarily and I know that I can interrupt it at any time. I agree with the use of the information I have provided in scientific publications.” With these instructions, consent of participants was obtained. The data were obtained from 406 emerging adults continuing their education at a university in November-December 2021.

## Data Analysis

SPSS 24.0 and AMOS 24.0 programs were used in the analysis of the data. Before the analyses, the data set was examined specific family contexts and data were statistical outliers that would exclude participants from analysis. A total of 519 participants interacted with the survey. A number of participants were removed from the dataset used for analysis. Regarding family context, 32 participants were over the age of 25, eight participants reported on siblings who were under nine years old, 15 participants reported on siblings who are twins and half-siblings, 46 participants reported on siblings who had a chronic illness, and 22 participants had a parent or parents who died. Data were examined for missing data and all data was complete. We then examined participant data extreme values. The data were converted to standard Z scores and the data belonging to the nine participants were seen to be extreme values ( $\pm 3.29$ ) and removed from the data set. Additionally, multidimensional extreme value analysis suggested excluding the data of one participant from the data set. Skewness values for the items varied between -0.17 and 0.67 and kurtosis ranged from -0.47 and -0.64. With these obtained values, it was determined that normality assumptions were met and the data showed normal distribution (Tabachnick & Fidell, 2013). Thus, final data analyses were done on 396 participants. The construct validity of ASRQ-SF was examined using exploratory factor analysis (EFA) and confirmatory factor



analysis (CFA). Following the EFA and CFA, convergent and discriminant validity of the ASRQ-SF scales were examined using correlations. For the reliability of the ASRQ-SF, we computed Cronbach's alpha.

## Results

### Exploratory Factor Analysis (EFA)

In this study, EFA was first performed using the SPSS 24.0 to examine the original factor structure of ASRQ-SF. The Kaiser-Meyer-Olkin (KMO) test was computed to determine the sampling adequacy of the data. The obtained value was .83, indicating sampling adequacy. The chi-square value obtained from the Barlett test was significant at .01 level. This obtained value shows that the sample size is sufficient to perform factor analysis (Tavşancıl, 2005). Factor analysis was performed on the three-dimensional structure as stated in the original measurement model of ASRQ-SF. To clarify the relationship among factors, the varimax rotation (the orthogonal rotation technique of Principal Component Analysis) was used. The contribution of warmth (items from intimacy, emotional support, and knowledge subscales), conflict (items from quarreling, antagonism, dominance subscales) and rivalry (items from paternal rivalry and maternal rivalry subscales) of the scale to total variance was calculated as 48%. It was determined that the eigenvalue of the "warmth" factor that emerged as the first factor was 10.46, the eigenvalue of the "conflict" factor that emerged as the second factor was 7.30, and the eigenvalue of the "rivalry" factor that emerged as the third factor was 5.05, the variance was 20%, 15% and 13%, respectively. Factor loadings for the warmth dimension have been observed to vary between .61 and .82 and for conflict dimension has been observed to vary between .51 and .77 and rivalry dimension has been observed to vary between .66 and .75. These obtained factor loadings are evaluated as good (Tabachnick & Fidell, 2013). Table 3 presents the subscales of the scale and the factor loading related to the items.

**Table 3.** Factor structure and factor loadings.

Factors								
Warmth			Conflict			Rivalry		
Items	Intimacy	Knowledge	Emotional Support	Quarreling	Antagonism	Dominance	Maternal Rivalry	Paternal Rivalry
Item 1	.75		Item 3	.67			Item 6	.66
Item 2	.73		Item 18	.64			Item 7	.67
Item 16	.82		Item 19	.60			Item 22	.68
Item 17	.78		Item 34	.63			Item 23	.67
Item 32	.68		Item 35	.58			Item 38	.66
Item 33	.76		Item 4		.67		Item 39	.70
Item 14		.73	Item 5		.68		Item 12	.73
Item 15		.69	Item 20		.77		Item 13	.74
Item 30		.76	Item 21		.72		Item 28	.75
Item 31		.77	Item 36		.72		Item 29	.73
Item 46		.77	Item 37		.72		Item 44	.74

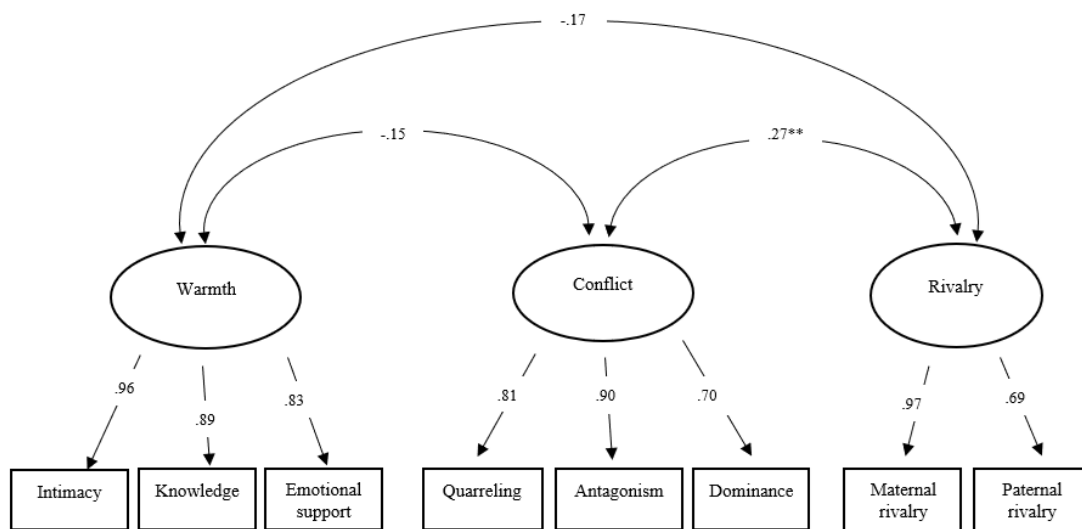
Table 3 (Continued).

Item 47	.76	Item 10	.52	Item 45	.72
Item 8		Item 11	.57		
Item 9		Item 26	.51		
Item 24		Item 27	.53		
Item 25		Item 42	.55		
Item 40		Item 43	.55		
Item 41	.66				

### Confirmatory Factor Analyses (CFA)

In addition, confirmatory factor analysis (CFA) was performed using three dimensions and eight subscales of the original scale and AMOS 24.0 program with 47 items. It was observed that the three-factor structure of the scale was confirmed. In the evaluation of the data compliance of the proposed model, the values of Chi-Square Goodness Adjustment, the Root Mean Square Error of Approximation (RMSEA), Normed Fit Index (NFI), the Comparative Fit Index (CFI), Goodness Fit Index (GFI), and the Adjusted Goodness-of-Fit Index (AGFI) were examined. The obtained fit indices all indicated good fit to the proposed structure (Hu & Bentler, 1999; Schermelleh-Engel et al., 2003; Schumacker & Lomax, 1996; Tabachnick & Fidell, 2013). The following fit indices were obtained:  $\chi^2/df = 39,950/17 = 2.35$ ; RMSEA = .06; GFI = .98; CFI = .98; NFI = .98; and AGFI = .95. In addition, the relationships between the latent variable warmth and observed variables (intimacy, emotional support and knowledge) varied between .83 and .96. The relationships between the latent variable conflict and observed variables (quarrelling, antagonism, dominance) varied between .70 and .90. The relationships between the latent variable rivalry and observed variables (maternal rivalry, paternal rivalry) varied between .69 and .97. Figure 1 shows the results of the second order confirmatory factor analysis using standardized regression coefficients.

**Figure 1.** Standardized Regression Coefficients.



Note: \*\*  $p < .01$

## Evidence of Convergent and Discriminant Validity

### *Discriminant Validity*

The wellness scale and autonomous-related self scale were administered to assess discriminant validity. Wellness was positively correlated with warmth ( $r = .20, p < .01$ ) and negatively correlated with conflict ( $r = -.14, p < .01$ ). Both autonomous self ( $r = .17, p < .01$ ) and autonomous relational self ( $r = .20, p < .01$ ) were positively correlated with warmth. Autonomous relational self was negatively associated with conflict ( $r = -.18, p < .05$ ), and positively correlated with rivalry ( $r = .14, p < .05$ ). It should be noted that the magnitude of these correlations are small.

Variables	1	2	3	4	5	6	7	8
1. Warmth	1.00							
2. Conflict	-.11*	1.00						
3. Rivalry	-.13**	.22**	1.00					
4. Wellness	.20**	-.14**	-.09	1.00				
5. Sibling Relationship Quality	.76**	-.20**	-.13**	.25**	1.00			
6. Relational Self	-.02	.08	-.05	-.04	-.00	1.00		
7. Autonomus Self	.17**	-.07	.04	.20**	.28**	-.38**	1.00	
8. Autonomous-Relational Self	.20**	-.18**	.14**	.17**	.31**	.11*	.48**	1.00
<i>M</i>	66.38	44.25	8.27	45.93	95.98	26.54	32.32	35.97
<i>SD</i>	13.13	11.67	6.69	7.05	14.62	4.53	4.34	4.68
<i>Range</i>	29-90	19-81	0-24	24-60	54-120	13-40	19-44	23-45

**Table 4.** Correlations as evidence of convergent and discriminant validity

Note. \*\*  $p < .01$ , \*  $p < .05$

### *Convergent Validity*

Relationships between sibling relationship quality as assessed by the LSRS and warmth, conflict, and rivalry were examined to assess convergent validity. Adult sibling relationship quality was positively correlated with warmth ( $r = .76, p < .01$ ) and negatively significant relationship was obtained between adult sibling relationship quality and conflict ( $r = -.20, p < .01$ ) and adult sibling relationship quality and rivalry ( $r = -.13, p < .01$ ).

Table 2, it is seen that the items that provide the formation of the two-factor structure of the scale have a significant contribution to the factor formation ( $p < .01$ ). It is seen that the error variance values for CFA vary between .213 and .470 and all values are at a significant level.

### *Reliability*

Within the scope of reliability study, Cronbach's alpha coefficient was calculated at the factor and subscale level. The Cronbach's alpha coefficient of ASRQ-SF was found to be .88 for intimacy, .83 for emotional

support, .88 for knowledge, .77 for quarreling, .87 for antagonism, .74 for dominance, .86 for maternal rivalry, .88 for paternal rivalry. The Cronbach's alpha coefficient was found to be .94 for warmth and .90 for conflict and .91 for rivalry dimensions.

### **Sibling Relationships and Gender Composition of Dyad**

In addition to the validity and reliability analyses of ASRQ-SF, one-way analysis of variance for independent samples were conducted to examine whether the relationship between sibling dyads differs according to gender composition of the dyad. According to the results of the analysis, there is a significant difference between sibling pairs (sister-sister, brother-sister and brother-brother) only in the dimension of warmth. Post-hoc analyses showed that sister-sister sibling pairs ( $M = 71.41$ ) had higher levels of warmth in their relationship than brother-brother ( $M = 63.11$ ) and brother-sister ( $M = 63.49$ ) sibling pairs. There was no significant difference in conflict and rivalry variables according to sibling gender composition of the dyads.

### **Discussion**

The aim of this study was to adapt the Adult Sibling Relationship Scale Short Form developed by Stocker et al. (1997) into Turkish and examine its psychometric properties. In this context, the items in the original form of the scale were translated into Turkish first, and at the next stage, the structural validity of the scale was examined in the emerging adult sample of participants who continued their university education and who had a sibling who was at least 9 years old. The factor structure of the Adult Sibling Relations Scale on the Turkish emerging adult group was examined by exploratory factor analysis and confirmatory factor analysis methods, and it was concluded that the structure obtained was a good fit with the original structure suggested by Stocker et al (1997). The factor loading values should be 0.30 and above (Costello & Osborne, 2005) and the factor loading for all sub-scales showed sufficient values. Factor loadings varied between .61 and .82 for the warmth scale; varied between .51 and .77 for the conflict scale and varied between .66 and .75 for the rivalry scale. However, in the EFA results, it was observed that the factor loads in the dimensions belonging to the conflict area were lower, especially dominance. This may be due to differences based on language and culture and the characteristics of the sample. In the adaptation studies carried out in different cultures of the scale, it was observed that some items in conflict dimension differed to some extent and were excluded the scale. For example, in the adaptation study conducted in French culture, three items related to the conflict dimension were removed from the scale due to their low factor loadings (Plesis et al., 2020). Also, in the long version of Turkish form (Şahin, 2017) four items were deleted from conflict subscale due to low factor loadings. However, the version of the ASRQ- SF in South Korea which has collectivistic culture, the closeness and conflict dimensions of the scale were confirmed (Jang, 2009). Still, in our study, dominance loadings were sufficient. Future research with other samples can further examine whether this cultural variation is consistent across samples with Turkey and across other cultures. In addition, while the structural aspects of the ASRQ-SF are similar across Turkey and the US, it would be interesting to conduct cross cultural comparisons at the mean level to determine whether culture differences exist at that level.

The results of the correlation analysis for convergent validity of the scale showed a high level of positive correlation between the warmth dimension of the ASRQ-SF and the quality of adult sibling relationship as assessed by the LSRS; while LSRS has a low level of negative correlation with conflict and rivalry. The LSRS evaluates the closeness between siblings in the cognitive, affective, and behavioral fields between siblings (Riggio, 2000). It is an expected result that there will be a high level of relationship between the warmth and the adulthood sibling relationship quality. The discriminant validity of conflict and rivalry with the ASRQ scale also points to the added information given in conflict and rivalry scales is not simply the reverse of warmth. The ASRQ provides additional information on the characteristics of the sibling relationship that may not be captured in other measures and is something to be considered when researchers are interested in more nuanced views of the sibling relationship.

In terms of discriminant validity, a small positive significant relationship was found between warmth and wellness, a small negative relationship between conflict and wellness, and no relationship with the rivalry dimension. These findings support the discriminant validity of the ASRQ and are consistent with other studies, with small to moderate relations with ASRQ factors and scores on other measures. In the original norming

study of the full ASRQ (Stocker et al., 1997), only conflict showed a small negative relationship with mental health problem scores. In a study using the ASRQ-SF developed by Stocker et al (1997), it was determined that there was a moderately positive significant relationship between warmth and well-being among Italian emerging adults, and a negative, but low levels of significant relationship with conflict (e.g., Ponti & Smorti, 2020). In a study conducted on the emerging adult group, it was reported that high levels of support from siblings were associated with low levels of loneliness and depression, and high levels with self-esteem and life satisfaction (e.g., Milevsky, 2005). Again, these small to moderate correlations make intuitive and theoretical sense and show that the ASRQ scale measures unique qualities of the sibling relationship that are also meaningfully related to outcomes of interest like indexes of mental health described above. Research looking at the role sibling relationships play both within and across cultures for understanding such outcomes is an important area for further study.

In addition, the relationships between the Autonomous-Relational Self Scale and warmth, conflict and rivalry were examined for discriminant validity purposes. There was no relationship between the autonomous self-structure and sibling warmth, conflict, and rivalry. However, warmth between siblings was positively related to autonomous self and autonomous-relational self; it was found that the autonomous-relational self was negatively correlated with sibling conflict and low positively with rivalry. The small magnitude of the correlations provide further evidence of discriminant validity for the ASRQ-SF. In terms of understanding the statistically significant correlations, the autonomous-relational self-trait indicates ongoing family commitment (Kağıtçıbaşı, 2000) and it can be interpreted that the emerging adults in this study group maintain interdependent behavior patterns in the family and even that these relationships are related to the intimacy area that includes sibling intimacy and emotional support. On the other hand, parental control and its effects continue in the Turkish emerging adult group, even if it decreases somewhat (Doğan & Cebioğlu, 2011). The siblings make inferences about how much their parents love, reject or exclude them by observing their behaviors towards other siblings during childhood (Brody, 2004). When both parents approach their children with an egalitarian attitude, the nature of the relationship between siblings takes on a more egalitarian structure with less rivalry (Wallace, 2012). However, it has been reported that the characteristics based on rivalry between siblings' change depending on the developmental period, and emerging adults might have less rivalry with their siblings than adolescents (Buhrmester & Furman, 1990; Scharf et al., 2005).

In the current study, intimacy, conflict and rivalry relationship characteristics between emerging adults and siblings were examined based on gender differences to provide additional evidence for cultural similarity and difference with other studies. According to the results, it was found that warmth between sisters was higher than that reported by brothers and brother-sister pairs. There were no differences in the dimensions of conflict and rivalry between the same and different genders (sisters-sisters, brother-brother and sisters-brothers). In some studies, it has been reported that there is no gender difference in the relations between siblings (e.g., Portner & Riggs, 2016; Scharf et al., 2005; Tucker et al., 2019). In this study, it was observed that the relations between sisters, including intimacy, knowledge, and emotional support, were more common in Turkish emerging adults than in those relationships that involved men. These findings are consistent with study results in the related literature showing that there is more intimacy between sisters, more time spent together, and they provide more support to each other (e.g., Jeong et al., 2013). This difference in relations between the genders can be explained by the cultural context and the features of the emerging adulthood period. Even though studies examining the nature of sibling relationship dynamics in emerging adulthood in Turkey are still quite recent (Aytaç-Bakkaloğlu, 2021), the characteristics and continuation of these relationships in emerging adulthood and middle adulthood are important for families. Even if adult children leave home for different reasons such as going to university and getting married, because of the prominence of relationships based on mutual-emotional dependence in family relationships in Turkish culture (Kağıtçıbaşı, 2013), maintaining the sibling relationships and ties in adulthood is the expected behavior in Turkish society. In addition, questions were asked to the participants in the study to describe how their parents' observed intimacy and frequency of contact in their sibling relationships. The adults who appeared in the study stated that their mothers were in more contact with their siblings than their fathers and that they observed more closeness in these relationships. This

information may also indicate the importance of sibling relations among women in Turkish society. From the perspective of conflict and rivalry characteristics, the reason why there is no difference in the conflict and rivalry dimension in relationships between same and different genders can be explained by the influence of factors such as age difference, physical distance, and parental attitudes. Studies showing that the eldest child is brought up with stricter family rules and harbors feelings of resentment towards their younger siblings who do not have the same rules show that this unequal treatment can be explained as a cause of disagreements and conflicts in sibling relationships (Cinalioğlu & Gazioğlu, 2022; Milevsky & Heerwagen, 2013). Also, while living together with a sibling is a situation that can sustain the conflict levels of siblings, it has been found that those who live apart from their siblings have less conflict frequency (Hamwey et al., 2019; Lindell & Campione-Barr, 2017). In this study, although the majority of participants live far away from their siblings, the rate of participants stating that they meet frequently is also high and this can be explained by the effect of physical distance in conflict situations rather than gender compositions.

The reliability analysis of the scale revealed that the reliability coefficients obtained in the results ranged from .83 to .94 in warmth, between .74 and .90 in conflict, and between .86 and .91 in rivalry. The Cronbach alpha value in the original version of the ASRQ is between .88 and .97 (Stocker et al., 1997), the Polish version in different languages is between .87 and .97 (Walecka-Matyja, 2016), the Italian version is between .81 and .90 (Tani et al., 2013), the German version has been reported to be .75 to .94 (Heyeres, 2006), the French version of the ASRQ-SF .65 to .96 (Plesis, et al., 2020). All of these studies indicate acceptable levels of reliability for this measure as a research tool. Taken together, the obtained evidence of validity and reliability in the current study has shown that ASRQ-SF can be used to measure sibling relationship characteristics in emerging adults in Turkish culture.

### **Limitations and Future Research Directions**

The main strength of the study is the adaptation of a measurement tool evaluating sibling relationship characteristics in emerging adulthood to Turkish culture. However, some limitations of the study should be considered when evaluating the results of the study. First, the majority of study group consisted of females. Studies show that there are gender-related changes in relations between siblings (Doughty et al., 2013), and women score higher on sibling relationship quality than men (Sommantico et al., 2019). Further studies should examine gender-based differences in sibling relationships quality and the future research is needed try to test for female and male groups using a measurement invariance of ASRQ-SF. The other limitation of the study is that all participants were university students, essentially representing a sample of convenience of a certain type of emerging adult. Life transitions, such as starting more serious romantic relationships, entering higher education, and career/work can be lead changes in relationships between siblings (e.g. Conger & Little, 2012; Hamwey et al., 2019). In future studies, examining the psychometric properties of the scale in emerging adults experiencing various life transitions and inclusion of community-based sample would provide further information about how useful the ASRQ-SF is in broader cultural contexts in Turkey and in other countries.

However, another limitation of this study is the age gap between the participants and their targeted siblings', birth order, and developmental periods differences. For example, Milevsky and Heerwagen (2013) found that the age gap between sibling was a determinant in the maintaining relationships. In collectivistic cultures, the age gap between siblings, gender and birth order affected sibling relationships, as the older sibling often assumes a semi-parenting role towards to younger siblings (Cicirelli, 1995). The quality of the relationship between siblings is affected by the age difference and gender because Turkey is a society where collectivistic features are dominant. Moreover, another limitation is that the targeted sibling in the study must be at least nine years old. Systematic studies of these large age gaps in age between siblings have yet to be systematically studied, but anecdotal evidence suggests warmer less conflicted relations. In research that examines relations between observed age gap and sibling relationship quality have shown mixed results. For example, in a sample of young adults found a small correlation only between conflict and age gap (-.23), yet found only a small correlation (-.08) with rivalry (Stocker et al., 2020). Thus the effect of age gap in adult sibling relations is worthy of future research. In addition, since the study participants included only emerging adults, examining the psychometric properties of the scale in different groups including middle aged and older age adults in Turkey in future studies will increase the knowledge about the characteristics of the sibling relationship



depending on the participants' age. Another limitation is that the majority of the participants lived relatively close to each other, most lived at least 100 km from their targeted siblings. Further the study should test on living together sibling. Finally, one of these limitations is that in the current study, participants whose siblings had a disability or chronic illness were not included in the study. Some studies show that this relationship characteristics and interactions between siblings may differ if they have a sibling with disability or chronic illness (Sommanico et al., 2020). In future studies, testing ASRQ in a different group with disabilities or chronic diseases will contribute to understanding the characteristics of the relationship between siblings in special cases.

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Esra Eker Durmuş: Contributed to the literature review, data collection and method section.

Richard Lanthier: Contributed conceptualization of the study, proof reading process and revision of the manuscript.

Yaşar Özbay: Contributed conceptualization of the study and method and discussion section.

Mehmet Göktaş: Contributed to the literature review, data collection and method section.

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**Data Availability:** Data is available upon request from the corresponding author.

**Ethics Approval and Consent to Participate:** Authors declared that study carried out within ethical scope. Participants were given informed consent form and were volunteer to participate to study. Ethic committee approval was obtained from Hasan Kalyoncu University Social and Human Sciences Ethics Committee (804.01-E.2005110024).

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