

MODELING THE ASSOCIATIONS AMONG SIBLING RELATIONSHIP  
QUALITY, CO-RUMINATION, RUMINATION, AND DEPRESSION

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Approval of the Graduate School of Social Sciences

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This is to certify that we have read this thesis and that in our opinion it is fully  
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## ABSTRACT

### MODELING THE ASSOCIATIONS AMONG SIBLING RELATIONSHIP QUALITY, CO-RUMINATION, RUMINATION, AND DEPRESSION

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The present study was designed to test a model exploring the associations among sibling relationship quality, co-rumination, rumination, and depression. The sample of the current study was composed of 578 Turkish university students. The number of female participants was 336 (58 %) and the number of male participants was 242 (42 %). The age of the participants ranged between 18 and 26 ( $M= 20.86$ ,  $Mdn= 21$   $Mo= 21$ ,  $SD= 2.11$ ). The Lifespan Sibling Relationship Scale, the Co-Rumination Questionnaire, the Short Version of the Ruminative Response Scale and the Beck Depression Inventory were used to assess the variables of the study.

In the current study, structural equation modelling (SEM) was used to test the hypothesized model. The SEM results demonstrated that proposed model provided a good fit to the data despite two non-significant paths. The proposed model was retested by removing these non-significant paths. The trimmed model provided a better fit to the data. According to the results, rumination was found to have a high correlation with depression and a low correlation with sibling relationship quality. Co-rumination was found to have a high correlation with sibling relationship quality and low

correlation with rumination. MANOVA analysis revealed that gender had a significant effect on all of the study variables, except for depression.

Keywords: Sibling Relationship Quality, Co-rumination, Rumination, Depression, Structural Equation Modeling

## ÖZ

### KARDEŞ İLİŞKİ KALİTESİ, EŞLİ RUMİNASYON, RUMİNASYON, VE DEPRESYON ARASINDAKİ İLİŞKİLERİN MODELLENMESİ

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Bu çalışma kardeş ilişki kalitesi, eşli ruminasyon, ruminasyon ve depresyon arasındaki ilişkileri ortaya çıkaran bir modeli test etmek için tasarlandı. Bu çalışmanın örneklemi 578 Türk üniversite öğrencisinden oluşmaktadır. Kadın katılımcıların sayısı 336 (%58), erkek katılımcıların sayısı 242'dir (%42). Katılımcıların yaşları 18 ve 26 arasında değişmektedir ( $M= 20.86$ ,  $Mdn= 21$ ,  $Mo= 21$ ,  $SD= 2.11$ ). Çalışmanın değişkenlerini değerlendirebilmek için Hayat Boyu Kardeş İlişkisi Ölçeği, Eşli Ruminasyon Ölçeği, Ruminatif Tepki Ölçeği Kısa Formu ve Beck Depresyon Envanteri kullanılmıştır.

Bu çalışmada ön görülen modeli test etmek amacı ile Yapısal Eşitlik Modeli (YEM) kullanılmıştır. YEM analizi sonucu, önerilen modelin anlamsız çıkan iki yola rağmen iyi uyum indeksleri gösterdiğini ortaya çıkarmıştır. Anlamsız bulunan yollar modelden çıkarılarak analiz tekrar edilmiştir. Yeni model veriye daha iyi uyum sağlamıştır. Bu yeni modelin sonuçlarına göre, ruminasyonun depresyon ile yüksek ilişkili; kardeş ilişki kalitesi ile düşük ilişkili olduğu bulunmuştur. Buna ek olarak, eşli ruminasyonun kardeş ilişki kalitesi ile yüksek ilişkili; ruminasyon ile düşük ilişkili olduğu

bulunmuştur. MANOVA analizi, cinsiyetin depresyon dışında arařtırmada kullanılan tüm deęiřkenler üzerinde anlamlı bir etkisi olduęunu ortaya koymuřtur.

Anahtar Kelimeler: Kardeř İliřki Kalitesi, Eřli ruminasyon, Ruminasyon, Depresyon, Yapısal Eřitlik Modeli

*To my lovely sister, Buket ...  
She is my life-long friend!*

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## CHAPTER 1

### INTRODUCTION

*“Sibling relationships...outlast marriages, survive the death of parents, and resurface after quarrels that would sink any friendship. They flourish in a thousand incarnations of closeness and distance, warmth, loyalty and distrust”.*

Erica E. Goode

#### **1.1. Background of the Study**

Within the framework of family systems theory, the family is regarded as a social system that is composed of different subsystems (Minuchin, 1988). Family members are considered to be part of an interactive and interdependent network where one individual's or subsystem's behavior has an effect on the others (Brody, 1998). Even though the bulk of previous research concerned with family subsystems such as parent-child or spousal subsystem, the sibling subsystem has received relatively less attention. However, the sibling relationship is one of the family subsystems that play an important role in the development of interpersonal and social skills of an individual (Cicirelli, 1995).

Majority of individuals are raised in a family with siblings (Lee, Mancini, & Maxwell, 1990) and they generally take a step toward adulthood with their siblings. In fact, this particular relationship starts with the birth of the younger sibling and ends with the death of one of the siblings, so the relationship with a sibling is the most long-lasting and enduring relationship throughout the entire lifespan of an individual (Cicirelli, 1991; Floyd, 1995; Noller, 2005).

Siblings have different roles in each other's lives as companions, confidants, and role models in their childhood and adolescence years and they are regarded as sources of support during adulthood (Whiteman, McHale, & Soli, 2011). Thus, siblings can have direct influences on each other's social and emotional development throughout the lifespan. Growing up with siblings creates an opportunity for individuals to shape each other's behavior and adjustment (McHale, Updegraff, & Whiteman, 2012). However, the quality of sibling relationship should be taken into account to decide whether it contributes to their development positively or negatively. Stormshak, Bullock and Falkenstein (2009) emphasized the importance of the quality of sibling relationship on individuals' socioemotional development and adjustment, with not only positive but also negative outcomes.

The advantages of having a positive sibling relationship such as increase in self-esteem, well-being, adaptive behaviors and developing skills in self-regulation, problem-solving, establishing empathy and negotiating have been documented in various studies (e.g., Brown & Dunn, 1992; Dunn, 2007; Dunn, Brown, & Beardsall, 1991; Cicirelli, 1995; Howe, Rinaldi, Jennings, & Petrakos, 2002; Sandler, Miller, Short, & Wolchik, 1989; Sherman, Lansford, & Volling, 2006). If siblings maintain a harmonious and supportive relationship, it can become a buffer against depressive symptoms. That is to say, having a supportive and positive sibling relationship can yield various positive outcomes for individuals.

On the other hand, not all sibling relationships are positive. Some sibling relationships might also involve conflicts which lead siblings to exhibit negative attitudes towards each other. If the sibling relationship is conflictual, this might worsen their adjustment by increasing the amount of depressive symptoms. Having a low quality and negative sibling relationship may result in negative outcomes such as risky behaviors and adjustment problems for the individuals (e.g., Natsuaki, Ge, Reiss, & Neiderhiser, 2009; Rende, Slomkowski, Lloyd-Richardson, & Niaura, 2005; Synder, Bank, & Burraston, 2005). Whereas sibling support provides numerous benefits as mentioned above, sibling conflict may cause various problems related to psychological

functioning and adjustment such as loneliness, antisocial behaviors, aggression, bullying, delinquency, substance use, risky sexual activities and various internalizing problems (e.g., Bank, Burraston, & Snyder, 2004; Compton, Snyder, Schrepferman, Bank, & Shortt, 2003; Criss & Shaw, 2005; Garcia, Shaw, Winslow, & Yaggi, 2000; Stocker, Burwell, & Briggs, 2002; Stocker, Lanthier, & Furman, 1997; Windle, 2000).

The long and the short of it is, having a positive sibling relationship can be seen as a resilience and protective factor that reduces the risk of development of depression. In contrast, having a negative sibling relationship that includes high levels of conflict may be seen as a risk factor of increasing the amount of depressive symptoms (Dirks, Persram, Recchia, & Howe, 2015; Padilla-Walker, Harper, & Jensen, 2010; Stocker, Burwell, & Briggs, 2002). A number of researchers have documented that there is an association between the sibling relationship quality and internalizing problems mostly with depression. In a meta-analysis study, Buist, Dekovic and Prinzie (2013) revealed that less conflict and more warmth in the sibling relationship is related to less externalizing and internalizing problems. In another study with an emerging adult sample, Milevsky (2005) found that sibling support was negatively correlated with depression and positively correlated with life-satisfaction. Kim, McHale, Crouter, and Osgood (2007) also demonstrated that increase in sibling intimacy was related to decrease in depressive symptoms whereas increase in conflict levels was related to increase in depressive symptoms over time. Similarly, Pike, Coldwell, and Dunn (2005) reported that conflictual sibling relationships were associated with adjustment problems. Based on the results of these studies, it can be concluded that high conflict in sibling relationships is a risk factor for internalizing and externalizing problems while sibling support and warmth can serve as a protective factor against them.

With respect to gender differences, same-sex sibling dyads, particularly female-female dyads, were found to have closer and more intimate relationship than mixed-sex sibling dyads do (e.g., Buhrmester & Furman, 1990; Buist, 2010; Buist & Vermande, 2014; Connidis & Campbell, 1995; Dunn, Slomkowski, Beardsall, & Rende, 1994). Accordingly, it can be said that individuals who have sisters are more likely benefit

from sibling support when compared to the ones who have brothers. In short, gender might be a salient factor while investigating the quality of the sibling relationship and sibling support.

The sibling relationship is probably one of the most intimate dyadic relationships which involves self-disclosure in an individual's social network. Self-disclosure was described by Sprecher and Hendrick (2004) as "the process of revealing personal information about oneself to another and an important aspect of communication in close relationships" (p.858). Examining self-disclosure in the sibling relationship can reveal invaluable knowledge concerning the sibling relationship quality between sisters and brothers. For instance, Campione-Barr, Lindell, Giron, Killoren and Greer (2015) conducted a study with a sample, involving adolescents and emerging adults to see the effects of self-disclosure in a sibling relationship. They revealed that both disclosing to and being disclosed to by siblings increased the quality of the sibling relationship significantly, even after they don't live together anymore. Another finding of this study indicated that the sibling giving or receiving the disclosure was specifically critical for depressive symptoms. For instance, when siblings (whether girls or boys) disclosed to their brothers, boys' emotional well-being increased. Older siblings who disclosed, and boys who were disclosed to by siblings, reported fewer levels of depressive symptoms. On the contrary, girls who were disclosed to by brothers reported higher levels of depressive symptoms. According to the results of this study, high disclosure in the sibling relationship might be a protective factor for the well-being of boys, but a risk factor for the well-being of girls.

Rose (2002) presented the construct of co-rumination as the excessive discussion of problems repeatedly within a dyadic relationship. This interpersonal process combines both self-disclosure and rumination in itself (Calmes & Roberts, 2008). Since self-disclosure has been found to relate to positive relationship qualities, co-rumination will also be associated with positive relationship quality, as well. Within the context of sibling relationship, siblings who co-ruminate more can be expected to have more positive relationship quality with their brothers and sisters. However,

another element of co-rumination construct is rumination. Rumination is known as passive, solitary focus on one's own negative thoughts and emotions (Nolen-Hoeksema, 1991). Not surprisingly, rumination has been found to relate to internalizing problems, particularly depression (e.g., Lyubomirsky & Nolen-Hoeksema, 1993; Nolen-Hoeksema & Morrow, 1991; Nolen-Hoeksema, Morrow, & Frederickson, 1993). Apart from self-disclosure, co-rumination also involves rumination. Hence, it may also give rise to internalizing problems such as depression. In brief, co-rumination with a sibling might bring in not only positive but also negative outcomes such as higher relationship quality as a positive outcome due to self-disclosure and higher depressive symptoms as a negative outcome due to rumination.

Various studies conducted with children, adolescents and young adults indicated that there is a transactional, reciprocal association between co-rumination and depression (e.g., Calmes & Roberts, 2008; Rose, 2002; Rose, Carlson & Waller, 2007). According to the findings of these studies, co-rumination predicts depression over time. Consequently, it can be concluded that increased levels of depressive symptoms will lead people to co-ruminate. Such a reciprocal relationship will certainly become an endless loop eventually. Unlike rumination, co-rumination has also been found to lead positive outcomes such as closer relationship bonds and higher relationship quality (Calmes & Roberts, 2008; Rose, 2002; Rose et al., 2007, Starr & Davila, 2009). Therefore, co-rumination seems to contribute not only negative outcomes such as depression, but also positive outcomes such as relationship quality.

There is substantial research in the available literature to suggest that there are significant associations among co-rumination, depression and relationship quality, howbeit these studies were mostly designed to examine co-rumination with a friend. Other dyadic relationships to co-ruminate haven't been investigated thoroughly yet, except for roommate, parent, romantic partner and colleagues (Barstead, Bouchard & Shih, 2013; Calmes & Roberts, 2008; Haggard, Robert & Rose, 2011; Waller & Rose, 2010). Although siblings are regarded as life-long friends, they unfortunately have not been considered as confidants to co-ruminate yet. Since sibling relationship was

emphasized both to understand the development of interpersonal and social skills and to explain individuals' positive and negative adjustments, siblings should also be regarded as one of the most common confidants to co-ruminate. Therefore, investigating co-rumination with the closest sibling will probably bridge this gap in the literature.

Just before and during emerging adulthood, sibling relationships go through developmental changes and turn out to be more egalitarian and more symmetrical (Buhrmester & Furman, 1990). Accordingly, co-rumination within a sibling context is also exposed to particular developmental changes associated with this transitional stage of life. The previous sibling research mostly focus on the early years of sibling relationships when siblings have direct daily contact (e.g., Downey & Condran, 2004; Dunn, Slomkowski, Beardsall, & Rende, 1994; Howe, Ross & Recchia, 2011; McHale, Updegraff, & Whiteman, 2012; Stoneman, 2001). During childhood years, the sibling relationships are mostly strong and intense. Early years of sibling relationship involves intimacy, warmth and conflict at the same time. As children step into adolescence, sibling relationships mostly become less intense because of the decline in sibling interaction. Most adolescents would prefer spending time with close friends to spending time with siblings (Buhrmester & Furman, 1990). Another period that caught researchers' attention is middle and old adulthood (e.g., Campbell, Connidis, & Davies, 1999; Fuller-Thomson, 2000; Greif & Woolley, 2015; Khodyakov & Carr, 2009, McKay & Caverly, 1995, White & Riedmann, 1992). During middle adulthood, sibling relationships are gradually mediated by personal family commitments such as marriage and parenthood or geographical distance (Goetting, 1986). However, sibling contact or interaction is most likely to increase again since they are to cooperate for the care of their elderly parents' health. This collaboration is most likely to vitalize the sibling relationship in middle adulthood. In older adulthood, sibling relationships become closer and sibling ties get stronger again. During old age, individuals may feel lonely due to particular life events such as retirement, their own children's leaving home or parental loss and they need social

support from siblings again. In brief, siblings remain as an important source of familial support throughout the lifespan, even after the death of the parents.

However, little scholarly attention has been devoted to the sibling relationships during emerging adulthood (e.g., Conger & Little, 2010; Milevsky, 2005; Scharf, Shulman, & Avigad-Spitz, 2005; Riggio, 2000; Pulakos, 1989; Stocker, Lanthier & Furman, 1997; Wong, Branje, VanderValk, Hawk, & Meeus, 2010). Overall, these studies revealed that emerging adults mostly maintain their relationship with their siblings although the time spent together and daily contact decline sharply due to the drastic changes of emerging adulthood. During this period, individuals undergo a number of essential changes such as leaving home of origin, going to university, developing a career plan or being employed. These major life events can bring both excitement and stress to their lives. Trying to take on the various responsibilities of adulthood can be overwhelming and demanding for emerging adults. Particularly, university students may experience adjustment problems and depressive symptoms due to such developmental transformations and challenges of emerging adulthood. Transition to university setting is often a time of stress and anxiety (Arnett, 2004). Majority of emerging adults leave their parental home for the first time to move to university. Leaving such a strong social support network behind may result in homesickness and difficulty in adaptation to the novel environment (Beck, Taylor, & Robbins, 2003). Emerging adults are expected to adjust to university not only academically, but also socially and emotionally (Bland, Melton, Welle, & Bigham, 2012). At university, they mostly try to cope with the unstable circumstances, intense workload and the requirements of university courses, taking financial responsibilities and making numerous decisions or choices by themselves. Ultimately, all these new challenges might become sources of stress in their lives. Consequently, emerging adults become more prone to develop depressive symptoms while struggling to overcome the stress related to this transition stage of life. Previous research has also demonstrated an increase in depressive symptoms of emerging adults in their university life (e.g., Beck et al., 2003; Dyson & Renk, 2006; Yorgason, Lonville, & Zitzman, 2008). During times of stress, most individuals need someone to comfort or support them. Social

support has been reported to decrease depression and anxiety, and increase psychological adjustment (Taylor, 2007). Having a strong social support network can serve as a buffer against stress and enable emerging adults to make a healthy transition to university (Brissette, Scheier, & Carver, 2002; Shulman, Kalnitzki, & Shahar, 2009).

Even though emerging adults step into a period when they become more autonomous and independent, they may still need help and support from their family members, particularly from their siblings as they are close in age and have similar life stories. Higher support from siblings have been reported to predict better adjustment during emerging adulthood (e.g., Milevsky, 2005). Limited research on siblings during such an important transitional period is quite surprising because the presence of sibling support can be beneficial to overcome the distress associated with the interpersonal and intrapersonal changes related to this particular stage of life. Although having a close sibling relationship and being able to disclose to (or disclosed by) siblings might be a protective factor against internalizing and externalizing problems, it may also become a risk factor if the siblings mostly focus on problems rather than taking action to solve the problems in their disclosures. At this point, particular questions arise regarding how sibling-based co-rumination has an effect on emerging adults' adjustment and well-being.

In this current study, previous findings were extended by examining co-rumination with the closest sibling during emerging adulthood and exploring the associations among sibling relationship quality, co-rumination, rumination, and depression with a Turkish emerging adult sample.

## **1.2. Purpose of the Study**

The purpose of this study was to investigate the associations among sibling-based co-rumination, rumination, depression and the sibling relationship quality of Turkish university students. The findings of the present study will contribute greatly not only to sibling research in emerging adulthood but also to co-rumination research within the context of various dyadic relationships.

## **1.3. Research Questions and Hypotheses**

The current study was designed to answer the following research questions:

### ***General Research Questions:***

***RQ.1.*** How do sibling relationship quality, rumination and co-rumination relate to depression in a structured model?

***RQ.2.*** How do sibling relationship quality, rumination and co-rumination relate to depression in a structural model for female emerging adults?

***RQ.3.*** How do sibling relationship quality, rumination and co-rumination relate to depression in a structural model for male emerging adults?

***RQ.4.*** Will female emerging adults report significantly higher scores on co-rumination, rumination, sibling relationship quality and depression than male emerging adults?

### ***Specific Research Questions:***

***RQ.1a.*** How do co-rumination and rumination relate to sibling relationship quality for all participants?

**RQ.1b.** How do co-rumination and rumination relate to depression for all participants?

**RQ.1c.** How does sibling relationship quality relate to depression for all participants?

**RQ.1d.** Is there a significant relationship between co-rumination and rumination for all participants?

**RQ.2a.** How do co-rumination and rumination relate to sibling relationship quality for female participants?

**RQ.2b.** How do co-rumination and rumination relate to depression for female participants?

**RQ.2c.** How does sibling relationship quality relate to depression for female participants?

**RQ.2d.** Is there a significant relationship between co-rumination and rumination for female participants?

**RQ.3a.** How do co-rumination and rumination relate to sibling relationship quality for male participants?

**RQ.3b.** How do co-rumination and rumination relate to depression for male participants?

**RQ.3c.** How does sibling relationship quality relate to depression for male participants?

**RQ.3d.** Is there a significant relationship between co-rumination and rumination for male participants?

***General Hypotheses:***

***H<sub>1</sub>***. The hypothesized structural model exploring the associations among sibling relationship quality, rumination, co-rumination and depression will fit the data for all participants.

***H<sub>2</sub>***. The hypothesized structural model exploring the associations among sibling relationship quality, rumination, co-rumination and depression will fit the data for female participants.

***H<sub>3</sub>***. The hypothesized structural model exploring the associations among sibling relationship quality, rumination, co-rumination and depression will fit the data for male participants.

***H<sub>4</sub>***. Female emerging adults will report significantly higher scores on co-rumination, rumination, sibling relationship quality and depression than male emerging adults.

***Specific Hypotheses:***

***H<sub>1a</sub>***. Co-rumination is positively and rumination is negatively related to sibling relationship quality for all participants.

***H<sub>1b</sub>***. Co-rumination and rumination are positively related to depression for all participants.

***H<sub>1c</sub>***. Sibling relationship quality is negatively related to depression for all participants.

***H<sub>1d</sub>***. There is a positive relationship between co-rumination and rumination for all participants.

*H<sub>2a</sub>*. Co-rumination is positively and rumination is negatively related to sibling relationship quality for female participants.

*H<sub>2b</sub>*. Co-rumination and rumination are positively related to depression for female participants.

*H<sub>2c</sub>*. Sibling relationship quality is negatively related to depression for female participants.

*H<sub>2d</sub>*. There is a positive relationship between co-rumination and rumination for female participants.

*H<sub>3a</sub>*. Co-rumination is positively and rumination is negatively related to sibling relationship quality for male participants.

*H<sub>3b</sub>*. Co-rumination and rumination are positively related to depression for male participants.

*H<sub>3c</sub>*. Sibling relationship quality is negatively related to depression for male participants.

*H<sub>3d</sub>*. There is a positive relationship between co-rumination and rumination for male participants.

#### **1.4. Significance of the Study**

Rose's study on co-rumination (2002) was only limited to the dyadic relationships of same-sex friends among children and adolescents. However, the closest same-sex friend may not be the primary relationship to co-ruminate for an individual. There might be other types of close relationships that should be investigated in co-rumination studies. Pulakos (1989) noted that both friend and sibling relationships are

peer relationships in the sense that they mostly involve individuals who belong to the same generation. Since a sibling is considered as a life-long friend, one of the primary relationships to co-ruminate for an individual might also be his or her sibling. Surprisingly, co-rumination within the context of sibling relationship has never been studied or investigated yet. In this manner, the current study is the first attempt to investigate co-rumination in a sibling relationship.

Since the first study conducted by Rose (2002), majority of research on co-rumination have investigated gender differences in co-rumination and girls have been found to co-ruminate more than boys. Therefore, it is assumed that co-rumination with a sibling will also show differences by gender. For this reason, gender differences of emerging adults will also be explored in this study. Although the co-rumination construct has caught the attention of many researchers in the United States of America and in European countries, there is no published research in the area of co-rumination in Turkey, except for the Turkish adaptation study of the Co-rumination Questionnaire (Bugay & Erdur-Baker, 2015). However, co-rumination should be seen as a potential contributor to the transmission of depression from one person to another because of its repeated focus on problems and negative feelings. It is known that sharing the burdens of others and over involvement in others' problems is related to depression (Gore, Aseltine, & Colten, 1993). This can be regarded as an emotional cost of co-rumination. Besides, disclosures in the sibling relationship are not always beneficial. If siblings keep on rehashing the same problems in a non-solution oriented way, self-disclosure takes the form of co-rumination, which may result in depressive symptoms over time. In this manner, understanding the co-rumination construct can shed light on the underlying factors of depressive symptoms of Turkish emerging adults, particularly during the transition to university.

Considering Turkey, the limited research on the sibling relationship, particularly during emerging adulthood is one of the most important motivations of the current study. This research aimed to fill the void in the existing literature on the sibling relationship in Turkey. Understanding the nature of the sibling relationship during this

transitional stage of life and being aware of the possible outcomes of having a negative/positive sibling relationship seem to be important while dealing with emerging adults' adjustment problems and internalizing behaviors. Therefore, examining the quality of sibling relationship within a Turkish emerging adult sample can greatly contribute to the sibling research in Turkey.

In spite of the fact that, sibling relationship is regarded as an expanding research area, the number of the validated self-report measures is limited. For the purposes of the current study, a validated self-report measure was searched to assess sibling relationship quality across the lifespan. According to Cicirelli (1995), siblings have profound influence on each other's psychological and behavioral development not only in their childhood years but also throughout their lifespan. The Lifespan Sibling Relationship Scale (Riggio, 2000) differs from the other instruments which were developed to measure sibling relationship quality because it has an important advantage of measuring the quality of sibling relationship across the lifespan. As Riggio (2000) acknowledged, "attitudes toward the childhood sibling relationship may be seen as a meaningful component of attitudes toward the sibling relationship in adulthood" (p.710). At this point, the translation and adaptation of the Lifespan Sibling Relationship scale into Turkish language was seen as reasonable. This translation and adaptation study is also crucial for the Turkish researchers who are eager to investigate sibling relationships of Turkish adults and emerging adults within a lifespan perspective.

The findings of the current study provide essential knowledge to the professional people in the field of counseling psychology. Being aware of the clients' sibling relationship quality might help counselors perceive the clients' problems in the family context and may provide better understanding of the absence/existence of support from family members, particularly siblings. Besides, this study mainly focused on emerging adulthood, a critical transitional period, in which young people are expected to overcome salient challenges such as leaving home of origin, going to university and adjusting into a novel environment. Counselors should also bear the characteristics of

emerging adulthood in mind in order to better conceptualize their clients' issues. Furthermore, counselors working with emerging adult groups should also take the role of rumination and co-rumination into consideration while dealing with their clients' negative and depressive feelings. With the findings of this research, counselors might help their clients understand the underlying factors of their depressive symptoms and also make them realize the important roles of their siblings in their current issues. Thus, the present study on co-rumination in sibling relationship is quite meaningful to introduce the co-rumination construct in Turkey and make professional helpers become aware of the possible consequences of co-rumination, such as higher depressive symptoms and higher relationship quality.

### **1.5. Limitations of the Study**

It is noteworthy that there are several limitations of the present study as well as its strengths. These limitations should be interpreted with caution while reading the chapter that presents the findings of the study.

Firstly, an important limitation of the current study was the sampling method. The subjects of this research were selected by convenience sampling method, rather than random sampling method. Thus, the sample may not truly represent the whole population. Moreover, the findings of this study are limited to the university students who are studying at three public and one private university that are located in Turkey. As a consequence, the results of the current study cannot be generalized to all university students in Turkey.

Secondly, the measurement technique of the study can be regarded as another limitation. Although the instruments used in the current study were found to be valid enough, self-report instruments (particularly the ones that measure depression and rumination) are generally subject to the issue of social desirability. Hence, social desirability might deter some participants from reporting honestly. This could be seen as another disadvantage in terms of the validity of the results.

Thirdly, the data was collected at one time point because it was designed as a cross-sectional study. However, the relationship between the participants and their siblings and related variables may change and show variety over time. Future research may involve gathering data at multiple time points to make casual inferences.

Another limitation of this research is the length of the instruments. The instrument pack includes four separate scales with a total number of 96 items and a demographic form to be completed by the participants. There may arise some threats to internal validity during the administration of these instruments. If it takes too much time to complete all, instrument decay can become an internal validity threat.

Lastly, the design of the current study might be seen as another weakness. Since this research was designed as correlational, establishing a cause and effect relationship is not possible. Although SEM analyses have an advantage of making predictions to some extent, researchers cannot draw precise conclusions about one variable causing changes in other variable or variables.

## **1.6. Definitions of the Terms**

In this part, the definitions of the terms used in the current study are presented alphabetically.

*Co-rumination* is defined as “frequently discussing problems, discussing the same problem repeatedly, mutual encouragement of discussing problems, and focusing on negative feelings” (Rose, 2002, p.1830).

*Depression* is an emotional state showing itself with feelings of sadness and worthlessness, and with loss of interest, pleasure, appetite and sleep, sexual desire (Davison & Neale, 1994).

*Depressive symptoms* are the physical, emotional and behavioral indicators of depression. It is essential to note the difference between depression and depressive symptoms. Since the sample of the current study consists of non-clinical participants, the term ‘depressive symptom’ was preferred.

*Emerging adulthood* is defined as “a developmental time period from the late teens through the twenties” (Arnett, 2000, p.469).

*Ruminative responses* are defined as “behaviors and thoughts that focus one’s attention on one’s depressive symptoms and on the implication of these symptoms” (Nolen-Hoeksema, 1991, p.569).

*Self-disclosure* is described as “the process of revealing personal information about oneself to another and an important aspect of communication in close relationships” (Sprecher & Hendrick, 2004, p.858).

*Sibling relationship quality* can be defined as one’s perceived satisfaction with his or her sibling.

## CHAPTER 2

### REVIEW OF THE LITERATURE

The main purpose of the present study was to model the associations among the sibling relationship quality, co-rumination, rumination and depression. Previous research examined these variables separately. For instance, the quality of sibling relationship has mostly been examined in order to reveal its links with positive adjustment or internalizing behaviors, particularly with depression (e.g., Dirks, Persram, Recchia, & Howe, 2015; Padilla-Walker, Harper, & Jensen, 2010; Stocker, Burwell, & Briggs, 2002). On the other hand, co-rumination has been largely investigated within the context of friend relationship to explore its associations with the relationship quality and internalizing problems, mostly depression (e.g., Calmes & Roberts, 2008; Rose, 2002; Schwartz-Mette & Rose, 2012). Existing research indicated that co-rumination contributes to both the quality of the friend relationship and depressive symptoms. Rumination and self-disclosure are the two elements that compose co-rumination construct. In fact, co-rumination can be defined as the interpersonal form of rumination. Co-ruminators mostly share their problems in detail by disclosing themselves to the person in whom they confide. Howe, Aquan-Assee, Bukowski, Lehoux, and Rinaldi (2001) acknowledged that disclosing or sharing personal information about oneself is a primary component of close relationships. Since sibling relationship is considered as one of the most intimate interpersonal relationships in an individual's life, siblings should also be regarded as the potential confidants to co-ruminate with. Yet, sibling-based co-rumination, rumination and their relations to the quality of sibling relationship and depression have not been examined together up till now. Exploring the associations among these variables can help researchers and practitioners have a look at the sibling relationship from a different perspective by taking the role of sibling-based co-rumination and its negative and positive outcomes into account.

This chapter presents the literature relevant to the variables of the study. The first section is devoted to review research on sibling relationship in emerging adulthood. The second section includes a brief overview of the prevalence of depressive symptoms worldwide and Turkey, the introduction of rumination and co-rumination constructs and it also presents how important to investigate co-rumination with a sibling during emerging adulthood.

## **2.1. Sibling Relationships in Emerging Adulthood**

Emerging adulthood refers to a time period between the ages of 18 to 25. Arnett (2000) defined *emerging adulthood* as “a developmental time period from the late teens through the twenties” (p.469). He also emphasized the importance of distinguishing emerging adulthood from adolescence and adulthood. In 2004, Arnett identified five characteristics of emerging adulthood in order to make this period distinct: the age of identity explorations, the age of instability, the self-focused age, the age of feeling in-between, and the age of possibilities. Even though Arnett (2000) defined emerging adulthood as the period from 18 to 25 years of age, this transition period should be extended to 30 years of age, since more and more individuals choose to continue their studies in higher education (Côté, 2006).

In fact, this specific phase of the life span, emerging adulthood, is definitely a crucial period of transition as individuals undergo a number of essential changes such as leaving home of origin, going to university, developing a career plan or being employed. According to Arnett (2004), the term *emerging adulthood* is a need to describe a particular period in our modern world because young people mostly have a tendency to postpone marriage and parenthood in order to pursue their higher education. Higher education has become a normative experience all around the world, particularly in developed and developing countries. Moreover, most emerging adults often choose to continue their education at graduate school after obtaining their undergraduate degrees (Arnett, 2000). The rise in the proportion of individuals who

attended secondary school in developing countries (including Turkey) between the years 1980 and 2000 was illustrated by Arnett (2004) as can be seen in Table 1. He also added that the median ages of getting married and entering parenthood also increased in these countries.

Table 1

*Changes in Secondary-School Enrollment in Selected Developing Countries, 1980-2000*

	% enrolled 1980		% enrolled 2000	
	Males	Females	Males	Females
Argentina	53	62	73	81
China	54	37	74	67
Egypt	66	41	83	73
India	39	20	59	39
Mexico	51	46	64	64
Nigeria	25	13	36	30
Poland	75	80	98	97
Turkey	44	24	68	48

\*From “*Emerging adulthood: The winding road from the late teens through the twenties*” by J. J. Arnett, 2004, Oxford University Press, p. 23

As can be seen in Table 1 above, the proportion also rose sharply in Turkey. Moreover, the number of Turkish young people attending university has still been increasing. That is, the term *emerging adulthood* is also appropriate to describe Turkish young people who are studying at undergraduate and graduate school (roughly ages 18-29) since most of these young individuals have not made the transition linked with adult status such as having a long-term occupation, entering marriage and parenthood (Arnett, 2004). As a result, their road to adulthood seems to be longer. In particular, transition to university involves multiple stressors for emerging adults as most of them have to stand on their own feet for the first time in their lives. Accordingly, emerging adults are likely to have difficulties in adapting to the new environment where they face with many academic, social and emotional challenges. In regards to academic challenges, emerging adults may find themselves with a heavy workload and feel

stressed while trying to meet the requirements of the courses offered at university. Considering social and emotional challenges, leaving the parental home and past social support network behind might be a tense experience for some of them. All these major changes and challenges might become sources of stress for emerging adults. Transition to university can be regarded as a stressful life event by most of them. The link between stressful events and depressive symptoms is well-established (Jenaway & Paykel, 1997). After entering university, increased levels of stress and symptoms of depression have also been documented in various longitudinal studies (e.g., Andrews & Wilding, 2004; Cooke, Bewick, Barkham, Bradley, & Audin, 2006; Sax, Bryant, & Gilmartin, 2004). Research demonstrated that the onset of majority of mental disorders occurs at the age of university education due to the particular stressors of university life (Kessler, Berglund, Demler, Merikangas, & Walters, 2005).

During times of stress, emerging adults are usually in need of reliable people in their social networks in order to comfort or support them. Social support is considered as a protective factor against the particular stress experienced during the transition to university. Emerging adults can make successful transitions without experiencing depressive symptoms as long as they have strong social support networks such as parents, friends, and siblings. However, sources of social support may also show variety during life transitions when people are expected to reform their social relationships within a novel environment (Tao, Dong, Pratt, Hunsberger, & Pancer, 2000). Therefore, emerging adults' available sources of social support in this specific transitional time should be explored. Even though social support from parents and friends have been widely studied during this transitional phase of life (e.g., Friedlander, Reid, Shupak, & Cribbie, 2007; Holahan, Valentiner, & Moos, 1994; Pittman, & Richmond, 2008), research on the sibling relationship and social support from sibling is limited. In fact, the most overlooked phase of sibling relationship is emerging adulthood. As Cicirelli (1995) claimed that "the greatest gap knowledge about the course of sibling relationships across the lifespan is in young adulthood" (p.218). However, sibling commitment is known to remain constant across the lifespan (Rittenour, Myers & Brann, 2007). In a study conducted with a sample of

7730 adults with siblings, White and Riedmann (1992) revealed that nearly 30% of their participants would call upon a sibling first in case of an emergency in order to receive support and approximately two-thirds of their large sample reported that they regarded at least one of their siblings as one of their closest friends.

Although individuals are no longer required to live in the same place with their siblings in their emerging adulthood years, it is remarkable that they usually keep their companionship and contact with their siblings. Goetting (1986) indicated that siblings mostly keep supporting and assisting each other during early and middle adulthood years. For instance, sibling relationships were found to get warmer and have less conflicts during young adulthood (Lanthier & Stocker, 1993). Likewise, in a more recent study conducted by Scharf, Shulman, and Avigad-Spitz (2005), emerging adults were found to have warmer relationships and experience less conflict with their siblings than did adolescents. Apparently, siblings keep assisting each other and maintain their supportive relationship throughout their emerging adult years.

Furthermore, the importance of sibling support during emerging adulthood have been reported in a few studies. For instance, Cicirelli (1980a) conducted a study with college women and revealed that college women prefer their siblings to their fathers when they need a confidante and support. Moreover, the bonds with their siblings were found to be as strong as the bonds with their mothers when a family member is needed as a confidante. Similarly, Milevsky (2005) also found that sibling support compensated for low support from mothers for self-esteem and depression; for low support from fathers for self-esteem, loneliness, and life satisfaction; for low support from friends for life satisfaction, self-esteem, and depression. The findings of this study also indicated that emerging young adults who have high sibling support reported significantly lower scores on loneliness and depression; and reported higher scores on self-esteem and life-satisfaction (Milevsky, 2005). More recently, Sherman, Landsford, and Volling (2006) reported that young adults who have harmonious sibling relations were found to have the highest well-being. Conversely, they also revealed that participants having high conflict in their sibling relationship reported

higher levels of loneliness and lower levels of self-esteem. Likewise, sibling conflict was also found to be negatively correlated with psychological functioning in a study conducted with university students (Stocker, Lanthier, & Furman, 1997).

Self-disclosure within the context of sibling relationship was also reported to increase the quality of sibling relationship and well-being. In a study conducted with adolescents that are approaching emerging adulthood, Howe, Aquan-Assee, Bukowski, Lehoux, and Rinaldi (2001) revealed that sibling self-disclosure was positively associated with feeling good about sharing. In a more recent study conducted with adolescents and emerging adults, Campione-Barr, Lindell, Giron, Killoren and Greer (2015) found that both disclosing to and being disclosed to by siblings was positively related to the sibling relationship quality. They also noted that sibling self-disclosure can serve as a protective factor for boys' mental health, and a risk factor for girl's mental health because girls who were disclosed to by their brothers were found to have higher depressive symptoms. They explained the reason behind this finding as girls' "cost of caring" (e.g., Smith & Rose, 2011). According to Campione-Barr et al. (2015), girls have a tendency to do their best to help and solve their brothers' problems. Consequently, girls become emotionally overloaded, which eventually leads to feeling overwhelmed and depressed.

In Turkey, the majority of research concerned with family subsystems such as parent-child or spousal subsystem, the sibling subsystem has not received enough attention. There are only a few studies that examined the relationship among siblings (e.g., Aksoy & Berçin-Yıldırım, 2008; Kanyas, 2008; Özyavru, 2008). Unfortunately none of them examined siblings in their emerging adulthood years. Most of the studies conducted in Turkey focused on the early years of the sibling relationship. More specifically, the researchers were mostly interested in the links between parental vs. sibling rejection/acceptance and the relationship between healthy children and their disabled (handicapped) siblings. For instance, the purpose of Kanyas' study (2008) was to explore the influence of parent-child relationship (parental rejection-parental acceptance) on different aspects of sibling relationship such as jealousy, conflict and

positiveness with respect to particular variables such as age difference, birth order and gender. Among siblings, higher parental rejection was found to predict more jealousy, conflict and less positiveness only for mothers, not fathers. According to this finding of the study, it can be said that being neglected by mothers may result in rejection of siblings. Another finding of this study is about gender compositions of the sibling dyads. Female-female sibling dyads were found to have the highest positiveness. Furthermore, same-sex sibling dyads reported more positiveness than opposite-sex sibling dyads did. However, gender was not found to influence the quality of sibling relationship. Likewise, Özyavru (2008) investigated the effects of elder sibling's acceptance-rejection on psychological adjustment of younger sibling and its relation to various familial factors. The results of this study showed the importance of elder sibling acceptance-rejection, particularly in the psychological adjustment of their younger brothers and sisters. It was found that how much the elder siblings would accept or reject their younger brothers or sisters is based on how much the elder siblings were accepted or rejected by their parents. In another study conducted by Aksoy and Berçin-Yıldırım (2008), the relationships of healthy children with their handicapped siblings were investigated and their acceptance of the siblings was examined. Findings of this study revealed that healthy children display positive attitudes towards their handicapped siblings. Unfortunately, no published research has been found on the sibling relationship of Turkish emerging adults.

Taken together, research on siblings showed that siblings maintain their social relationship and continue to influence each other from childhood to old age, even when they no longer live together. Siblings having harmonious and positive relations keep assisting and showing care to each other throughout their entire life. They are often regarded as sources of nonjudgmental social support in times of stress and salient confidants to whom they can disclose their most personal information. Sibling support can even compensate for the lack of support from other members of social network such as parents or peers (e.g., Milevsky, 2005). That is to say, having a positive sibling relationship may serve as a protective factor against the onset of depressive symptoms in emerging adulthood. On the other hand, siblings having low

quality and conflictual relations have negative influences on each other, which may result in higher rates of adjustment problems and internalizing behaviors, particularly depression (e.g., Jurkin & Adorić, 2009; Kim, et al., 2007; Stocker, et al., 1997).

## **2.2. Rumination and Co-Rumination**

A number of studies have indicated higher prevalence of psychological distress among emerging adults than the rest of the general population (e.g., Adlaf, Gliksman, Demers, & Newton-Taylor, 2001; Kuwabara, Van Voorhees, Gollan, & Alexander, 2007; Nerdrum, Rustøen, & Rønnestad, 2006). Kuwabara et al. (2007) acknowledged that one in four emerging adults experience a depressive episode during their emerging adult years. Particularly, university students may be more vulnerable to demonstrating depressive symptoms due to the specific challenges and changes associated with the transition to university. Systematical studies conducted in various countries indicated that university years are becoming more difficult with each passing year and correspondingly, the number and severity of the problems of help-seeking clients at university counseling centers have been increasing (Erdur-Baker & Bıçak, 2006).

In Turkey, there are a few studies which investigated the prevalence of depression among Turkish university students (e.g., Arslan, Ayranci, Unsal, & Arslantas, 2009; Bayram & Bilgel, 2008; Ceyhan, Ceyhan, & Kurtyılmaz, 2005; Erdur-Baker & Bıçak, 2006). For example, Bayram and Bilgel (2008) revealed that 8.1% of 1617 university students had severe or extremely severe depression and 27.1 % of all students had moderate depression. Similarly, Ceyhan, Ceyhan and Kurtyılmaz (2005) reported that 31 % of Turkish university students were found to be mildly or moderately depressed and 7 % of them were found to be clinically depressed. In a more recent study, the prevalence of depression in Turkish university students was found to be 21.8 %, approximately one in five students was found to have depressive symptoms (Arslan, Ayranci, Unsal, & Arslantas, 2009). All these findings showed that depressive symptoms are also common among Turkish emerging adults, yet mild in severity.

Therefore, investigating and identifying the possible factors contributing to depressive symptoms of emerging adults may be beneficial for preventive intervention and treatment.

There are multiple contributors to develop depressive symptoms. One salient contributor to depressive symptoms is ruminative response style. Ruminative response style is correlated with depressive symptoms and may lead to increased levels of depressive symptoms and future depressive episodes (Nolen-Hoeksema, 1991). According to the response styles theory of depression, ruminative responses are defined as “behaviors and thoughts that focus one’s attention on one’s depressive symptoms and on the implication of these symptoms” (Nolen-Hoeksema, 1991, p.569). Rather than taking an action or trying to solve their problems, ruminators mostly choose to think on a problematic issue passively or concentrate on their depressive symptoms repetitively. A great deal of research has confirmed that ruminative responses lead to higher levels of depressive symptoms (e.g., Abela & Hankin, 2011; Abela, Payne & Moussally, 2003; Butler & Nolen-Hoeksema, 1994; Lyubomirsky & Nolen-Hoeksema, 1993; Stone, Hankin, Gibb, & Abela, 2011). An individual who has a ruminative response style questions himself and his life in a non-solution oriented way. “Why can’t I handle things better?”, “Why do I have problems other people don’t have?”, and “What am I doing to deserve this?” are the typical questions that ruminators ask themselves frequently. Once ruminators start to share such thoughts verbally with close confidants around their social circle, rumination becomes an issue that should be investigated from an interpersonal perspective. The present study is an attempt to investigate rumination from an interpersonal perspective, which is called “co-rumination”. Co-rumination is relatively a new construct that was introduced by Rose in 2002. Co-rumination is “characterized by frequently discussing problems, discussing the same problem repeatedly, mutual encouragement of discussing problems, and focusing on negative feelings” (Rose, 2002, p.1830). The difference between rumination and co-rumination is that the former is intrapersonal while the latter one is interpersonal.

On the other hand, previous research showed that depression is contagious within people who are close to each other (Coyne, Kessler, Tal, Turnbull, Wortman, & Greden, 1987; Hokanson & Butler, 1992; Katz, Beach, & Joiner, 1999; Joiner & Katz, 1999). Coyne (1976) named this transmission as “depression contagion”. Over time, one can feel burdened and overwhelmed as well after listening to a depressed person’s problems and difficulties repetitively. Depressive symptoms of one person may result in the onset of depressive symptoms in other people around him (Joiner & Katz, 1999). When people co-ruminate with their close confidants, they share their problems and focus on their negative feelings, so it is sensible to expect those confidants to experience depressive symptoms in the long run. That’s why, co-rumination can be regarded as an important contributor that transmits depressive symptoms from one person to other because co-ruminators only share negative feelings and thoughts with each other. Thus, they might feel burdened by each other’s problem-focused discussions. Smith and Rose (2011) named this as the “cost of caring”. Respective studies have shown that co-rumination is positively with depressive symptoms in children, adolescents, and young adults (Barstead et al., 2013; Calmes & Roberts, 2008; Hankin, Stone & Wright, 2010; Rose, 2002; Rose et al., 2007; Tompkins, Hockett, Abraibesh, & Witt, 2011).

As mentioned before, co-rumination has been found to contribute not only to depression or anxiety but also to higher relationship quality and closer relationship bonds. By co-ruminating, individuals disclose themselves to each other and they eventually get closer to each other. Sharing most private information is most likely to increase the quality of relationship and boost closeness. Having close supportive relationships has been found to serve as a buffer against internalizing behaviors (e.g., Brissette, Scheier, & Carver, 2002; Shulman, Kalnitzki, & Shahar, 2009; Taylor, 2007). Although rumination has only negative outcomes such as depression and anxiety, co-rumination has not only negative but also positive outcomes such as deeper intimacy and closer relationship with the confidants.

When Rose (2002) first introduced the construct of co-rumination, she conducted a study with 322 female and 286 male adolescents. The findings of this first study revealed significant gender differences. The results indicated that girls co-ruminating more than boys reported higher levels both in depression and friendship quality. Besides, co-rumination was only found to predict depressive symptoms for girls, not for boys. Similarly, Rose, Carlson and Waller (2007) conducted a longitudinal study and again found that co-rumination predicted increases in depressive symptoms and relationship quality over time, in turn, contributed to higher co-rumination. It is striking that negative outcomes of co-rumination were only reported by girls in both studies. One conclusion can be drawn from the findings of these two studies is that co-rumination might be a risk factor just for females' mental health, not for males'.

Likewise, Starr and Davila (2009) replicated previous studies on co-rumination (Rose, 2002; Rose et al., 2007) in a one-year longitudinal study. However, they indicated that co-rumination was only cross-sectionally associated with depressive symptoms. Contrary to previous findings of Rose and Rose et al. (2002; 2007), co-rumination did not predict changes in depressive symptoms over time. Similar to their findings, Starr and Davila also reported higher levels of relationship quality in their longitudinal study. Tompkins et al. (2011) conducted another study that provided further evidence of co-rumination's cross-sectional relationship with depressive symptoms, with girls' reporting higher levels of co-rumination and internalizing problems, compared to boys.

Calmes and Roberts (2008) made the first attempt to examine co-rumination with different types of close relationships such as parents, roommate, same-sex friends and romantic partner. They gathered data from 345 university students, which is also known as the first co-rumination study conducted with emerging adults. Consistent with the previous findings with children and adolescents (Rose, 2002; Rose et al., 2007), Calmes and Roberts (2008) found that friend-based co-rumination of university students was positively correlated with their depressive symptoms and friendship quality, with females' reporting higher levels of co-rumination, depressive symptoms

and friendship satisfaction. However, parent-based, roommate-based and romantic partner-based co-rumination were not found to have correlations with depression. On the other hand, co-rumination in each type of dyadic relationship was positively associated with higher relationship satisfaction. Besides, Calmes and Roberts (2008) did not reveal any gender differences in co-rumination in other types of relations.

Waller and Rose (2010) extended the co-rumination literature within the context of other types of dyadic relations by examining adolescents' co-rumination with their mothers. According to the findings of this study, girls reported higher co-rumination scores with their mothers than adolescent boys did, and girls reporting higher scores in co-rumination were found to have higher depressive symptoms. In a more recent study, Haggard, Robert, and Rose (2011) investigated co-rumination in an organizational setting with working adults, which has been the first attempt to examine co-rumination in a workplace setting. Consistent with previous co-rumination literature, female workers reported higher levels of co-rumination than male workers did. Whereas co-rumination was found to be related with higher levels of depression for women, it was found to be related with lower levels of depression for men.

After reviewing co-rumination literature, it is acknowledged that the majority of the research was conducted with children and adolescents, mostly within the context of friend relationships. There is limited research on co-rumination with emerging adult samples and none of the existing studies was conducted to investigate co-rumination within the context of sibling relationship. However, siblings should be considered as important confidants of co-rumination as they commonly have similar life stories with shared intimacies. Thus, siblings are most likely to consider each other as a nonjudgmental social support and they frequently become recipients of their self-disclosures. In a meta-analysis study, Yalçın (2015) included all related studies conducted in Turkey between the years 1997 and 2013 in order to investigate associations between social support, well-being and depression. The findings of this meta-analysis study revealed that perceived support from family was significantly

stronger than other support sources (i.e., support from friends and support from teachers) for Turkish individuals. The researcher also revealed the negative correlation between the social support from family and depressive symptoms. None of the studies included in this meta-analysis were conducted to examine sibling support alone. Yet, one important conclusion which can be drawn from this study is that social support from family is essential for Turkish individuals' well-being. In this manner, exploring the associations among sibling-based co-rumination, rumination, depression and the sibling relationship quality of Turkish university students can contribute greatly not only to sibling research in emerging adulthood but also to co-rumination research within the context of various dyadic relationships.

## CHAPTER 3

### METHOD

This chapter presents the description of the methodological procedures of the study. The first section describes the data collection procedure. The second section presents the sample of the current study. The third section presents the data collection instruments and the following section presents the data analyses procedures.

#### 3.1. Data Collection Procedure

The target population of the current study is Turkish emerging adults studying at undergraduate or graduate schools in Turkey. A six-page survey pack including Turkish versions of the *Lifespan Sibling Relationship Scale*, the *Co-Rumination Questionnaire*, the *Short Version of the Ruminative Response Scale* and the *Beck Depression Inventory* was prepared. An application was submitted to Middle East Technical University Human Subjects Ethics Committee (HSEC) in order to obtain the ethical approval.

After getting required permissions from METU, Human Subjects Ethics Committee (HSEC), four different campuses were visited by the researcher to gather data (See Appendix A for the approval letter of HSEC). Data were collected through convenient sampling method during the spring semester of 2013-2014 academic year. Firstly, the head of each department and the instructor of each class were informed about the purpose of the research. After getting the approval of the directors and instructors, the researcher visited classes during regular lesson hours, introduced herself and explained the purpose of the study briefly. Privacy and confidentiality issues were shared with all participants and they were informed about their right to withdrawal. Then, the 6-page survey pack that involves all instruments of the study was distributed to the

volunteer students. The instruments took approximately 15-20 minutes to complete. Each participant was also asked to fill and sign the *informed consent form* separately (See Appendix C, D, E, F, and G for sample items of all instruments used in the study and the informed consent form).

### 3.2. Participants

The data for the current study were collected from 755 undergraduate and graduate students attending different universities (3 state, 1 private university) that are located in Turkey. Firstly, the missing data was eliminated. In the current study, all cases with missing data more than 5 % were removed. After the elimination of missing data, 583 cases remained among 755 participants. Secondly, influential outliers were checked by examining Z scores, inspecting histograms and calculating Mahalanobis distance, respectively. All missing cases and influential outliers were removed from the data set. Consequently, the study was conducted with a sample of 578 Turkish university students. Table 2 below presents the distribution of the participants by university type (private or state university) and gender.

Table 2

*The Distribution of the Participants In terms of University Type and Gender*

University Type	Female (n=336)	Male (n= 242)	Total (n= 578)
Private University	82	99	181
State Universities	254	143	397

The number of female participants was 336 (58 %) and the number of male participants was 242 (42 %). The age of the participants ranged between 18 and 26 ( $M= 20.86$ ,  $Mdn= 21$ ,  $Mo= 21$ ,  $SD= 2.11$ ).The details of the demographic characteristics of the participants and their chosen siblings can be seen in Table 3 below.

Table 3

*Demographic Characteristics of the Participants and Their Chosen Siblings*

	<i>f</i>	%
<b>Age of the Participants</b>		
18	78	13.5
19	93	16.1
20	107	18.5
21	113	19.6
22	73	12.6
23	38	6.6
24	30	5.2
25	25	4.3
26	21	3.6
<b>Age of the Siblings</b>		
(7-17)	189	32.7
(18-29)	342	59.2
(30-40)	47	8.1
<b>Gender of the Participants</b>		
Female	336	58.1
Male	242	41.9
<b>Gender of the Participant's Sibling</b>		
Female	285	49.3
Male	293	50.7
<b>Types of Siblings</b>		
Biological Sibling	574	99.3
Half Sibling	4	.7

### **3.3. Instruments**

#### **3.3.1. Lifespan Sibling Relationship Scale (LSRS: Riggio, 2000)**

The Lifespan Sibling Relationship Scale (LSRS) was developed by Riggio (2000) to measure individual attitudes toward the adult sibling relationship. The LSRS has 48 self-report items that are scored on a 5-point Likert scale showing the degree to which respondents agreed or disagreed with the statement about their sibling relationship (1 = Strongly Disagree, 2= Disagree, 3= Neither agree nor Disagree, 4 = Agree and 5= Strongly Disagree).

The LSRS has six subscales that assess emotions toward the sibling and the sibling relationship as a child (Child Affect; CA) and as an adult (Adult Affect; AA); beliefs about the sibling and the sibling relationship as a child (Child Cognitions; CC) and as an adult (Adult Cognitions; AC); and behavioral interactions with the sibling and the positivity of those interactions as a child (Child Behavior; CB) and as an adult (Adult Behavior; AB). The Lifespan Sibling Relationship Scale, which is relatively a new scale, differs from the other instruments which were developed to measure sibling relationship quality because it has an important advantage of measuring the quality of sibling relationship across the lifespan. It has been used in many studies in the USA, Canada and Korea as a valid instrument to measure the quality of sibling relationship (e.g., Burbidge & Minnes, 2014; Frank; 2007; Frank; 2008; Jeong, Jeong, Yu, Lyoo, Im, Bae & Kim, 2013). The LSRS was found to have good psychometric properties including discriminant validity, internal consistency and test-retest reliability. In the original validity and reliability study of the LSRS, 711 undergraduate and graduate students, with a mean age of 23.5 years, completed the scale (Riggio, 2000). According to the results of this study, coefficient alphas for the six subscales were found to be from .84 to .91. Coefficient alpha for the total LSRS was found to be .96. Test-retest reliability correlations were all greater than .80. LSRS items with their corresponding subscales are presented in Table 4 below.

Table 4

*The LSRS Subscales and Items*

LSRS Subscales	Items
CA	<p>6. I remember having a lot of fun with my sibling when we were children.</p> <p>*12. I was frequently angry at my sibling when we were children.</p> <p>18. I enjoyed spending time with my sibling as a child.</p> <p>24. I remember feeling very close to my sibling when we were children.</p> <p>*30. My sibling bothered me a lot when we were children.</p> <p>36. I was proud of my sibling when I was a child.</p> <p>42. I remember loving my sibling very much when I was a child.</p> <p>*48. My sibling made me miserable when we were children.</p>
CB	<p>4. My sibling and I spent time together after school as children.</p> <p>10. My sibling and I often helped each other as children.</p> <p>16. My sibling and I often had the same friends as children.</p> <p>*22. My sibling and I did not spend a lot of time together when we were children.</p> <p>28. My sibling and I shared secrets as children.</p> <p>34. My sibling looked after me (OR I looked after my sibling) when we were children.</p> <p>40. My sibling and I often played together as children.</p> <p>46. I talked to my sibling about my problems when we were children.</p>
CC	<p>2. My sibling and I were "buddies" as children.</p> <p>*8. My sibling did not like to play with me when we were kids.</p> <p>14. My sibling and I were important to each other when we were children.</p> <p>20. My sibling knew everything about me when we were kids.</p> <p>26. My sibling had an important and positive effect on my childhood.</p> <p>32. My sibling and I liked all the same things when we were children.</p> <p>38. My sibling and I were very close when we were children.</p> <p>44. My sibling and I had a lot in common as children.</p>

Table 4 (cont'd)

AA	3. My sibling makes me happy.
	9. I enjoy my relationship with my sibling.
	15. I am proud of my sibling.
	21. My sibling's feelings are very important to me.
	27. My sibling and I have a lot of fun together.
	33. I like to spend time with my sibling.
	*39. My sibling frequently makes me very angry.
45. I admire my sibling.	
AB	1. I presently spend a lot of time with my sibling.
	*7. I never talk about my problems with my sibling
	13. I call my sibling on the telephone frequently.
	19. My sibling and I borrow things from each other.
	25. My sibling talks to me about personal problems
	31. My sibling and I hang out together.
	37. My sibling and I do a lot of things together.
43. My sibling and I share secrets	
AC	5. My sibling is a good friend.
	11. My sibling is very important in my life.
	*17. My sibling and I are not very close.
	23. My sibling is proud of me.
	29. I know that I am one of my sibling's best friends.
	35. My sibling and I have a lot in common
	41. I believe I am very important to my sibling.
47. My sibling is one of my best friends.	

*Note.* AA= Adult Affect; AB= Adult Behavior; AC=Adult Cognitions; CA= Child Affect; CB= Child Behavior; CC= Child Cognitions and \*Reversed items

### ***3.3.1.1. Translation Study of the LSRS***

Prior to the translation procedure, the researcher asked for permission from the owner of the instrument. After getting the approval letter of Riggio, the developer of the Lifespan Sibling Relationship Scale, the original scale including 48 items was translated from English into Turkish by two English language teachers working at university level and an English/Turkish translator and interpreter.

After comparing all translations, an expert counselor who is advanced in English agreed on the final version by selecting the best alternative for each item. Afterwards, the Turkish version of the LSRS was back-translated into the original language by another English language teacher who had no idea about the original scale. The back translation showed that the scale was accurately translated. Subsequently, a Turkish literature teacher checked the Turkish version of the LSRS in order to ensure the accuracy of Turkish wording and grammar of the final Turkish version. (See Appendix B for the permission letter of Riggio).

### ***3.3.1.2. Validity and Reliability Study of the Turkish Version of LSRS***

The reliability of the scale was calculated from the internal consistency coefficient (Cronbach's  $\alpha$ ). The Cronbach's alpha of the total LSRS was found to be  $\alpha = .94$ , which indicated a good internal consistency. Internal consistency coefficient was also calculated for the six subscales of LSRS respectively. Cronbach's alpha was found to be  $\alpha = .80$  for Child Affect subscale;  $\alpha = .77$  for Child Behavior subscale;  $\alpha = .81$  for Child Cognitions subscale;  $\alpha = .80$  for Adult Affect subscale;  $\alpha = .74$  for Adult Behavior subscale and  $\alpha = .83$  for Adult Cognitions subscale. These findings indicated adequate and good internal consistency of the scale and its subscales.

All descriptive statistics including Means, standard deviations and internal consistency reliabilities (coefficient alphas) of all measured subscales and the total scale of the LSRS are presented for females and males in Table 5.

Table 5

*Descriptive Statistics for the Lifespan Sibling Relationship Scale (LSRS)*

LSRS Subscales	Female (n=336)		Male (n=242)		Total (n=578)
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>A</i>
Child Affect	31.9	4.7	31.7	4.5	.80
Child Behavior	29.9	5.2	29.1	5.0	.77
Child Cognitions	31.0	5.3	30.3	4.9	.81
Adult Affect	34.1	4.1	32.8	4.1	.80
Adult Behavior	30.8	5.2	28.8	4.7	.74
Adult Cognitions	34.07	4.5	33.2	4.6	.83

A Confirmatory Factor Analysis (CFA) was conducted on the 48 items of the LSRS to examine whether the scale had six underlying dimensions. Analysis of Moment Structures (AMOS) Version 18.0 software (Arbuckle, 2009) was used to perform CFA with item parceling technique. The technique of parceling items can be used to decrease the number of indicators of lengthy scales, to obtain more continuous and normally distributed data and to improve the fit of the CFA model (Bandalos & Finney, 2001).

The original six-factor structure suggested by Riggio (2000) was tested to examine the goodness of fit to the data with the technique of item parceling. Each factor consists of 2 item parcels and each item parcel includes 4 items which were selected based on their skewness and kurtosis values. The skewness and kurtosis values of the item parcels ranged from - .009 to - .819 indicating the normal distribution of the item parcels. That's, all item parcels were normally distributed. Their skewness and kurtosis values are presented in Table 6 below.

Table 6

*Item Parcels of the LSRS and their Skewness and Kurtosis Values*

<i>Item Parcels</i>	<i>Skewness</i>	<i>Kurtosis</i>
P1CA	-.217	-.681
P2CA	-.462	-.524
P3CB	-.060	-.436
P4CB	-.017	-.727
P5CC	-.231	-.696
P6CC	-.009	-.703
P7AA	-.557	-.825
P8AA	-.187	-.667
P11AB	-.015	-.615
P12AB	-.196	-.819
P9AC	-.677	-.453
P10AC	-.346	-.714

Running the confirmatory factor analysis, each item parcel was allowed to load on its suggested factor and all six factors were considered as related to each other. The results indicated a good model fit for the data [ $\chi^2(39) = 224.700, p = .00; \chi^2/df = 5.76; TLI = .94, CFI = .96$  and  $RMSEA = .09, SRMR = .04$ ]. The goodness-of-fit indices (TLI, CFI, and SRMR) suggested that the six-factor model fit is adequate. Yet, the modification indexes were examined and modifications suggested by the program were checked. According to these suggestions, the error covariance of parcel P2CA-P8AA; parcel P7AA-P11AB; parcel P4CB-P11AB and parcel P5CC-P9AC were freely estimated since they measure the similar affects, cognitions or behaviors. New results indicated a better model fit for the data [ $\chi^2(35) = 139.534, p = .00; \chi^2/df = 3.99; TLI = .96, CFI = .98$  and  $RMSEA = .07, SRMR = .03$ ]. Conducted modification improved the model better as it can be seen in Table 7.

Table 7

*Goodness of Fit Indexes for Six Factor Model of the LSRS*

	$\chi^2/df$	CFI	TLI	RMSEA	SRMR
Model 1	5.76	.96	.94	.09	.04
Model 2	3.99	.98	.96	.07	.03

Overall, model fit indices showed that the six-factor structure became a better fit with particular modifications. Each parameter's estimated value (column 1), standard error (column 2), and critical ratio (column 3) are listed in Table 8 below.

Table 8

*Parameter Estimates of the LSRS*

			<i>Regression Weight</i>	<i>S.E.</i>	<i>C.R.</i>	<i>P</i>
Parcel 1 CA	<---	CA	1.172	.056	20.808	< .001
Parcel 2 CA	<---	CA	1.000			
Parcel 3 CB	<---	CB	.762	.040	19.170	< .001
Parcel 4 CB	<---	CB	1.000			
Parcel 5 CC	<---	CC	.928	.038	24.543	< .001
Parcel 6 CC	<---	CC	1.000			
Parcel 7 AA	<---	AA	.717	.033	21.523	< .001
Parcel 8 AA	<---	AA	1.000			
Parcel 11 AB	<---	AB	.653	.027	24.598	< .001
Parcel 12 AB	<---	AB	1.000			
Parcel 9 AC	<---	AC	.631	.035	18.112	< .001
Parcel 10 AC	<---	AC	1.000			

*Note.* CA= Child Affect; CB= Child Behavior; CC= Child Cognitions; AA= Adult Affect; AB= Adult Behavior; AC=Adult Cognitions.

Unstandardized coefficients with factor correlates for the model were given in Appendix H. Intercorrelations among the six subscales and the total LSRS score are

demonstrated in Table 9. All subscales were found to be moderately or highly correlated. The three adult subscales scales and the three child subscales were found to be more strongly correlated among each other.

Table 9  
*Intercorrelations of the LSRS Subscales*

	AA	AB	AC	CA	CB	CC	LSRS
AA	-	.66	.81	.63	.48	.57	.82
AB	-	-	.75	.45	.55	.55	.80
AC	-	-	-	.54	.55	.60	.85
CA	-	-	-	-	.64	.75	.80
CB	-	-	-	-	-	.80	.82
CC	-	-	-	-	-	-	.87

*Note.* AA= Adult Affect; AB= Adult Behavior; AC=Adult Cognitions; CA= Child Affect; CB= Child Behavior; CC= Child Cognitions; LSRS= total LSRS score.  $p < .01$

As it can be seen in descriptive statistics table (Table 2) above, female participants had higher scores than male participants for each subscale. Furthermore, a two-way (participant sex by chosen sibling sex) multivariate analysis of variance (MANOVA) was conducted to examine sex differences in LSRS subscales. Using Wilks's lambda, results showed a significant multivariate effect of participant sex  $\Lambda = 0.94$ ,  $F(6,569) = 6.18$ ,  $p < .001$ ,  $\eta^2 = .061$ ; a significant multivariate effect of sibling sex  $\Lambda = 0.97$ ,  $F(6,569) = 3.19$ ,  $p < .01$ ,  $\eta^2 = .033$  and a significant multivariate effect of the interaction between the participant sex and chosen sibling sex  $\Lambda = 0.96$ ,  $F(6,569) = 4.50$ ,  $p < .001$ ,  $\eta^2 = .045$ . All results of multivariate and univariate analyses of variance (MANOVA and ANOVAs) for the effects of participant's sex, his/her chosen sibling sex and the interactions between them are presented in Table 10 below.

Table 10

*Multivariate and Univariate Analyses of Variance F Ratios for the Effects of Participant Sex and Chosen Sibling Sex*

Variable	ANOVA $F(1,574)$						
	MANOVA $F(6, 569)$	CA	CB	CC	AA	AB	AC
Participant Sex	6.18***	.43	3.35	3.19	13.01***	20.68***	4.41*
Sibling Sex	3.19**	2.03	.03	.68	.56	8.22**	2.35
P. Sex x S. Sex	4.50***	.67	7.21**	1.73	3.16	20.05***	9.69**

*Note.* F ratios are Wilks's approximation of F; ANOVA= univariate analysis of variance; MANOVA=multivariate analysis of variance; CA= Child Affect; CB= Child Behavior; CC= Child Cognitions AA= Adult Affect; AB= Adult Behavior; AC=Adult Cognitions; \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$

For childhood subscales, univariate tests showed that Child Affect and Child Cognition subscales did not differ significantly according to participant sex, sibling sex and the interaction between them. Univariate tests also indicated that among childhood subscales only Child Behavior subscale differed significantly according to participant sex by sibling sex interaction ( $F(1,574) = 7.21, p < .01$ ), but it did not differ significantly according to the sibling sex.

On the other hand, for adult subscales univariate tests demonstrated that female participants reported significantly higher scores on Adult Affect ( $F(1,574) = 13.01, p < .001$ ), on Adult Behavior ( $F(1,574) = 20.68, p < .001$ ) and on Adult Cognition ( $F(1,574) = 4.41, p < .05$ ) than male participants. Furthermore, univariate tests also demonstrated that Adult Behavior and Adult Cognition subscales differed significantly according to participant sex by sibling sex interaction, but only Adult Behavior subscale differed significantly according to participant sex, sibling sex and the interaction between them.

### **3.3.2. Beck Depression Inventory (BDI; Beck, Rush, Shaw, & Emery, 1979)**

Beck Depression Inventory was developed by Beck, Rush, Shaw, and Emery in 1979. The BDI is a well-known self-report instrument to assess depressive symptoms. The BDI has 21 statements with a four-point Likert type scale. Each item ranges from 0 to 3. Higher scores demonstrate greater depressive symptoms. The standard cut-off scores of the BDI are as follows: 0–9: minimal depression, 10–18: mild depression, 19–29: moderate depression and 30–63: severe depression. Moreover, the split half reliability is  $\alpha = .90$  and test-retest reliability is  $\alpha = .75$ . The BDI was adapted into Turkish by Hisli (1988). The Turkish version's split half reliability was found to be  $\alpha = .74$  and its internal consistency was found to be  $\alpha = .86$ . The test-retest reliability of BDI-Turkish ranges from  $\alpha = .76$  to  $\alpha = .84$ . The BDI seems to be the most common, valid and reliable measure for the current study to assess depressive symptoms.

In the current study, the internal consistency reliability of the BDI was  $\alpha = .88$ . Four-factor structure suggested by Hisli (1988) was tested in this study through CFA. The results indicated an inadequate model fit for the data ( $\chi^2/df = 2.81$ ;  $TLI = .88$ ,  $CFI = .89$  and  $RMSEA = .06$ ,  $SRMR = .05$ ). The goodness-of-fit indices (TLI, CFI, and SRMR) suggested that the four-factor model fit is adequate. Yet, the modification indexes were examined and modifications suggested by the program were checked. According to these suggestions, the error covariance of item 18 and item 19 was freely estimated. Both items measure the same somatic problem of losing weight and appetite, so there is theoretical justification for relating the covariance errors of these items. Unstandardized coefficients with factor correlates for the model were given in Appendix I. Conducted modification improved the model better as it can be seen in Table 11 below.

Table 11

*Goodness of Fit Indexes for Four Factor Model of the BDI*

	$\chi^2/df$	CFI	TLI	RMSEA	SRMR
Model 1	2.81	.89	.88	.06	.05
Model 2	2.44	.91	.90	.05	.04

**3.3.3. Co-rumination Questionnaire (CRQ; Rose, 2002)**

The Co-Rumination Questionnaire (CRQ) is a 27-item questionnaire designed to measure the extent to which participants co-ruminate with a close friend. Participants rate how well each statement describes their general interactions using a 5-point Likert scale ranging from 1 = “Not at all true” to 5 = “really true.” In a study, the population involved adolescents, the Co-Rumination Questionnaire was shown to have high internal consistency ranging from  $\alpha = .96$  to  $\alpha = .97$  (Rose, 2002; Rose et al., 2007). Calmes and Roberts (2008) found the internal consistency in their undergraduate sample to range from  $\alpha = .94$  to  $\alpha = .98$ . The questionnaire was translated and adapted into Turkish by Bugay & Erdur-Baker (2015). The internal consistency coefficient for the total scale was .95 (Bugay & Erdur-Baker, 2015). They tested the one-factor structure with 27 items and 12 parcels. CFA results of this adaptation study indicated a good fit of the one factor model ( $\chi^2/df = 2.53$ ;  $GFI = .95$ ,  $CFI = .98$  and  $RMSEA = .08$ ,  $SRMR = .02$ ). For the purposes of the current study the original Co-Rumination Questionnaire was modified by changing the instruction at the beginning of the questionnaire. Participants are asked to identify their closest sibling (instead of their closest friend) and think about this sibling while answering the remaining 27 items. All other items were kept identical to the original Co-Rumination Questionnaire. In the current study, the internal consistency reliability of the CRQ was  $\alpha = .97$ . The original one-factor structure suggested by (2002) was tested to examine the goodness of fit to the data. The technique of item parceling was conducted with 27 items. 4 parcels were created based on their factor loading values. The skewness and kurtosis values of the item parcels ranged from  $-.929$  to  $.536$  indicating the normal distribution

of the item parcels. In other words, all item parcels were normally distributed. All parcels of CRQ and their skewness and kurtosis values are presented in Table 12 below.

Table 12

*Item Parcels of the CRQ and their Skewness and Kurtosis Values*

<i>Item Parcels</i>	<i>Skewness</i>	<i>Kurtosis</i>
CRP1	.105	-.929
CRP2	.079	-.839
CRP3	-.201	-.725
CRP4	.536	-.654

After running the confirmatory factor analysis, the results indicated a poor model fit for the data [ $\chi^2/df = 6.11$ ;  $TLI = .99$ ,  $CFI = .1.00$  and  $RMSEA = .09$ ,  $SRMR = .02$ ]. Although the goodness-of-fit indices (TLI, CFI, and SRMR) suggested that the single factor model fit is adequate, the normed chi-square value ( $\chi^2/df$ ) exceeded the threshold level 5 (Schumacker & Lomax, 2004). Consequently, the modification indexes were examined and modifications suggested by the program were checked. According to these suggestions, the error covariance of parcel 3 and parcel 4 were freely estimated since they measure the similar behaviors. New results indicated a better model fit for the data [ $\chi^2/df = .01$ ;  $TLI = 1.00$ ,  $CFI = 1.00$  and  $RMSEA = .00$ ,  $SRMR = .00$ ]. Conducted modification improved the model better as it can be seen in Table 13.

Table 13

*Goodness of Fit Indexes for One Factor Model of the CRQ*

	$\chi^2/df$	<i>CFI</i>	<i>TLI</i>	<i>RMSEA</i>	<i>SRMR</i>
Model 1	6.11	1.00	.99	.09	.02
Model 2	.01	1.00	1.00	.00	.00

Unstandardized coefficients with factor correlates for the model were given in Appendix J.

### **3.3.4. The Short Version of the Ruminative Response Scale (Treyner, Gonzalez, & Nolen-Hoeksema, 2003)**

Nolen-Hoeksema and Morrow developed the original Ruminative Response Scale in 1991. It was developed as a subscale of Response Styles Questionnaire. Ruminative Response Scale was composed of 22 items which were scored on a 4-point Likert type. The short version of Ruminative Response Scale was formed by Treyner et al. (2003) to measure ruminative tendencies. After eliminating particular items that are similar to Beck Depression Inventory, 10 items remained in the short version of RRS.

All items are scored on a 4-point Likert type scale, from 1 being “almost never” to 4 being “almost always”, as in the original RRS. The short version of RRS consists of two subscales which are called reflection and brooding. The coefficient alpha for reflection subscale was found to be .72 and the coefficient alpha for brooding subscale was found to be .77 (Treyner et al., 2003).

The short version of the scale was adapted into Turkish by Erdur-Baker and Bugay (2010). The internal consistency coefficient for the total scale was reported as .72 (Erdur-Baker & Bugay, 2010). CFA results of the adaptation study showed that two factor-structure proposed by Treyner et al. (2003) indicated a good fit ( $\chi^2/df= 3.93$ ;  $GFI= .95$ ,  $CFI=.88$  and  $RMSEA= .07$ ).

In the current study, the coefficient alphas for both brooding and reflection subscales were found to be .80 and the internal consistency reliability of the total scale was  $\alpha = .88$ . To test the original two-factor structure of the short version RRS, CFA was conducted with the technique of item parceling. 4 parcels were created (2 for each factor) with 10 items. The skewness and kurtosis values of the item parcels ranged from -.543 to .479 indicating the normal distribution of the item parcels. Their skewness and kurtosis values are presented in Table 14 below.

Table 14

*Item Parcels of the Short RRS and their Skewness and Kurtosis Values*

<i>Item Parcels</i>	<i>Skewness</i>	<i>Kurtosis</i>
RumBp1	.381	-.183
RumBp2	.474	-.393
RumRp3	.355	-.215
RumRp4	.369	-.543

The CFA results with item parceling technique indicated a good model fit for the data ( $\chi^2/df = 4.17$ ;  $TLI = .98$ ,  $CFI = 1.00$  and  $RMSEA = .07$ ,  $SRMR = .01$ ). The goodness-of-fit indices (TLI, CFI, and SRMR) suggested that the two-factor model fit is adequate without any modifications as can be seen in Table 15 below.

Table 15

*Goodness of Fit Indexes for Two Factor Model of the Short RRS*

	$\chi^2/df$	<i>CFI</i>	<i>TLI</i>	<i>RMSEA</i>	<i>SRMR</i>
Model	4.17	1.00	.98	.07	.01

Unstandardized coefficients with factor correlates for the model were given in Appendix K.

### 3.4. Data Analysis Procedure

The current study's aim is to test a model that analyzes the associations among rumination, co-rumination, depression and sibling relationship quality. In order to get the descriptive statistics, SPSS 22 (IBM Corp., 2013) was used. To test the model, structural equation modelling (SEM) was preferred because it is regarded as a proper alternative to test the models and to define and estimate casual relationships among

latent variables (Klem, 2000). For this current study, the proposed model was tested on AMOS Version 18 (Arbuckle, 2009).

Prior to model testing, preliminary analyses were done to check missing data, outliers, skewness and kurtosis values. Afterwards, bivariate correlations among variables were calculated to identify significant correlations and to check whether there is any multicollinearity, or not. Then, the model for SEM was developed and examined based on previous literature related to the variables of the study. All results will be presented in the next chapter. To make the findings clear to the reader, necessary terms of SEM analysis were described below:

*Structural Equation Modeling (SEM)* is defined as a “multivariate technique combining aspects of factor analysis and multiple regression that enables the researcher to simultaneously examine a series of interrelated dependence relationships among the measured variables and latent constructs as well as between several latent constructs” ( Hair, Black, Babin, & Anderson, 2013, p.546).

*Measurement error (e)* is the error in the indicator or observed variables that is not accounted for the latent construct (Hair et al., 2013).

*Measurement model* is a model that identifies the relationship between the latent variables and their corresponding indicators (Byrne, 1998).

*Structural model* is a model that represents interrelationships among the latent variables (Hair et al., 2013).

*Structural regression model* is a model which combines a measurement model and a structural model (Kline, 2011).

*Path coefficient/path weight* is a standardized regression coefficient which indicates the direct effect of an exogenous variable on an endogenous one.

*Maximum likelihood estimation (MLE)* is a “procedure that iteratively improves parameter estimates to minimize a specified fit function” (Hair et al., 2013, p.544).

To evaluate a model, particular model fit indices were used. These indices are also described below for a better understanding:

*Chi -Square ( $\chi^2$ )* is a “statistical measure of difference used to compare the observed and estimated covariance matrices” (Hair et al., 2013). A chi square value of zero indicates the best or perfect fit. However, chi square is known as its sensitivity to sample size.

*Ratio of Chi-Square to Degrees of Freedom ( $\chi^2/df$ )* is used to reduce the sensitivity of chi square to sample size. This value is called *normed chi-square*, as well. According to the criterion of Schumacker and Lomax (2004), values between 2.0 to 5.0 indicates an acceptable fit.

*Root Mean Square Error of Approximation (RMSEA)* is a measure that represents how well a model fits the population (Hair et al., 2013). A RMSEA value which is close to 0 can be reported to indicate a perfect fit.

*Standardized Root Mean Square Residual (SRMR)* is a “measure of the mean absolute correlation residual, the overall difference between the observed and predicted correlations” (Kline, 2011, p. 209). Values less than .10 are generally regarded as acceptable, but values more than .10 indicate a problem with fit (Hair et al., 2013).

*Goodness of Fit Index (GFI)* is an “absolute fit index that estimates the proportion of covariances in the sample data matrix explained by the model” (Kline, 2011, p. 207). GFI is less sensitive to sample size and values more than .90 are considered as good (Hair et al., 2013).

*Comparative Fit Index (CFI)* is an “incremental fit index that measures the relative improvement in the fit of the researcher’s model over that of a baseline model” (Kline, 2011, p.208). Hair et al. (2013) noted that values greater than .90 are generally related to a good fit.

*Tucker-Lewis Index (TLI)* is a measure that is used “to compare alternative models or a proposed model against a null model” (Schumacker & Lomax, 2004, p. 103). Its values are between 0 and 1. Values that are close to 1.0 are accepted as good (Hair et al., 2013).

Apart from these terms generally used in a SEM analysis, one should also be familiar with the necessary symbols which are commonly used in SEM diagrams. Measured variables are represented by rectangles or squares; unobserved variables are represented by ovals or circles; a hypothesized direct relationship between two variables is represented by a line with one arrow; a line with two arrows at both ends demonstrates covariance between those variables indicated (Ullmann, 2006).

## **CHAPTER 4**

### **RESULTS**

This chapter is composed of three main sections to present the results of the analyses. In the first section, preliminary analyses are presented including data screening (missing data, influential outliers, and sample size adequacy) and tests of necessary assumptions. In the second section, descriptive statistics are reported to describe the participants of the study. Lastly, the results of the structural SEM model which tests the research questions are presented.

#### **4.1. Preliminary Analyses**

In order to run the primary Structural Equation Modeling (SEM) analyses, data were thoroughly screened and the required assumptions were tested. In this section, the results of these preliminary analyses are presented.

##### **4.1.1. Missing Data**

While dealing with missing data, there are several ways to follow, such as deletion of cases, estimation of missing values, using a missing data correlation matrix (Tabachnick & Fidell, 2013). In the current study, all cases with missing data more than 5 % were deleted. After the elimination of missing data, 583 cases remained among 755 participants.

##### **4.1.2. Influential Outliers**

A univariate outlier is a case which has an extreme score on one variable. When this case has extreme scores on more than one variable, it is called as multivariate outlier.

In the current study, univariate outliers were checked by examining Z scores. Among 583 cases, only 5 cases' Z scores exceeded -3.29 and + 3.29 (Tabachnick & Fidell, 2013). Hence, those five cases were regarded as potential outliers. Since SEM is a multivariate analysis, multivariate outliers had to be identified as well. Multivariate outliers of the current study were checked by using Mahalanobis Distance (Mahalanobis  $D^2$ ). A multivariate outlier is a case which is associated with Mahalanobis distance greater than a critical distance specified by a  $p < .001$  (Tabachnick & Fidell, 2013). The critical value for the Mahalanobis distance was checked from Chi-Square table and found to be  $\chi^2 (df = 4) = 18.47, p < .001$ . Based on this criteria, the results showed the presence of two multivariate outliers. The 3<sup>rd</sup> and 72<sup>nd</sup> participants' Mahalanobis values were found to be above the critical value. These two multivariate outliers had also been detected as univariate outliers when Z scores were examined. As a result, 5 univariate outliers, including 2 multivariate outliers, were removed from the data set (ID numbers of the detected outliers are 3, 48, 72, 104 and 107). After the deletion of 5 univariate outliers, 578 subjects remained for the analyses.

#### **4.1.3. Sample Size Adequacy**

Maximum Likelihood Estimation (MLE), the most common estimation technique used in SEM analyses, was chosen for the current study. As a rule of thumb concerning the adequate sample size and model complexity is the *N: q rule*. This rule should only be preferred when the estimation techniques is Maximum Likelihood. Researchers should prefer an *N: q* ratio of *10:1* (Jackson, 2003, Kline 2011). Since the measurement model consists of 41 parameters, 578 participants can be considered as adequate enough to conduct SEM analyses with Maximum Likelihood estimation. In this manner, an ideal minimum sample size was 410 for the current study (i.e., a total of  $q=41$  model parameters  $10 \times 41 = 410$ ). Since SEM analyses of this study were conducted with 578 cases, sample size adequacy assumption was met.

#### 4.1.4 Tests of Required Assumptions

##### 4.1.4.1. Univariate and Multivariate Normality

Univariate normality assumption was inspected by checking skewness (asymmetry) and kurtosis (peakedness) values and histograms. In the current study, all skewness and kurtosis values were found in the expected range between -1 and +1. All skewness and kurtosis values of the study variables were presented in Table 16 below.

Table 16  
*Indices of Normality for the Study Variables*

Variable	Skewness	Kurtosis
Sibling Relationship Quality	-.004	-.830
Depression	.929	.630
Rumination	.370	-.373
Co-rumination	-.025	-.758

Besides, histograms of the study variables were examined for visual inspection and all histograms seemed to be normal distributions. All histograms of the study variables were displayed in Appendix L.

##### 4.1.4.2. Linearity and Homoscedasticity

Linearity and homoscedasticity are two assumptions of multivariate normality that should be checked by inspecting bivariate scatter plots (Kline, 2011). After the visual inspections of bivariate scatter plots, the variables were found to be linearly related. The bivariate scatter plots of the study variables were presented in Appendix M. The straight lines depicting the linear relationships of the study variables showed that variables of the current study were linearly related and their variances were homogeneously distributed, so linearity and homoscedasticity assumptions were not violated (Hair et al., 2013).

#### 4.1.4.3. Multicollinearity

When variables are too highly correlated (i.e., .90 and above), multicollinearity problem rises (Tabachnick & Fidell, 2013). To check if there is any multicollinearity problem, bivariate correlations of the study variables were computed on SPSS. The results of the correlation matrix did not show a multicollinearity problem among the variables of the study as can be seen in Table 17 below.

Table 17

*Correlation Matrix of the Study Variables*

Variable	1	2	3	4
1 Sibling Relationship Quality	-	-	-	-
2 Depression	-.09*	-	-	-
3 Rumination	-.07	.50*	-	-
4 Co-rumination	.45**	.12**	.17**	-

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

## 4.2. Descriptive Statistics

### 4.2.1. Mean and Standard Deviations of Male and Female Participants

The means and standard deviations of the study variables by gender are presented in Table 18 below. In order to test whether there is a significant difference between the means of female and male participants, one-way MANOVA was used. Prior to conducting MANOVA, necessary assumptions were checked. After inspecting histograms and Q-Q plots, skewness and kurtosis values were examined. The data were found to be normal. Then, homogeneity of covariance matrices was checked by Box's M test and the results showed that Box's M test was non-significant, *Box's M*

=8.78,  $p = .56$ ; therefore homogeneity of variance assumption was also met. Wilks's Lambda was chosen as an appropriate test to continue.

Table 18

*Means and Standard Deviations for the Study Variables*

Variable	Gender	<i>n</i>	<i>M</i>	<i>SD</i>	Min. Score	Max. Score
Sibling Relationship Quality	Female	336	191.84	23.81		
	Male	242	186.11	23.20	48	240
	Total	578	189.44	23.71		
Depression	Female	336	12.22	8.58		
	Male	242	11.16	8.13	0	63
	Total	578	11.78	8.41		
Rumination	Female	336	23.74	6.02		
	Male	242	22.14	6.49	10	40
	Total	578	23.07	6.27		
Co-Rumination	Female	336	83.49	25.32		
	Male	242	75.79	24.84	27	135
	Total	578	80.26	25.39		

*Note.* Min. Score = Minimum Score that can be reported; Max. Score= Maximum Score that can be reported

A one-way MANOVA revealed a significant multivariate main effect of gender on the variables of the study, with females reporting significantly higher mean scores, Wilks's  $\lambda = .961$ ,  $F(4, 573) = 5.74$ ,  $p < .001$ , partial  $\eta^2 = .04$ . Moreover, separate univariate ANOVAs on the outcome variables revealed that gender has a statistically significant effect on sibling relationship quality ( $F(1, 576) = 8.32$ ;  $p < .01$ ; partial  $\eta^2 = .014$ ), on rumination ( $F(1, 576) = 9.29$ ;  $p < .05$ ; partial  $\eta^2 = .016$ ), and on co-rumination ( $F(1, 576) = 13.22$ ;  $p < .001$ ; partial  $\eta^2 = .022$ ), with females reporting significantly higher mean scores. However, females and males were found to have

similar mean values of depression ( $F(1,576) = 2.26; p > .05$ ). The results of one-way MANOVA are presented in Table 19 below.

Table 19

*Multivariate and Univariate Analyses of Variance F Ratios for the Effects of Participant's Gender*

Variable	MANOVA $F(4, 573)$	ANOVA $F(1,576)$			
		SRQ	DEP	RUM	CO-RUM
Gender	5.74***	8.32**	2.26	9.29**	13.22***

*Note.* F ratios are Wilks's approximation of F; ANOVA= univariate analysis of variance; MANOVA=multivariate analysis of variance; LSRS= Sibling Relationship Quality DEP= Depression; RUM= Rumination; CO-RUM= Co-Rumination, \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$

#### 4.2.2. Bivariate Correlations

Prior to running the SEM analyses, bivariate correlations among sibling relationship quality, depression, rumination and co-rumination were calculated. The correlation matrix table was presented in Table 17 in multicollinearity part above. The results of Pearson correlations showed that all correlations were found to be in the expected direction in terms of being negative or positive. The strength of correlations were examined according to the criterion suggested by Field (2005). The correlation coefficient of .10 represents a low or small correlation; the correlation coefficient of .30 represents a medium correlation and the correlation coefficient of .50 represents a strong or large correlation. Based on these cut off points, the correlation of co-rumination with sibling relationship quality was found to be medium and positive ( $r = .45, p < .01$ ); it was found to be low and positive with depression ( $r = .12, p < .01$ ) and with rumination, it was found to be positive, albeit low ( $r = .17, p < .01$ ). Yet, the correlations between co-rumination and other study variables were all found to be statistically significant. The correlation between depression and sibling relationship quality was found to be low, negative and significant ( $r = -.09, p < .05$ ).

The correlation between rumination and sibling relationship quality was negative but not significant ( $r = -.07, p > .05$ ). Furthermore, rumination was positively correlated with depression and the strength of the correlation was found to be strong ( $r = .50, p < .01$ ).

### 4.3. Primary Analyses (Model Testing)

#### 4.3.1. Measurement Model

Before structural modeling, a measurement model was created to present the associations among latent variables (sibling relationship quality, co-rumination, rumination and depression) and their indicators (items and item parcels) by using a second-order factor analysis. Particular model fit indices were examined to see the measures of overall model fit. CFA results were inspected according to the recommended levels by Hu and Bentler, 1999; Kline, 2011; Schumacker and Lomax, 2004 as can be seen in Table 20 below.

Table 20

*Recommended Fit Criteria Used in the Current Study*

Fit Index	Recommended Level	Resource
$\chi^2/df$	Less than 5: Acceptable Fit (<5)	Schumacker& Lomax (2004)
	Less than 3: Acceptable Fit (<3)	Kline (2011)
<i>CFI</i>	More than .90: Acceptable Fit (> .90)	Hair, Black, Babin, & Anderson (2013)
<i>TLI</i>	More than .90: Acceptable Fit (> .90)	Hu & Bentler (1999)
	More than .95: Good Fit (> .95)	
<i>RMSEA</i>	Less than .08 (< .08)	Kline (2011)
<i>SRMR</i>	Less than .10 (< .10)	Kline (2011)

The results of measurement model indicated an inadequate fit to the data [ $\chi^2(756) = 2003.251$ ,  $p = .00$ ;  $\chi^2/df = 2.65$ ;  $TLI = .87$ ,  $CFI = .90$  and  $RMSEA = .05$ ,  $SRMR = .05$ ]. Even though the goodness-of-fit indices ( $\chi^2/df$ ,  $CFI$ ,  $RMSEA$  and  $SRMR$ ) suggested that the model fit is adequate,  $TLI$  value didn't reach the threshold level (Hu & Bentler, 1999). Thus, the modification indexes were examined and modifications were checked. According to these suggestions, the error covariance of the subscales

CA and CC of the Lifespan Sibling Relationship Scale were freely estimated since both subscales measure similar affects and cognitions that belong to childhood period. The results of the slightly modified measurement model indicated a better model fit for the data [ $\chi^2$  (755)=1787.248,  $p = .00$ ;  $\chi^2/df = 2.37$ ;  $TLI=.91$ ,  $CFI = .91$  and  $RMSEA = .05$ ,  $SRMR = .05$ ]. Conducted modification improved the model better as it can be seen in Table 21.

Table 21

*Goodness of Fit Indexes for the Measurement Model*

	$\chi^2/df$	<i>CFI</i>	<i>TLI</i>	<i>RMSEA</i>	<i>SRMR</i>
Model 1	2.65	.90	.87	.05	.06
Model 2	2.37	.91	.91	.05	.05

The correlation coefficients among estimated latent variables are presented in Table 22 below.

Table 22

*Estimated Latent Variable Correlations of the Measurement Model*

Variable	1	2	3	4
1. Sibling Relationship Quality	-	-	-	-
2. Depression	-.08	-	-	-
3. Rumination	-.05	.56***	-	-
4. Co-rumination	.46***	.12*	.19***	-

Note. \* $p < .05$ , \*\*\* $p < .001$

The tested measurement model of the study is presented in Figure 1 below.

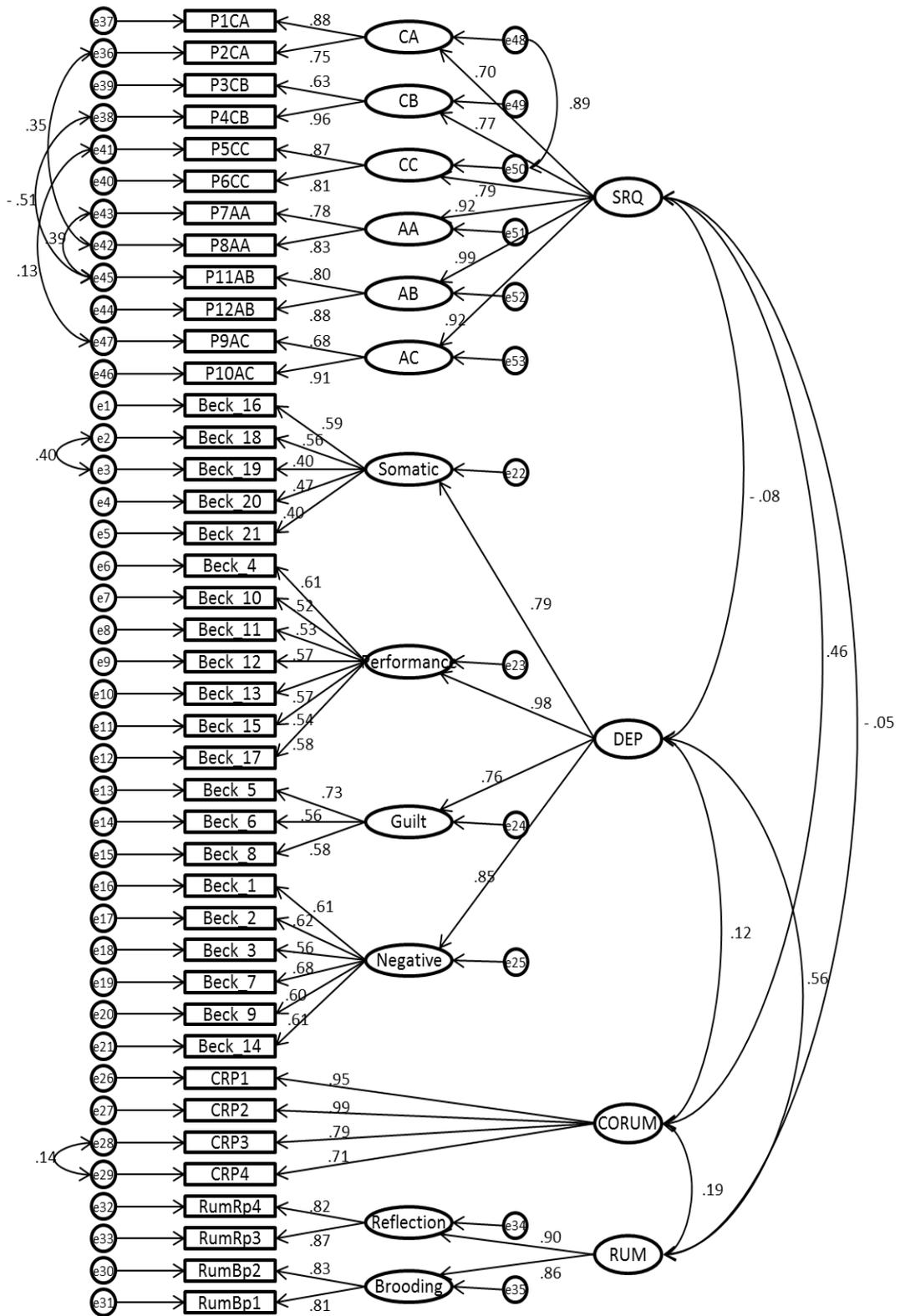


Figure 1. Standardized Estimates for the Parameters in Measurement Model

## 4.3.2. Structural Regression Models

### 4.3.2.1. Structural Model for All Participants

The results of the structural model for all participants indicated an adequate fit for the data [ $\chi^2(755) = 1787.248, p = .00; \chi^2/df = 2.37; TLI = .91, CFI = .91$  and  $RMSEA = .05, SRMR = .05$ ]. The standardized values of parameter estimates are presented in Figure 4 below. Significant paths were demonstrated by bold arrows, whereas non-significant paths were demonstrated by dashed arrows. The non-significant paths were found to be the direct path from co-rumination to depression and the direct path from sibling relationship quality to depression. All statistically significant paths values ranged from  $\gamma = -.15$  (low effect) and  $\gamma = .54$  (strong effect). Also, the correlation between co-rumination and rumination was found to be .19, indicating a low association. More specifically, co-rumination with the sibling had positive, large and statistically significant effect on the sibling relationship quality ( $\gamma = .49, p < .001$ ). That is, when siblings co-ruminate more, their relationship quality with each other increases. Rumination was found to have a negative and statistically significant direct effect on the sibling relationship quality ( $\gamma = -.15, p < .05$ ). This negative relationship demonstrated that ruminative tendencies had a negative small effect on the relationship between siblings. On the other hand, rumination was also found to have a strong and statistically significant direct effect on depression ( $\gamma = .54, p < .001$ ). This positive large effect of rumination on depression showed that individuals having more ruminative tendencies would be more depressed. The squared multiple correlation ( $R^2$ ) coefficient values for the latent variables were examined to see the amount of variance that was explained by the model. The results indicated that the overall model explained 23% of the variance in sibling relationship quality variable and it was also found to explain 31% of the variance in depression variable. All standardized parameter estimates of the hypothesized model are presented in Figure 2 below.

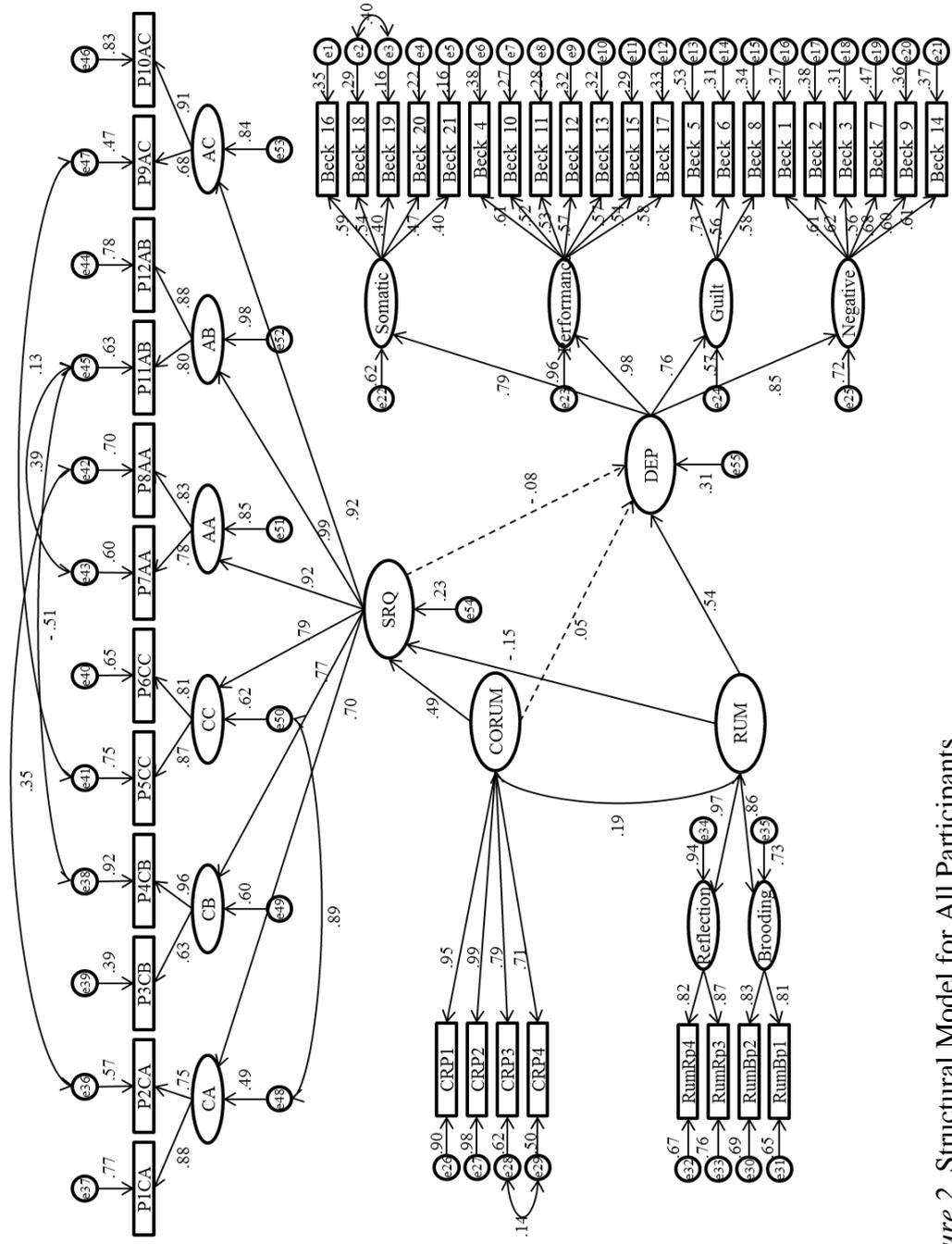


Figure 2. Structural Model for All Participants

#### ***4.3.2.2. Model Trimming for All Participants***

When the results of the structural model were inspected, two paths (the direct path from co-rumination to depression and the direct path from sibling relationship quality to depression) were found to be non-significant. For the purposes of getting a more parsimonious and better fitting model, two non-significant paths were removed from the model. Results of the trimmed model indicated an adequate fit [ $\chi^2(757) = 1789.630$ ,  $p = .00$ ;  $\chi^2/df = 2.36$ ;  $TLI = .91$ ,  $CFI = .91$  and  $RMSEA = .05$ ,  $SRMR = .05$ ]. The initial structural model and the trimmed model were compared by checking the difference of their AIC (Akaike Information Criteria) values. The initial structural model's AIC value was found to be 1999.25 and the trimmed model's AIC value was found to be 1997.63. Since the lower value of AIC indicates a more parsimonious model, the trimmed model was found to fit better to the data than the initial model did. Furthermore, the trimmed model explained 32% variance in depression variable and 23% variance in sibling relation quality variable.

After examining the standardized regression coefficients of the trimmed model, all paths were found to be statistically significant. Co-rumination positively predicted sibling relationship quality ( $\beta = .49$ ,  $p < .001$ ). Rumination negatively predicted sibling relationship quality ( $\beta = -.16$ ,  $p < .001$ ) and positively predicted depression, respectively. ( $\beta = .57$ ,  $p < .001$ ). Moreover, there is a weak correlation between rumination and co-rumination, indicating their being distinct constructs from each other ( $r = .20$ ,  $p < .001$ ). The results of the trimmed model demonstrated that emerging adults' higher levels of co-rumination with their siblings predicted higher sibling relationship quality. Besides, individuals that ruminate more frequently would feel more depressed and their relationship with their siblings become worse.

#### ***4.3.2.3. Structural Models for Female and Male Participants***

At the first step, the structural model was tested for female participants. The results of the structural model for female participants revealed an inadequate fit for the data [ $\chi^2$

(755) = 1503.116,  $p = .00$ ;  $\chi^2/df = 1.99$ ;  $TLI = .89$ ,  $CFI = .90$  and  $RMSEA = .05$ ,  $SRMR = .06$ ] since some goodness of fit index couldn't reach the threshold levels. When the results of the structural model of female participants were examined, two paths (the direct path from co-rumination to depression and the direct path from sibling relationship quality to depression) were found to be non-significant. For the purposes of getting a more parsimonious and better fitting model, two non-significant paths were removed from the model. However, results of the trimmed model for female participants indicated an inadequate fit again [ $\chi^2$  (757) = 1503.624,  $p = .00$ ;  $\chi^2/df = 1.99$ ,  $TLI = .89$ ,  $CFI = .90$  and  $RMSEA = .05$ ,  $SRMR = .06$ ]. TLI value still couldn't reach the threshold level. That is, the trimmed model for females did not yield an adequate model fit for the data. Neither the results of the initial model nor the trimmed one revealed adequate fit to the data for female participants.

Secondly, the structural model was tested for male participants. The results of male participants were not so different from the females' results. The structural model for male participants did not indicate a good fit for the data, either [ $\chi^2$  (755) = 1253.562,  $p = .00$ ;  $\chi^2/df = 1.66$ ;  $TLI = .89$ ,  $CFI = .90$  and  $RMSEA = .05$ ,  $SRMR = .07$ ]. According to the results of the structural model of male participants, three paths (the direct path from co-rumination to depression, the direct path from sibling relationship quality to depression and the direct path from rumination to sibling relationship quality) were found to be non-significant. To obtain a more parsimonious model, three non-significant paths were eliminated from the model. Yet, the results of the trimmed model for male participants indicated an inadequate fit [ $\chi^2$  (758) = 1260.414,  $p = .00$ ;  $\chi^2/df = 1.66$ ;  $TLI = .89$ ,  $CFI = .90$  and  $RMSEA = .05$ ,  $SRMR = .07$ ]. In brief, neither the structural model for males nor the structural model for females revealed adequate fit to the data. These inadequate models for female and male participants may be caused by the effect of sample size. Jackson (2003) and Kline (2011) suggested that researchers should use the *N: q rule* (N: q ratio of 10:1) when the preferred estimation technique is Maximum Likelihood in SEM analyses. Based on this rule, the total number of female and male participants separately did not suffice. Since the total number of parameters in the whole model was 41, at least 410 cases were needed for

each model. However, the total number of female participants was 336 and the total number of male participants was 242. The initial complex model with 41 parameters was not appropriate to continue due the inadequate sample size for females and males separately. Thus, a simpler model was needed to be developed by the researcher to decrease the number of parameters. Accordingly, the total scores of each latent variable was calculated and a less complex model was designed .For this new model, 4 observed variables were created by calculating the total scores of each study variable (i.e., Total scores of the instruments to measure the study variables). This new simplified structural model was tested for female participants and for male participants, respectively.

#### 4.3.2.4. Simplified Structural Model for Female Participants

First, this simplified structural model was tested for female participants as can be seen in Figure 3 below.

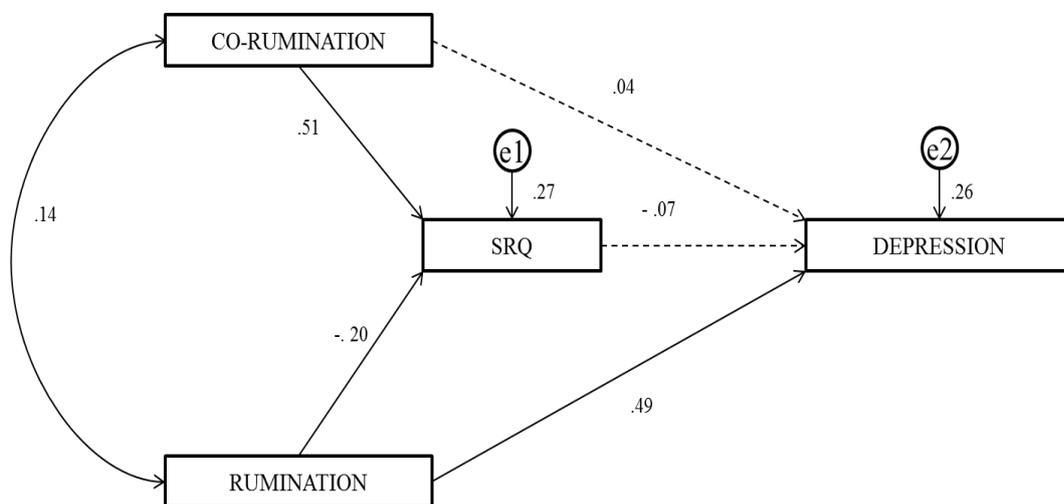


Figure 3. Structural Model for Female Participants

Significant paths were demonstrated by bold arrows, whereas non-significant paths were demonstrated by dashed arrows. The non-significant paths were found to be the direct path from co-rumination to depression and the direct path from sibling

relationship quality to depression. For the purposes of getting a more parsimonious and better fitting model, two non-significant paths were removed from the model. Results of the trimmed model for female participants indicated an adequate fit [ $\chi^2/df = 2.66$ ;  $TLI=.97$ ,  $CFI=.99$  and  $RMSEA = .05$ ,  $SRMR = .02$ ]. Removing two non-significant paths from the model improved the model as it can be seen in Table 23 below.

Table 23

*Goodness of Fit Indexes of the Structural Model for Female Participants*

	$\chi^2/df$	<i>CFI</i>	<i>TLI</i>	<i>RMSEA</i>	<i>SRMR</i>
Model	-	1.00	-	.32	.00
Trimmed Model	.74	1.00	1.00	.00	.01

After examining the standardized regression coefficients of the trimmed model, all paths were found to be statistically significant. All statistically significant paths values ranged from  $\gamma = -.20$  (small effect) and  $\gamma = .51$  (large effect). More specifically, co-rumination with the sibling had positive, large and statistically significant effect on the sibling relationship quality of female participants ( $\gamma = .51$ ,  $p < .001$ ). That is, when females co-ruminate more with their siblings, their perceived relationship quality with their siblings increases. Rumination was found to have a negative and statistically significant direct effect on the sibling relationship quality ( $\gamma = -.20$ ,  $p < .05$ ). This negative relationship demonstrated that ruminative tendencies had a negative but small effect on the relationship with siblings for females. On the other hand, rumination was also found to have a strong and statistically significant direct effect on depression ( $\gamma = .51$ ,  $p < .001$ ). This positive large effect of rumination on depression showed that females having more ruminative tendencies would be more depressed. The squared multiple correlation ( $R^2$ ) coefficient values for the dependent variables of the study were examined to see the amount of variance that was explained by the model. The results of the structural model for female participants indicated that the overall model

explained 27% of the variance in sibling relation quality variable and it was also found to explain 26% of the variance in depression variable.

Trimmed structural model for female participants is presented in Figure 4 below.

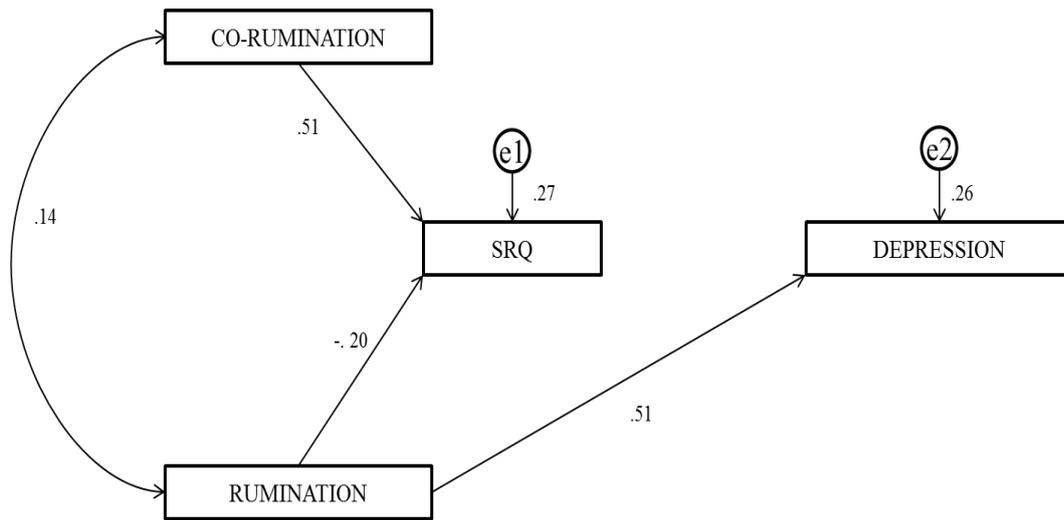


Figure 4. Trimmed Structural Model for Female Participants

#### 4.3.2.5. Simplified Structural Model for Male Participants

Secondly, the simplified structural model was also tested for male participants. This new structural model for male participants is presented in Figure 5 below. Significant paths were demonstrated by bold arrows, whereas non-significant paths were demonstrated by dashed arrows. The non-significant paths were found to be the direct path from co-rumination to depression, the direct path from sibling relationship quality to depression and the path between rumination and sibling relationship quality.

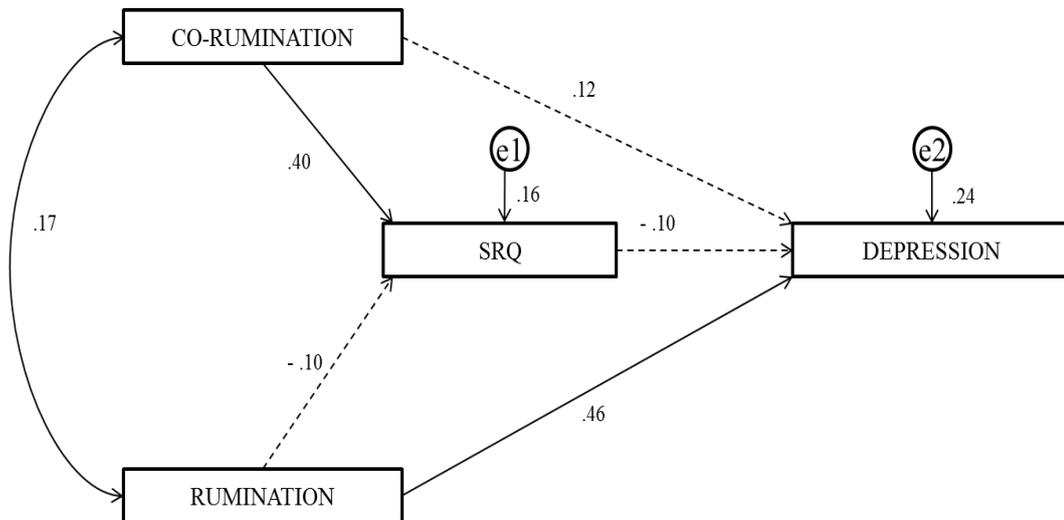


Figure 5. Simplified Structural Model for Male Participants

To obtain a more parsimonious and better fitting model, three non-significant paths were removed from the model. Results of the trimmed model for male participants indicated an adequate fit [ $\chi^2/df = 2.41$ ;  $TLI = .92$ ,  $CFI = .96$ ,  $RMSEA = .07$ ,  $SRMR = .05$ ]. Eliminating three non-significant paths from the model improved the model as it can be seen in Table 24 below.

Table 24

*Goodness of Fit Indexes of the Structural Model for Male Participants*

	$\chi^2/df$	CFI	TLI	RMSEA	SRMR
Model	-	1.00	-	.28	.00
Trimmed Model	2.41	.96	.92	.07	.05

Trimmed structural model for male participants is presented in Figure 6 below.

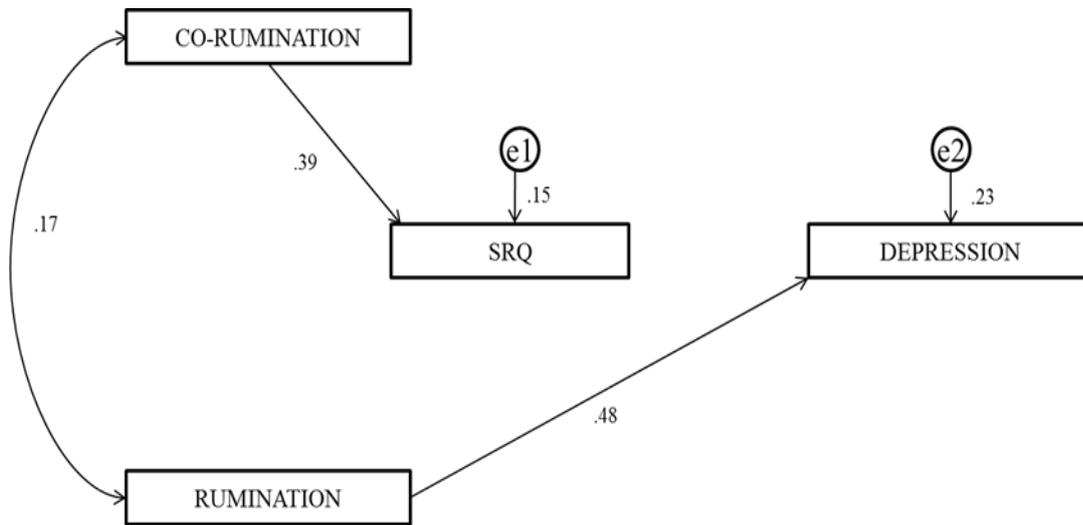


Figure 6. Trimmed Structural Model for Male Participants

According to the results the standardized regression coefficients of the trimmed model, only two paths were found to be statistically significant. To be more specific, co-rumination with the sibling had positive, medium and statistically significant effect on the sibling relationship quality of male participants ( $\gamma = .40, p < .001$ ). That is, co-rumination predicts the sibling relationship quality for males. Moreover, rumination was found to have a positive and statistically significant direct effect on depression for male participants ( $\gamma = .46, p < .001$ ). Similar to females, this positive effect of rumination on depression revealed that males having more ruminative tendencies would also be more depressed. The squared multiple correlation ( $R^2$ ) coefficient values for the dependent variables of the study were examined to see the amount of variance that was explained by the model. The results of the structural model for male participants indicated that the overall model explained 23% of the variance in depression variable and it was also found to explain 15% of the variance in sibling relationship quality variable.

## CHAPTER 5

### CONCLUSIONS

The final chapter presents and discusses the results of the current study. In the first section of this chapter, the findings of the study are summarized with reference to previous studies. In the second section of the chapter, implications of the findings and suggestions for future research are presented respectively

#### 5.1. Discussion on the Results

The current study sought to explore the associations among co-rumination with a sibling, rumination, depression and sibling relationship quality with a sample of Turkish emerging adults in a structural model. In fact, the current study has been the first attempt to investigate co-rumination in a sibling relationship. Thus, the findings of the present study will contribute greatly not only to sibling research in emerging adulthood but also to co-rumination research within the context of various dyadic relationships.

##### 5.1.1. Discussion on the First General Hypothesis and Specific Hypotheses

*H<sub>1</sub>. The hypothesized structural model exploring the associations among sibling relationship quality, rumination, co-rumination and depression will fit the data for all participants.*

In order to test the hypothesized structural model, path analysis via structural equation modeling was used. Overall, the proposed model explained 32% variance in depression variable and 23% variance in sibling relation quality variable. After removing the non-significant paths to obtain a more parsimonious model, the fit

indexes of the trimmed model were still found to be adequate and very similar to the hypothesized model's fit indexes. The SEM results of the model demonstrated that the hypothesized model provided an adequate fit for all participants regardless of two non-significant paths from co-rumination to depression and from sibling relationship quality to depression. So, the first general hypothesis of the research was confirmed.

### ***Specific Hypotheses:***

To test the specific hypothesis, the standardized regression coefficients of the finalized model were examined. Based on the specific hypotheses, the findings will be discussed:

***H<sub>1a</sub>.*** *Co-rumination is positively and rumination is negatively related to sibling relationship quality for all participants.*

Similar to previous research, co-rumination was found to influence sibling relationship quality positively (e.g., Calmes & Roberts, 2008; Rose, 2002; Rose, 2007; Rose et al., 2007, Starr & Davila, 2009). As discussed in the earlier chapters of this study, when individuals co-ruminate, they disclose their most personal information to each other and eventually they become closer and the quality of their relationship increases. According to the results of the current study, co-rumination had a large effect on sibling relationship quality. On the other hand, rumination was found to predict the quality of the sibling relationship negatively as expected. When emerging adults keep ruminating, their relationship quality with their siblings declines. In other words, ruminative responses exacerbate the relationship with siblings.

***H<sub>1b</sub>.*** *Co-rumination and rumination are positively related to depression for all participants.*

Contrary to the expectation, co-rumination was found not to influence depression. Even though co-rumination was hypothesized to predict depression, the path between

co-rumination and depression was found to be non-significant. Yet, this finding is consistent with some previous studies. For instance, Calmes and Roberts (2008) revealed that co-rumination with romantic partner and co-rumination with a parent did not predict depression. In another study, Starr and Davila (2009) noted that friend-based co-rumination did not predict longitudinal changes in depression. Similarly, this finding of the current study also indicated that sibling-based co-rumination did not contribute to depressive symptoms of emerging adults, whereas it predicted the quality of sibling relationship significantly. Consistent with previous research, rumination was found to predict depression positively and significantly. Emerging adults' ruminative tendencies were found to have a large effect on their depressive symptoms. That is, the more they ruminate, the more depressed they become. This result of the present study is analogous to the previous research on rumination (e.g., Abela & Hankin, 2011; Butler & Nolen-Hoeksema, 1994, Nolen-Hoeksema & Morrow, 1991; Nolen-Hoeksema, Parker & Larson, 1994, Stone, Hankin, Gibb, & Abela, 2011).

***H<sub>1c</sub>.** Sibling relationship quality is negatively related to depression for all participants.*

Surprisingly, the direct path from sibling relationship quality to depression was found to be non-significant. In other words, the quality of sibling relationship of emerging adults did not predict depression significantly, although it was hypothesized to predict depression negatively. That is to say, having a positive or negative sibling relationship was not associated with a decrease or an increase in depressive symptoms. This finding is contrary to previous research (e.g., Milevsky, 2011; Padilla-Walker, Harper, & Jensen, 2010; Richmond, Stocker, & Rienks, 2005). As a result, this specific hypothesis was not confirmed.

***H<sub>1d</sub>.** There is a positive relationship between co-rumination and rumination for all participants.*

Based on the significant path between co-rumination and rumination, it can be said that they are significantly related. However, the correlation between them was found to be weak. Consistent with the previous research, co-rumination and rumination were found to be distinct constructs, yet weakly correlated (e.g., Brown & Tompkins, 2013; Calmes & Roberts, 2008).

#### **5.1.2. Discussion on the Fourth General Hypothesis to Explain Gender Differences**

*H4. Female emerging adults will report significantly higher scores on co-rumination, rumination, sibling relationship quality and depression than male emerging adults.*

After comparing the mean scores of the study variables (rumination, co-rumination, sibling relationship quality and depression), female emerging adults were found to have higher scores than male emerging adults did. To test the significance of these differences, a one-way MANOVA was conducted. The results revealed a significant multivariate main effect of gender on the variables of the study, with female emerging adults reporting significantly higher mean scores than male emerging adults.

Moreover, separate univariate ANOVAs on the outcome variables revealed that gender has a statistically significant effect on sibling relationship quality, rumination and co-rumination, with female emerging adults reporting significantly higher mean scores than male emerging adults. These findings are consistent with the previous studies on rumination (e.g., Bugay & Erdur-Baker, 2011, Butler & Nolen-Hoeksema, 1994; Erdur-Baker, 2009; Ziegert & Kistner, 2002) and co-rumination (e.g., Bugay & Erdur-Baker, 2015; Calmes & Roberts, 2008; Rose, 2002; Rose et al., 2007). Contrary to expectations, in the current study males and females did not show a significant difference with regard to depression. In other words, female emerging adults and male emerging adults report similar levels of depressive symptoms.

### 5.1.3. Discussion on the Second and Third General Hypotheses and Specific Hypotheses: Structural Models for Female and Male Participants

The same structural model designed for all participants were tested for female and male participants, respectively. However, the same structural model did not reveal good fit indexes to the data neither for female nor male participants. When male and female participants were tested separately, the number of the cases in each model decreased inevitably. The initial complex model with 41 parameters was not appropriate to continue due to the inadequate sample size for females and males separately. Consequently, inadequate size of the samples resulted in inadequate model fits. *N: q rule* (N: q ratio of 10:1) suggested by Jackson (2003) and Kline (2011) couldn't be met since the total number of parameters in the whole model was 41 (the total number of female participants was 336 and the total number of male participants was 242). Thus, a simpler model was needed to be developed by the researcher to decrease the number of parameters. Accordingly, the total scores of each latent variable was calculated and a less complex model was designed. For this new model, 4 observed variables were created by calculating the total scores of each study variable (i.e., total scores of the instruments to measure the study variables). This new simplified structural model was tested for female participants and for male participants, separately.

*H<sub>2</sub>. The hypothesized structural model exploring the associations among sibling relationship quality, rumination, co-rumination and depression will fit the data for female participants.*

*H<sub>3</sub>. The hypothesized structural model exploring the associations among sibling relationship quality, rumination, co-rumination and depression will fit the data for male participants.*

As a result of the non-significant paths, neither of the model indicated good fit to the data. For females, the direct path from co-rumination to depression and the direct path

from sibling relationship quality to depression were found to be non-significant. These two paths were also found to be non-significant for male participants. In addition to these two paths, the direct path from rumination to sibling relationship quality was found to be non-significant in the structural model for male participants. Removing all non-significant paths improved the models for both groups. Correspondingly, the finalized structural models for each group indicated good fit to the data. That is, both hypotheses ( $H_2$  and  $H_3$ ) were confirmed.

### ***Specific Hypotheses:***

To test the specific hypothesis, the standardized regression coefficients of each model were examined. Based on the specific hypotheses, the findings will be discussed:

***H<sub>2a</sub>.*** *Co-rumination is positively and rumination is negatively related to sibling relationship quality for female participants.*

***H<sub>3a</sub>.*** *Co-rumination is positively and rumination is negatively related to sibling relationship quality for male participants.*

Concerning the association between co-rumination and sibling relationship quality, the results of the structural model for female participants revealed that sibling-based co-rumination had a positive and large effect on the sibling relationship quality. When female emerging adults co-ruminate with their siblings, the quality of their sibling relationship increases significantly. Sibling-based co-rumination promotes higher quality sibling relationship of female participants. Likewise, sibling-based co-rumination was found to have a positive and medium effect on the quality of sibling relationship for male participants, which indicates that females' sibling-based co-rumination contributes more to the sibling relationship than males'. At all events, co-rumination with siblings increases the quality of the sibling relationship quality significantly for both groups.

Concerning the association between rumination and sibling relationship quality, rumination negatively predicted the quality of the sibling relationship for female emerging adults, whereas it did not predict the sibling relationship quality for male participants. This negative association found for female emerging adults show that ruminative tendencies of females had a negative but small effect on the quality of the sibling relationship. That is, females who ruminate less are more likely to have a more positive relationship with their siblings.

*H<sub>2b</sub>. Co-rumination and rumination are positively related to depression for female participants.*

*H<sub>3b</sub>. Co-rumination and rumination are positively related to depression for male participants.*

Although co-rumination was hypothesized to have a direct effect on depression for females and males, the path between co-rumination and depression was found to be non-significant in both structural models. In fact, this finding is in line with particular past research (e.g., Calmes & Roberts, 2008; Starr & Davila, 2009). In brief, sibling-based co-rumination was only found to have positive outcomes (i.e., increase in the quality of sibling relationship) not only for female but also for male emerging adults.

On the other hand, the structural model for male participants demonstrated that rumination had a positive, significant and medium effect on depression. Similarly, the structural model for female participants also revealed positive and statistically significant effect of rumination on depression, but the magnitude of this association was found to be larger. That is to say, both males and females become more depressed when they are frequently involved in ruminative responses, with females' having more depressive symptoms. This finding is also in line with the previous research on rumination with regard to gender differences.

***H<sub>2c</sub>.** Sibling relationship quality is negatively related to depression for female participants.*

***H<sub>3c</sub>.** Sibling relationship quality is negatively related to depression for male participants.*

Contrary to expectation, the direct path from sibling relationship quality to depression was found to be non-significant in both groups. In other words, the quality of sibling relationship of emerging adults did not predict depression significantly, although it was hypothesized to predict depression negatively. That is to say, having a positive or negative sibling relationship was not associated with a decrease or an increase in depressive symptoms. This finding was unexpected, so these two specific hypotheses (**H<sub>2c</sub>** and **H<sub>3c</sub>**) were not confirmed.

***H<sub>2d</sub>.** There is a positive relationship between co-rumination and rumination for female participants.*

***H<sub>3d</sub>.** There is a positive relationship between co-rumination and rumination for male participants.*

The direct paths between co-rumination and rumination were found to be positive and significant in both groups (i.e., females emerging adults and male emerging adults). Nevertheless, the correlation between them was found to be weak in each model. Similar to previous research, co-rumination and rumination were found to be distinct constructs, yet weakly correlated (e.g., Brown & Tompkins, 2013; Calmes & Roberts, 2008).

## **5.2. Implications of the Findings for Practice**

The current study provides crucial empirical findings for professional people serving in the field of counseling psychology, particularly for the ones who work with emerging adult clients in a university setting.

Firstly, psychological counselors working at university counseling centers should be aware of the particular developmental transformations and challenges that are characterized with this transitional period from adolescence to adulthood. During this transitional stage of life, most individuals experience important changes such as leaving home of origin, going to university or making a career plan. They generally suffer from homesickness, financial difficulties and adaptation problems to their novel environment. During this specific period, emerging adults also make critical choices which generally have an effect on the rest of their lives (Zarrett & Eccles, 2006). Eventually, all these new challenges and responsibilities might turn out to be sources of stress in their lives. When emerging adults experience stressful life events related to this transitional stage of life, they mostly seek for a person to talk with and share their problems with that particular person. The previous research emphasizes the importance of social support for emerging adults to make an effective and healthy transition into adulthood. While dealing with clients' issues, an investigation of support systems within the clients' social network is salient to understand whether they have any supportive relationships to comfort and encourage them in order to deal with the stress or depressive symptoms they experience. As discussed in earlier chapters of the current study, having a close and supportive sibling relationship has been reported to stand as an important protective factor that enhances resilience of emerging adults. Sibling support has also been found to compensate for the lack of support from friends and parents (Milevsky, 2005). If emerging adults do not have any supportive relationships such as friends, parents or siblings in their social network, they probably start to involve in ruminative tendencies when they are on their own. According to the results of the current study, rumination had a large influence on depression for emerging adults, particularly for females. Counseling

professionals working with emerging adult groups should also take the role of rumination into account while dealing with their clients' negative and depressive feelings. With the findings of this research, counselors might help their clients understand the underlying factors of their depressive symptoms and also make them realize the important roles of their siblings in their current issues. As a result, investigating the sibling relationship of the client and measuring the quality of sibling relationship can be beneficial in order to identify clients' available social support network. In this way, counselors can better conceptualize clients' behaviors, feelings and cognitions. Another contribution of the current study to the practice is adapting the Lifespan Sibling Relationship Scale (Riggio, 2000) into Turkish language to assess sibling relationship quality of Turkish emerging adults. The Lifespan Sibling Relationship Scale (Riggio, 2000) was found to have an eminent advantage of measuring the quality of sibling relationship throughout the lifespan. This validated Turkish version of the LSRS with good psychometrics will probably help Turkish researchers concentrating on sibling relationships within a lifespan perspective. Furthermore, this scale can also be used by counseling professionals as a valid and reliable tool to perceive the clients' problems in the family context and may provide better understanding of the absence/existence of support from siblings.

### **5.3. Implications of the Findings for Theory**

The findings of this research have some theoretical implications. According to Rose's (2002) theory, co-rumination "represents the overlap between the constructs of self-disclosure and rumination". (p. 1830). She posited that friend-based co-rumination is linked with high quality friendship due to its overlap with self-disclosure, and depressive symptoms due to its overlap with rumination. However, sibling-based co-rumination was found to have no relationship with depressive symptoms either among male or female emerging adults. Sibling-based co-rumination was only found to be linked with high quality sibling relationship. Prominently, this finding of the current study fails to confirm the conception that co-rumination is a dysfunctional coping style that leads to depression. In this case, co-rumination may not be a risk factor for

the increase in depressive symptoms among Turkish emerging adults. On the other hand, most siblings no longer live in the same place with their siblings during emerging adulthood, as discussed in earlier chapters. Perhaps sibling-based co-rumination is less frequent than friend-based co-rumination due to the geographical distance between siblings. Since the present study is the first research that investigated co-rumination within the context of sibling relationship, further replication studies are required to make definite inferences. Yet, its relation to higher quality relationship with the confidant was confirmed. In other words, as Turkish emerging adults co-ruminate with their siblings, the quality of the relationship with that particular sibling have a tendency to increase as Rose (2002) suggested.

#### **5.4. Recommendations for Future Research**

The ultimate goal of the current study was to investigate the associations among sibling-based co-rumination, rumination, depression and relationship quality of sibling relationships in a Turkish emerging adult sample. The findings of the present study can contribute greatly not only to sibling research in emerging adulthood but also to co-rumination research within the context of various dyadic relationships. As the present study has been the first attempt to examine co-rumination within the context of sibling relationship, some essential recommendations for future research are reasonable.

Firstly, future researcher should carry on conducting studies to examine sibling-based co-rumination and its positive (e.g., sibling relationship quality, well-being) and negative outcomes (e.g., depression, anxiety). The findings of the present study indicated that sibling-based co-rumination predicts the quality of the sibling relationship significantly. However, it was found not to predict depression. In order to clarify whether there are any negative outcomes as well as positive outcomes of sibling-based co-rumination, further replication studies are required.

Secondly, there might be a number of structural features of a sibling dyad that affect the sibling relationship quality. These can be listed as: sex composition, birth order, age difference, family size. Among these factors, sex composition of a sibling dyad has been documented as the most important structural feature that has a great impact on sibling relationship quality. Research has shown that same-sex sibling dyads, particularly sister-sister dyads have more intimacy and more positive relationship quality compared to brother-brother or brother-sister dyads (Connidis & Campbell, 1995; Dolgin & Lindsay, 1999; Dunn, Slomkowski, & Beardsall, 1994; Riggio, 2000). In the current study, the sample size was not adequate to run four different SEM analyses with ML estimation technique (i.e., female-female; female-male; male-male; male-female). Consequently, future researchers are recommended to investigate the sibling relationship according to the sex compositions of the dyads with larger samples.

Thirdly, establishing a cause and effect relationship is not possible since the design of the current study was correlational. Experimental research designs ought to be performed to establish causality. In this way, researchers will be able to draw conclusions about the variables of the study.

Another recommendation for future researchers is to design longitudinal studies. The present study was designed as a cross-sectional one, so the data was collected at one time point. However, the relationship between the participants and their siblings may change and show variety over time. In this case, gathering data at multiple time points is needed in order to make casual inferences by comparing the results of each time point.

Finally, the subjects of this research were selected by convenience sampling method. Future researchers had better use random sampling method to have a more representative sample, so they can increase the generalizability of their findings.

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## APPENDICES

### APPENDIX A: APPROVAL LETTER FROM MIDDLE EAST TECHNICAL UNIVERSITY HUMAN SUBJECTS ETHICS COMMITTEE

UYGULAMALI ETİK ARAŞTIRMA MERKEZİ  
APPLIED ETHICS RESEARCH CENTER



ORTA DOĞU TEKNİK ÜNİVERSİTESİ  
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13.11 2013

Gönderilen : Y. Doç. Dr. Özgür Erdur-Baker  
Eğitim Bilimleri

Gönderen : Prof. Dr. Canan Özgen  
IAK Başkanı

İlgi : Etik Onayı

Danışmanlığını yapmış olduğunuz Eğitim Bilimleri Bölümü öğrencisi Bengü Cilalı'nın "Birlikte Ruminasyonun, Depresyon ve Kardeş İlişkisi Kalitesi ile İlişkileri" isimli araştırması "İnsan Araştırmaları Komitesi" tarafından uygun görülerek gerekli onay verilmiştir.

Bilgilerinize saygılarımla sunarım.

Etik Komite Onayı

Uygundur

13/11/2013

Prof.Dr. Canan Özgen  
Uygulamalı Etik Araştırma Merkezi  
( UEAM ) Başkanı  
ODTÜ 06531 ANKARA

**APPENDIX B: PERMISSION LETTER FROM HEIDI RIGGIO, PHD, THE  
DEVELOPER OF THE LIFESPAN SIBLING RELATIONSHIP SCALE**



CALIFORNIA STATE UNIVERSITY, LOS ANGELES  
COLLEGE OF NATURAL AND SOCIAL SCIENCES  
Department of Psychology

August 1, 2013

To Whom It May Concern:

I give Bengü Cilali, permission to use the Lifespan Sibling Relationship Scale (LSRS; Riggio, 2001) in his research, including translation of the measure and related materials into Turkish or any other language.

Please contact me directly if you have any questions; thank you for your time and consideration.

Sincerely,

Heidi R. Riggio, Ph.D.  
Associate Professor of Psychology  
California State University, Los Angeles  
Los Angeles, CA 90032 USA  
hriaggio@calstatela.edu

A handwritten signature in black ink, appearing to read "H. Riggio".

mailed to:

Bengü Cilali

Atılım Üniversitesi Kizilcaşar Mah.

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**APPENDIX C: SAMPLE ITEMS FROM THE TURKISH VERSION OF CRQ  
(SIBLING FORM)**

Ölçeği lütfen seçmiş olduğunuz *tek bir kardeşi* düşünerek okuyunuz ve aşağıda verilen her ifadenin yanına, tarif edilen duruma genellikle nasıl tepki verdiğinizi ifade eden sayıyı (aşağıdaki 5’li değerlendirme ölçeğine göre) yazınız.

**1= Hiç doğru değil**

**2= Biraz doğru**

**3= Kısmen doğru**

**4= Büyük ölçüde doğru**

**5= Tam anlamıyla doğru**

***Sorunlarımızı Konuşurken,***

\_\_\_ Başka bir şey yapmak için buluşmuş olsak bile, ikimizden birinin bir sorunu varsa bulduğumuzda sorun hakkında konuşuruz.

\_\_\_ Kardeşimin bir sorunu olduğunda, neler olduğu ile ilgili bütün detayları anlatması için her zaman çaba sarf ederim.

\_\_\_ Kardeşime bir sorunum olduğunu söylediğimde, sonrasında daima beni sorunum hakkında daha çok konuşturmaya çalışır.

**APPENDIX D: SAMPLE ITEMS FROM THE TURKISH VERSION OF THE  
SHORT RRS**

Aşağıdaki ifadelere katılıp katılmadığınızı verilen derecelendirmeyi göz önüne alarak işaretleyiniz

**1= Hiçbir Zaman,      2= Bazen,      3= Çoğunlukla,      4= Her Zaman**

\_\_\_ Ne kadar sık, düşüncelerini yazıp, çözümlmeye ve anlamaya çalışıyorsun?

\_\_\_ Son zamanlarda yaşadığın olaylar hakkında “keşke daha iyi sonuçlansaydı” diye ne kadar sık düşünüyorsun?

\_\_\_ Ne kadar sık, tek başına bir yere gidip duygularını anlamaya çalışıyorsun?

## APPENDIX E: SAMPLE ITEMS FROM THE TURKISH VERSION OF BDI

Aşağıda, kişilerin ruh durumlarını ifade ederken kullandıkları bazı cümleler verilmiştir. Her madde, bir çeşit ruh durumunu anlatmaktadır. Her maddede o ruh durumunun derecesini belirleyen 4 seçenek vardır. Lütfen bu seçenekleri dikkatle okuyunuz. Son bir hafta içindeki (şu an dâhil) kendi ruh durumunuzu göz önünde bulundurarak, size en uygun ifadeyi bulunuz. O maddenin yanındaki sayının üzerine (X) işareti koyunuz.

- (0) Kendimi üzgün hissetmiyorum.
  - (1) Kendimi üzgün hissediyorum.
  - (2) Her zaman için üzgünüm ve kendimi bu duygudan kurtaramıyorum.
  - (3) Öylesine üzgün ve mutsuzum ki dayanamıyorum.
  
- (0) Kendimi suçlu hissetmiyorum.
  - (1) Arada bir kendimi suçlu hissettiğim oluyor.
  - (2) Kendimi çoğunlukla suçlu hissediyorum.
  - (3) Kendimi her an için suçlu hissediyorum.
  
- (0) İştahım eskisinden pek farklı değil.
  - (1) İştahım eskisi kadar iyi değil.
  - (2) Şu sıralarda iştahım epey kötü.
  - (3) Artık hiç iştahım yok.

## APPENDIX F: SAMPLE ITEMS FROM THE TURKISH VERSION OF LSRS

Aşağıda insanların kardeşleri ve kardeşleri ile olan ilişkilerini tanımlayan ifadeler ve yer almaktadır. Lütfen her maddeye ne ölçüde katılıp katılmadığınızı uygun kutuyu X ile işaretleyerek belirtiniz. *Lütfen ölçeği seçmiş olduğunuz **tek bir kardeşi** düşünerek cevaplandırınız.*

Yanıtlarınızı şu ölçeğe göre değerlendirin:

*1= Kesinlikle katılmıyorum*

*2= Katılmıyorum*

*3= Ne katılıyorum ne katılmıyorum*

*4= Katılıyorum*

*5= Kesinlikle katılıyorum*

- Kardeşimle gurur duyarım.
- Çocukken, kardeşimle gurur duyardım.
- Kardeşimle sırlarımızı paylaşırız.
- Çocukken, kardeşimle sırlarımızı paylaşırdık.

## APPENDIX G: GÖNÜLLÜ KATILIM FORMU

Sayın Katılımcı,

Bu araştırma insanların duygu durumlarını, kardeşleri ile olan paylaşımlarını nasıl değerlendirdiklerini ve kardeş ilişki kalitelerini anlamaya yönelik bir çalışmadır. Anketlerde bunları ölçmeye yönelik sorular yer almaktadır. Anketleri doldurma esnasında herhangi bir nedenden ötürü kendinizi rahatsız hissederseniz anketleri yarıda bırakmakta serbestsiniz. Her ölçeğin başında nasıl cevaplanacağı konusunda bilgi verilmiştir. Anketlerin cevaplanması yaklaşık 15 dakika sürmekte olup herhangi bir süre kısıtlaması bulunmamaktadır. Aşağıdaki formu doldurup imzalayarak uygulayan kişiye lütfen teslim ediniz. Bu araştırmaya katıldığınız için çok teşekkür ederim.

Bengü Cilalı

ODTÜ, Eğitim Bilimleri Bölümü

Yüksek Lisans Öğrencisi

E-posta: bengucilali@gmail.com

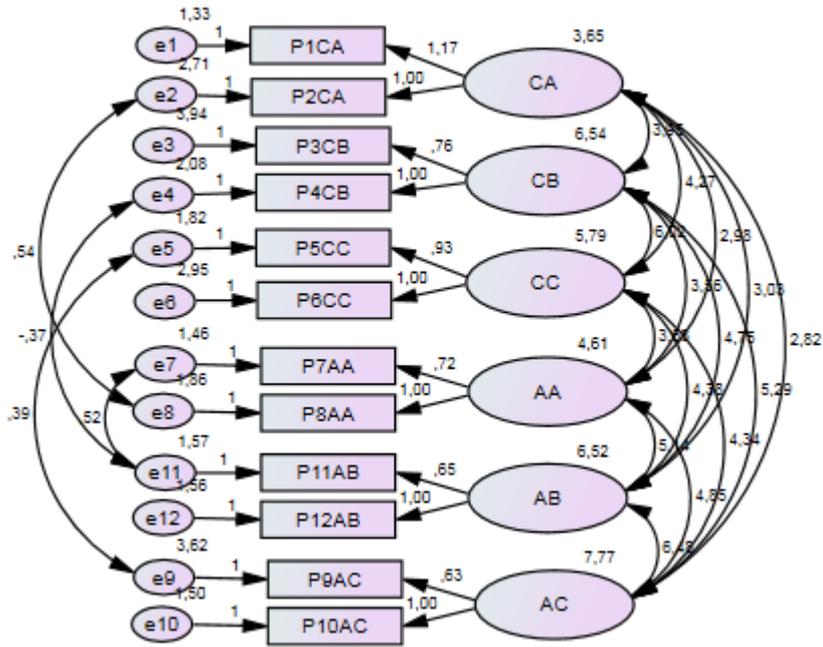
Bu çalışmaya gönüllü olarak katılıyorum. İstedğim zaman yarıda kesebileceğimi ve bilgilerimin gizli tutulacağını biliyorum. Bu araştırma bünyesinde verdiğim bilgilerin bilimsel amaçlı olarak kullanılmasını kabul ediyorum.

Ad ve Soyadı:

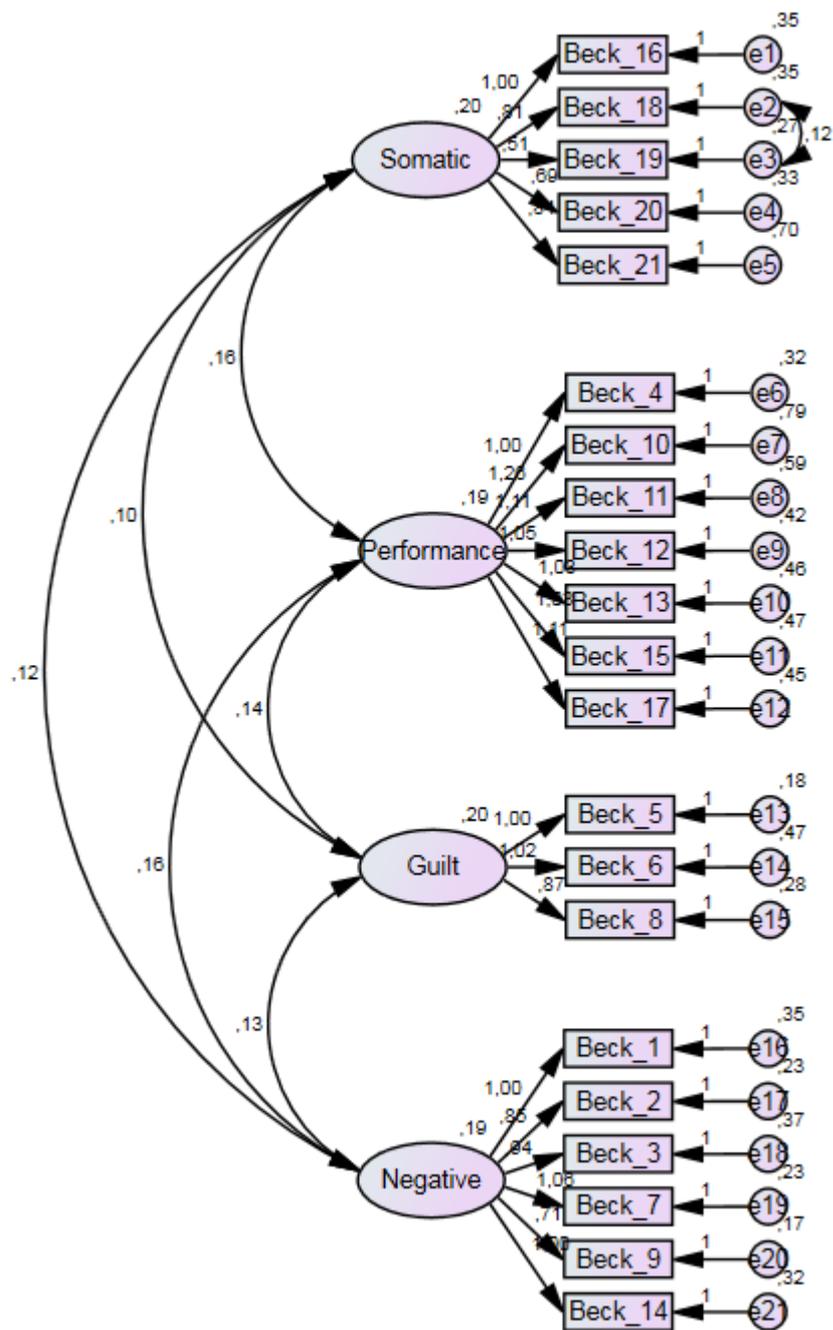
Tarih:

İmza:

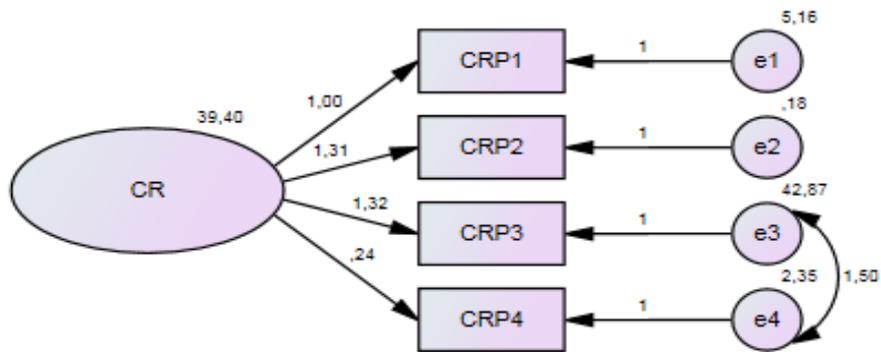
**APPENDIX H: AMOS GRAPHIC FOR THE CFA OF THE LSRS**



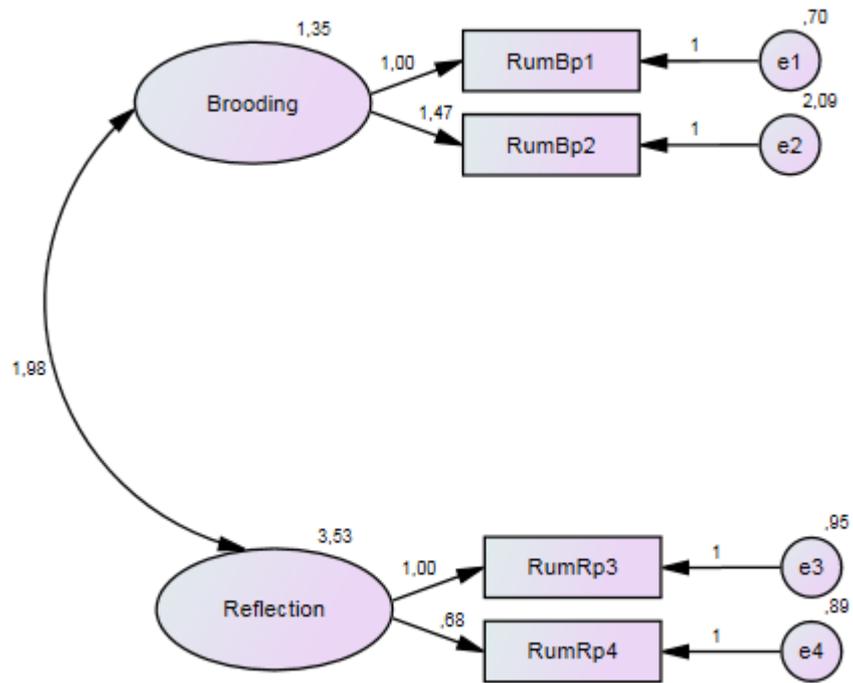
APPENDIX I: AMOS GRAPHIC FOR THE CFA OF THE BDI



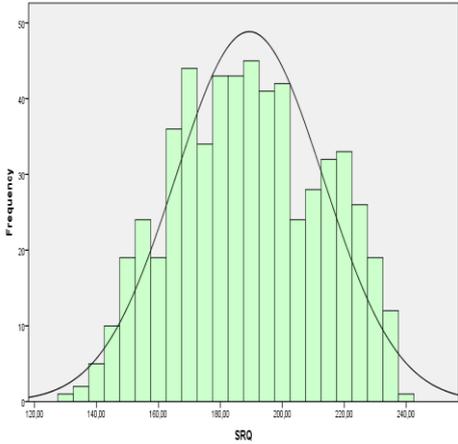
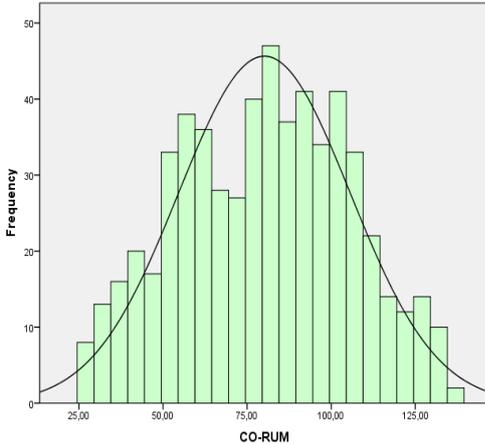
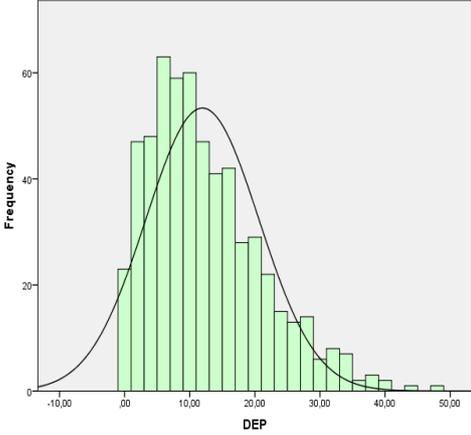
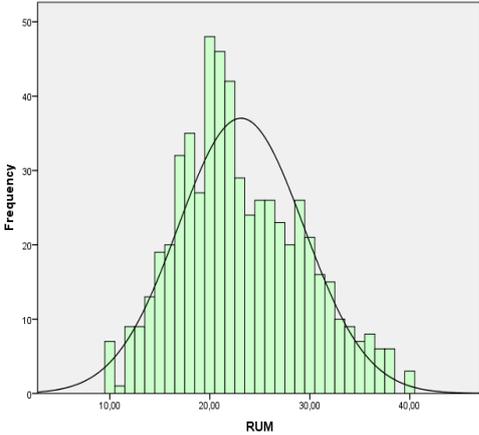
**APPENDIX J: AMOS GRAPHIC FOR THE CFA OF THE CRQ**



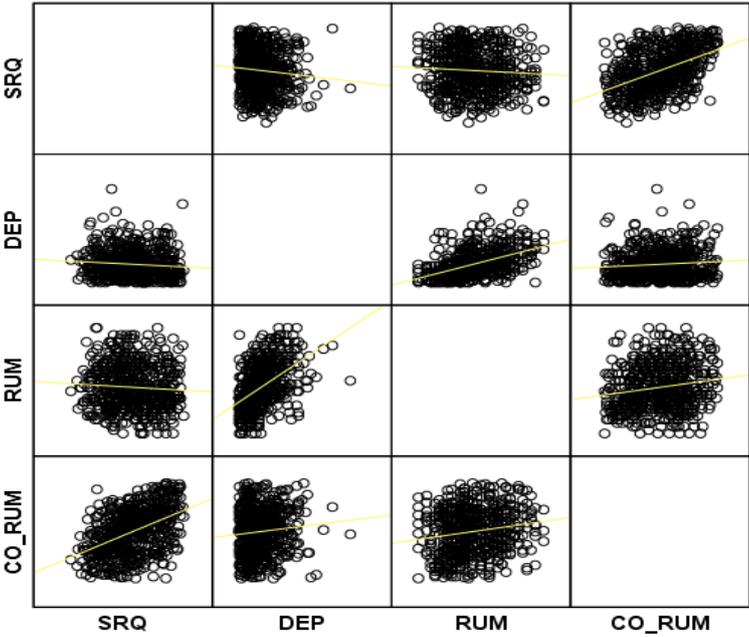
**APPENDIX K: AMOS GRAPHIC FOR THE CFA OF THE SHORT  
VERSION OF RRS**



**APPENDIX L: HISTOGRAMS OF THE STUDY VARIABLES**



**APPENDIX M: BIVARIATE SCATTER PLOTS OF THE STUDY  
VARIABLES**



## APPENDIX N: TURKISH SUMMARY

### TÜRKÇE ÖZET

#### KARDEŞ İLİŞKİ KALİTESİ, EŞLİ RUMİNASYON, RUMİNASYON, VE DEPRESYON ARASINDAKİ İLİŞKİLERİN MODELLENMESİ

### GİRİŞ

Aile sistemleri teorisi çerçevesinde aile, farklı alt sistemlerden oluşan bir sosyal sistem olarak kabul edilir (Minuchin, 1988). Aile fertleri, bir bireyin ya da alt sistemin davranışının diğerleri üzerinde etkisinin olduğu etkileşimli ve birbirine bağlı bir ağın bir parçası olarak görülürler (Brody, 1998). Daha önceki araştırmaların çoğunluğu her ne kadar ebeveyn-çocuk veya eşler alt sistemi gibi aile alt sistemleri ile ilgili olsa da, kardeş alt sistemi göreceli olarak daha az ilgi görmüştür. Ancak, bir bireyin kişiler arası ve sosyal becerilerinin gelişiminde kardeş ilişkisi, önemli bir rol oynayan aile alt sistemlerinden biridir (Cicirelli, 1995). Kardeşler, çocukluk ve ergenlik yıllarında birbirlerinin hayatlarında arkadaş, rol model, sırdaş gibi farklı rollere sahip olurlar ve yetişkinlik döneminde destek kaynağı olarak görülürler (Whiteman, McHale, ve Soli, 2011). Dolayısıyla, yaşamları boyunca kardeşler birbirlerinin sosyal ve duygusal gelişimlerinde doğrudan etki sahibi olabilirler. Kardeşlerle büyümek bireylere birbirlerinin davranışlarını şekillendirme ve uyum sağlama fırsatı yaratır (McHale, Updegraff, ve Whiteman, 2012). Ancak, gelişimlerine olumlu ya da olumsuz katkıda bulunduğunu kararlaştırabilmek adına kardeş ilişki kalitesi dikkate alınmalıdır. Stormshak, Bullock ve Falkenstein (2009), kardeş ilişki kalitesinin bireylerin sosyoduygusal gelişimi ve uyumu üzerindeki önemini sadece pozitif sonuçlarla değil; negatif sonuçlarla da vurgulamıştır.

Olumlu bir kardeş ilişkisinin özgüven, mutluluk artışı, uyumlu davranışlar ve öz-düzenleme, problem çözme, empati kurma ve uzlaşma becerilerinin gelişmesi gibi avantajları çeşitli çalışmalarda kanıtlanmıştır (örn., Brown ve Dunn, 1992; Dunn, 2007; Dunn, Brown, ve Beardsall, 1991; Cicirelli, 1995; Howe, Rinaldi, Jennings, ve Petrakos, 2002; Sandler, Miller, Short, ve Wolchik, 1989; Sherman, Lansford, ve Volling, 2006). Kardeşler uyumlu ve destekleyici bir ilişki kurabilirlerse bu, depresif semptomlara karşı bir kalkan haline gelebilir. Başka bir deyişle, destekleyici ve olumlu bir kardeş ilişkisine sahip olmak bireylere çeşitli pozitif sonuçlar sağlayabilir.

Diğer taraftan, bütün kardeş ilişkileri olumlu değildir. Bazı kardeş ilişkileri çatışma da içerebilir ve kardeşlerin birbirlerine olumsuz davranışlar sergilemesine sebep olabilir. Kardeş ilişkisi çatışma içeriyorsa bu, depresif semptomların sayısını artırarak uyumlarını kötüleştirebilir. Düşük kaliteli ve negatif bir kardeş ilişkisi, bireyler için riskli davranışlar ve uyum sorunları gibi olumsuz sonuçlara sebep olabilir (örn., Natsuaki, Ge, Reiss, ve Neiderhiser, 2009; Rende, Slomkowski, Lloyd-Richardson, ve Niauara, 2005; Synder, Bank, ve Burraston, 2005). Kardeş desteği, yukarıda bahsedildiği gibi sayısız fayda sağlamakta iken, kardeş çatışması yalnızlık, antisosyal davranışlar, saldırganlık, zorbalık, ihmalkarlık, madde kullanımı, riskli cinsel aktiviteler ve çeşitli içe yönelik sorunlar gibi psikolojik işlev ve uyum sorunlarına sebep olabilmektedir (Bank, Burraston, ve Snyder, 2004; Compton, Snyder, Schrepferman, Bank, ve Shortt, 2003; Criss ve Shaw, 2005; Garcia, Shaw, Winslow, ve Yaggi, 2000; Stocker, Burwell, ve Briggs, 2002; Stocker, Lanthier, ve Furman, 1997; Windle, 2000).

Uzun sözün kısası, olumlu bir kardeş ilişkisine sahip olmak, depresyon gelişimine karşı direnç ve koruyucu bir faktör olarak görülebilir. Buna karşın, yüksek derecede çatışmalı olumsuz bir kardeş ilişkisine sahip olmak depresif semptomları arttıran bir risk faktörü olarak görülebilir (Dirks, Persram, Recchia, ve Howe, 2015; Padilla-Walker, Harper, ve Jensen, 2010; Stocker ve ark., 2002). Birtakım araştırmacılar kardeş ilişki kalitesi ve çoğunlukla depresyon ile içe yönelik sorunlar arasında bir bağ olduğunu göstermiştir. Bir meta-analiz çalışmasında Buist, Dekovic ve Prinzie (2013),

daha az çatışmalı ve daha yakın kardeş ilişkisinin, dışa ve içe yönelik sorunlarda azalma ile bağlantılı olduğunu ortaya koymuştur. Beliren yetişkin örneklemler başka bir çalışmada Milevsky (2005), kardeş desteğinin depresyon ile negatif korelasyonlu ve yaşam doyumu düzeyi ile pozitif korelasyonlu olduğunu bulmuştur. Kim, McHale, Crouter ve Osgood (2007) da kardeş ilişkisinde yakınlığın artmasının depresif semptomların azalmasıyla ilişkili olduğunu, diğer taraftan; çatışma düzeyindeki artışın ise depresif semptomların zaman içerisinde artmasıyla ilişkili olduğunu göstermiştir. Benzer şekilde, Pike, Coldwell ve Dunn (2005), çatışmalı kardeş ilişkilerinin uyum sorunlarıyla bağlantılı olduğunu bildirmiştir. Bu çalışmaların sonuçları temel alındığında, yüksek derecede çatışmalı kardeş ilişkilerinin içe ve dışa yönelik sorunlarda bir risk faktörü olabileceğini; kardeş desteğinin ve yakınlığının ise bunlara karşı bir koruyucu faktör görevi görebileceği sonucu çıkarılabilir.

Kardeş ilişkisi, bireyin sosyal çevresi içerisinde kendini açmasını da kapsayan en önemli ikili ilişkilerden biri olabilir. Kendini açma, Sprecher ve Hendrick (2004) tarafından, "kişinin kendi hakkındaki kişisel bilgilerini bir başkasına açıklama işlemi ve yakın ilişkilerde iletişimin önemli bir açısı" olarak tanımlanmıştır (syf. 858). Kardeş ilişkisinde kendini açmayı incelemek, kız kardeşler ve erkek kardeşler arasındaki kardeş ilişkisinin kalitesine dair paha biçilemez bilgiler sağlayabilir. Örneğin, Campione-Barr, Lindell, Giron, Killoren ve Greer (2015), ergenler ve beliren yetişkinlerin örneklem olarak alındığı bir çalışma yürüterek kardeş ilişkisinde kendini açmanın etkilerini görmeye çalışmışlardır. Kardeşler arasında hem kendini açma hem de kardeş tarafından yapılan açılmanın, birlikte yaşamaya son verdikten sonra dahi kardeşlik ilişkisinin kalitesini önemli ölçüde arttırdığını bulmuşlardır. Bu çalışmanın diğer bir bulgusu da kardeşler arasında açma veya açılmanın özellikle depresif semptomlar için çok önemli olduğudur. Örneğin, kardeşler (erkek ya da kız) kendilerini erkek kardeşlerine açtıkları zaman, erkeklerin duygusal iyi oluşları artmıştır. Bu çalışmanın sonuçlarına göre, kardeş ilişkisinde yüksek oranda açılma, erkeklerin duygusal iyi oluşu için koruyucu bir faktör olabilirken, kızların iyi oluşu için bir risk faktörü olabilmektedir.

Rose (2002), ikili bir ilişki içerisindeki sorunların sürekli olarak tartışılmasına ilişkin olarak eşli ruminasyon yapısını sunmuştur. Bu kişiler arası süreç kendi içinde hem kendini açma hem de ruminasyonu birleştirmektedir (Calmes ve Roberts, 2008). Kendini açmanın olumlu ilişki kalitesiyle bağlantısının olduğu bulunduğu için eşli ruminasyon da pozitif ilişki kalitesi ile ilişkilendirilecektir. Kardeş ilişkisi bağlamında, daha fazla eşli ruminasyonda bulunan kardeşlerin, erkek ve kız kardeşleriyle daha olumlu bir ilişki kalitesine sahip olmaları beklenebilir. Ancak, eşli ruminasyon yapısının başka bir unsuru da ruminasyondur. Ruminasyon, kişinin kendi olumsuz düşünce ve duygularına pasif ve tekil bir odaklanma olarak bilinmektedir (Nolen-Hoeksema, 1991). Beklendiği üzere, ruminasyonun özellikle de depresyon gibi içe yönelik sorunlar ile ilgili olduğu görülmüştür (örn., Lyubomirsky ve Nolen-Hoeksema, 1993; Nolen-Hoeksema ve Morrow, 1991; Nolen-hoeksema, Morrow, ve Fredecikson, 1993). Kendini açmanın haricinde eşli ruminasyon, ruminasyonu da içerir. Dolayısıyla, depresyon gibi içe yönelik sorunlara da sebep olabilir. Kısacası, kardeş ile eşli ruminasyon, kendini açma nedeniyle daha yüksek bir ilişki kalitesi gibi sadece olumlu sonuçlar değil; ruminasyon nedeniyle daha yüksek depresif semptomlar gibi olumsuz sonuçlara da sebep olabilir.

Çocuklar, ergenler ve genç yetişkinlerle yürütülen çeşitli çalışmalar, eşli ruminasyon ve depresyon arasında etkileşimsel, karşılıklı bir ilişki olduğunu işaret etmektedir (örn., Calmes ve Roberts, 2008; Rose, 2002; Rose, Carlson, ve Waller, 2007). Bu çalışmaların bulgularına göre, eşli ruminasyon zaman içerisinde depresyonu öngörmektedir. Dolayısıyla, artan depresif semptomlar insanları eşli ruminasyona yönlendirecektir sonucuna varılabilir. Böyle bir karşılıklı ilişki hiç şüphesiz ki nihayetinde sonsuz bir döngüye dönüşecektir. Ruminasyonun aksine, eşli ruminasyonun daha yakın ilişki bağları ve daha yüksek ilişki kalitesi gibi pozitif sonuçlara yol açtığı görülmüştür (Calmes ve Roberts, 2008; Rose, 2002; Rose ve ark., 2007, Starr ve Davila, 2009). Netice itibarıyla, eşli ruminasyon yalnızca depresyon gibi negatif sonuçlara katkıda bulunmamakta, aynı zamanda ilişki kalitesi gibi pozitif sonuçlara da katkıda bulunmaktadır.

Mevcut alanyazında, eşli ruminasyon, depresyon ve ilişki kalitesi arasındaki ilişkiyi işaret eden azımsanmayacak sayıda araştırma bulunmakla beraber; bu çalışmaların çoğunluğu arkadaş ile eşli ruminasyonu incelemek için tasarlanmıştır. Eşli ruminasyon, oda arkadaşı, ebeveyn, sevgili ve iş arkadaşları haricindeki diğer ikili ilişkiler arasında henüz incelenmemiştir (Barstead, Bouchard, ve Shih, 2013; Calmes ve Roberts, 2008; Haggard, Robert ve Rose, 2011; Waller ve Rose, 2010). Kardeşler hayat boyu arkadaşlar olarak görülseler de maalesef eşli ruminasyon yapacak sırdaşlar olarak görülmemişlerdir. Kardeş ilişkisi hem kişiler arası ve sosyal becerilerin gelişimini anlamak hem de bireylerin olumlu ve olumsuz uyumlarını açıklamak için vurgulandığından ötürü, kardeşler aynı zamanda eşli ruminasyon için en yaygın sırdaşlardan biri olarak da görülmelidirler. Dolayısıyla, eşli ruminasyonu en yakın kardeş ile incelemek, literatürdeki bu açığı kapatabilir.

Beliren yetişkinliğin hemen öncesinde ve bu süre boyunca, kardeş ilişkileri gelişimsel değişimlerden geçer ve daha eşitlikçi ve simetrik bir hal alır (Buhrmester ve Furman, 1990). Bu doğrultuda, kardeş bağlamında eşli ruminasyon da yaşamın bu geçiş dönemiyle ilişkili olarak belirli gelişimsel değişimlere maruz kalır. Önceki kardeş araştırmaları çoğunlukla kardeşlerin günlük olarak doğrudan iletişim halinde olduğu kardeş ilişkisinin ilk yıllarına odaklanmaktadır (örn., Downey ve Condrón, 2004; Dunn, Slomkowski, Beardsall, ve Rende, 1994; Howe, Ross, ve Recchia, 2011; McHale ve ark., 2012; Stoneman, 2001). Çocukluk yıllarında, kardeş ilişkileri çoğunlukla güçlü ve yoğundur. Kardeş ilişkisinin ilk yılları samimiyet, yakınlık ve çatışmayı hep birlikte içerir. Çocuklar ergenliğe adım atarken kardeş ilişkileri, etkileşimdeki azalma nedeniyle zayıflar. Çoğu ergenler arkadaşlarıyla zaman geçirmeyi kardeşleriyle zaman geçirmeye tercih ederler (Buhrmester ve Furman, 1990). Araştırmacıların dikkatini çeken diğer bir dönem de orta ve yaşlı yetişkinlik dönemidir (örn., Campbell, Connidis, ve Davies, 1999; Fuller-Thomson, 2000; Greif ve Woolley, 2015; Khodyakov ve Carr, 2009, McKay ve Caverly, 1995, White ve Riedmann, 1992). Orta yetişkinlik döneminde, kardeş ilişkileri aşamalı olarak, evlilik ve ebeveynlik gibi ailevi yükümlülükler ya da coğrafi mesafe nedeni ile geri planda kalır (Goetting, 1986). Ancak, kardeşler arasındaki iletişim, yaşlı ebeveynlerinin sağlığı

ve bakımları için iş birliği yapacaklarından ötürü muhtemelen bu dönemde tekrar artacaktır. Bu işbirliğinin orta yetişkinlikte kardeş ilişkisini canlandırması kuvvetle muhtemeldir. Daha ileri yetişkinlikte, kardeş ilişkileri yakınlaşır ve kardeş bağları tekrar güçlenir. Yaşlılık döneminde bireyler, emeklilik, kendi çocuklarının evden ayrılması veya ebeveyn kaybı gibi hayattaki belirli olaylardan ötürü yalnız hissedebilirler ve tekrar kardeş desteğine ihtiyaç duyarlar. Kısacası, yaşam boyunca, hatta ebeveynlerin ölümünden sonra dahi kardeşler ailevi desteğin önemli bir kaynağını oluşturmaya devam ederler. Ancak, beliren yetişkinlik dönemindeki kardeş ilişkilerine çok az ilgi gösterilmiştir (örn., Conger ve Little, 2010; Milevsky, 2005; Scharf, Shulman, ve Avigad-Spitz, 2005; Riggio, 2000; Pulakos, 1989; Stocker ve ark., 1997; Wong, Branje, VanderValk, Hawk, ve Meeus, 2010). Genel olarak, bu çalışmalar beliren yetişkinlerin kardeşleriyle ilişkilerini sürdürdüklerini; ancak birlikte geçirilen zamanın ve günlük iletişimin beliren yetişkinlikteki önemli değişimler sebebiyle keskin biçimde azaldığını ortaya koymuştur. Bu dönem boyunca, bireyler aile evini terk etmek, üniversiteye gitmek, kariyer planı oluşturmak ya da işe girmek gibi birtakım hayati değişikliklerden geçerler. Bu başlıca yaşam olayları onların hayatlarına hem heyecan hem de stres getirebilmektedir. Yetişkinliğin birçok sorumluluğunu üstlenmeye çalışmak beliren yetişkinler için zorlu olabilir. Özellikle üniversite öğrencileri, bu tür gelişimsel değişimler ve beliren yetişkinliğin zorlukları karşısında uyum sorunları ve depresif semptomlar deneyimleyebilirler. Üniversite ortamına geçiş genellikle stresli ve endişeli bir süreçtir (Arnett, 2004). Beliren yetişkinlerin çoğunluğu aile evini ilk defa üniversiteye gitmek için terk ederler. Böylesine güçlü bir sosyal destek ağını geride bırakmak, ev hasreti çekmeye ve yeni ortama uyum sağlamada zorluk çekmeye sebep olabilir (Beck, Taylor, ve Robbins, 2003). Beliren yetişkinlerden üniversiteye sadece akademik olarak değil; aynı zamanda sosyal ve duygusal olarak da uyum sağlamaları beklenmektedir (Bland, Melton, Welle, ve Bigham, 2012). Beliren yetişkinler üniversite döneminde kendi başlarına; stabil olmayan şartlara, aşırı iş yüküne uyum sağlamaya ve üniversite derslerinin gereksinimlerini karşılamaya, maddi sorumluluk almaya ve sayısız kararlar vermeye ya da seçimler yapmaya çalışırlar. Sonuç olarak da bütün bu yeni zorluklar hayatlarında yeni bir stres kaynağına dönüşebilir. Bu nedenle, beliren yetişkinler

hayatın bu geçiş dönemine ilişkin stres ile mücadele ederken depresif semptomlar geliştirmeye daha yatkınlardır. Önceki araştırmalar, üniversite hayatındaki beliren yetişkinlerin depresif semptomlarında bir artış olduğunu göstermiştir (örn., Beck ve ark., 2003; Dyson ve Renk, 2006; Yorgason, Lonville, ve Zitzman, 2008). Stres zamanlarında çoğu birey kendisini rahatlatacak ya da destekleyecek birilerine ihtiyaç duyar. Sosyal desteğin depresyon ve anksiyeteyi azalttığı ve psikolojik uyumu arttırdığı bildirilmiştir (Taylor, 2007). Güçlü bir sosyal destek ağına sahip olmak strese karşı bir kalkan olarak işleyebilir ve beliren yetişkinlerin üniversiteye sağlıklı bir geçiş yapmasını sağlayabilir (Brissette, Scheier, ve Carver, 2002; Shulman, Kalnitzki, ve Shahar, 2009).

Beliren yetişkinler, daha özerk ve bağımsız oldukları bir döneme girseler de aile fertlerinin, özellikle de yaşça yakın oldukları ve benzer hayat hikayelerine sahip oldukları için kardeşlerinin desteğine ihtiyaç duymaya devam edebilirler. Daha yüksek oranda kardeş desteğinin beliren yetişkinlik döneminde daha iyi uyum sağlamayı öngördüğü bildirilmiştir (örn., Milevsky, 2005). Böylesine önemli bir geçiş döneminde kardeşler üzerine yapılan araştırmaların sınırlı olması bir hayli şaşırtıcıdır çünkü kardeş desteğinin varlığı, hayatın bu önemli dönemine ilişkin kişiler arası ve içsel değişimlerle bağlantılı sıkıntıların üstesinden gelmekte faydalı olabilir. Yakın bir kardeş ilişkisine sahip olmak ve kendini açabilmek (ya da kendisine açılan olmak), içe ve dışa yönelik sorunlara karşı koruyucu bir faktör olabilirken, kardeşlerin birbirlerine açılımlarında sorunları çözmek için eyleme geçmek yerine sadece sorunlara odaklandığı durumda bir risk faktörü de olabilir. Bu noktada, kardeş temelli eşli ruminasyonun beliren yetişkinlerin uyumları ve iyi oluşları üzerinde nasıl bir etkisinin olduğuna ilişkin belirli sorular ortaya çıkmaktadır.

Bu çalışmada, kardeş ile eşli ruminasyon, beliren yetişkinlik döneminde incelenmiş olup, kardeş ilişkisi kalitesi, eşli ruminasyon, ruminasyon ve depresyon arasındaki ilişkiler bir Türk beliren yetişkin örneklemini üzerinden araştırılıp önceki bulgular genişletilmiştir.

## YÖNTEM

### Örneklem

Araştırmaya, yaşları 18-26 arasında değişen, lisans ve yüksek lisans öğrenimi gören 336 kız (% 58) ve 242 erkek (% 42) olmak üzere toplam 578 Türk beliren yetişkin katılmıştır. Çalışmaya gönüllü katılan beliren yetişkinlerin yaş ortalaması 20.86 ve standart sapması 2.11'dir. Katılımcıların seçilmesinde kolay ulaşılabılır örnekleme yöntemi kullanılmıştır.

### Veri Toplama Araçları

Çalışmanın değişkenlerini değerlendirebilmek için Hayat Boyu Kardeş İlişkisi Ölçeği, Eşli Ruminasyon Ölçeği, Ruminatif Tepki Ölçeği Kısa Formu ve Beck Depresyon Envanteri kullanılmıştır.

*Hayat Boyu Kardeş İlişkisi Ölçeği* : Türk beliren yetişkinlerin kardeş ilişki kalitesini ölçmek amacıyla, Riggio (2000) tarafından geliştirilen 5'li Likert tipi 48 maddelik Hayat Boyu Kardeş İlişki ölçeği kullanılmıştır. Ölçeğin çocukluk duygu, çocukluk davranış, çocukluk düşünce, yetişkinlik duygu, yetişkinlik davranış ve yetişkinlik düşünce olmak üzere 6 alt boyutu bulunmaktadır. Bu araştırma kapsamında ölçeğin Türkçe'ye çeviri ve uyarlama çalışması yapılmıştır. Ölçeğin güvenilirliğini test etmek için Cronbach alfa katsayısı hesaplanmış ve çocukluk duygu alt boyutu için .80, çocukluk davranış alt boyutu için .77, çocukluk düşünce alt boyutu için .81, yetişkinlik duygu alt boyutu için .80, yetişkinlik davranış alt boyutu için .74 ve yetişkinlik düşünce alt boyutu için .83 olarak hesaplanmıştır. Ölçeğin toplam Cronbach alfa güvenilirlik katsayısı ise .94 olarak hesaplanmıştır. Geçerliliğini test etmek için ise cinsiyete göre kardeş ilişki düzeyleri arasındaki fark MANOVA analizi ile ortaya çıkarılmıştır. Ölçeğin orjinal 6 faktörlü yapısı doğrulayıcı faktör analizi ile test edilmiştir. Yapılan doğrulayıcı faktör analizi sonucunda uyum değerleri yeterli düzeyde bulunmuştur. Ölçek, Türk beliren yetişkin örneklemi için uygun bulunmuştur.

*Eşli Ruminasyon Ölçeği:* Beliren yetişkenlerin eşli ruminasyon düzeylerini ölçmek için Rose (2002) tarafından geliştirilen 5'li Likert tipi 27 maddelik Eşli Ruminasyon Ölçeği kullanılmıştır. Ölçeğin Türkçe uyarlama çalışması Bugay ve Erdur-Baker (2015) tarafından yapılmıştır. Ölçeğin bu araştırma için Cronbach alfa katsayısı .97 olarak hesaplanmıştır.

*Ruminatif Tepki Ölçeği Kısa Formu:* Beliren yetişkinlerin ruminasyon düzeylerini ölçmek için Treynor, Gonzalez ve Nolen-Hoeksema (2003) tarafından düzenlenen 4'lü Likert tipi 10 maddelik Ruminatif Tepki Ölçeği kısa formu kullanılmıştır. Ölçeğin Türkçe'ye uyarlama çalışması Erdur-Baker ve Bugay (2010) tarafından yapılmıştır. Bu çalışmada ise ölçeğin Cronbach alfa katsayısı .88 olarak hesaplanmıştır.

*Beck Depresyon Envanteri:* Örneklemin depresif semptomlarını ölçmek amacı ile Beck, Rush, Shaw ve Emery (1979) tarafından geliştirilen 4'lü Likert tipi 21 maddelik Beck Depresyon Envanteri kullanılmıştır. Ölçeğin Türkçe'ye uyarlama çalışması Hisli (1988) tarafından yapılmıştır. Ölçeğin bu araştırma için Cronbach alfa katsayısı .88 olarak hesaplanmıştır.

## **İşlem**

Öncelikle verinin toplanabilmesi için ODTÜ İnsan Araştırmaları Etik Kurulu'ndan (İAEK), veri toplama araçlarının sınıflarda uygulanabilmesi için ilgili öğretim elemanlarından gerekli izinler alınmıştır. Gönüllülük esasına dayanan katılım sağlanmıştır. Ölçekleri uygulamak yaklaşık 15-20 dakika sürmüştür.

## **Verilerin Analizi**

Araştırmada, betimsel istatistikleri elde etmek için SPSS 22 (IBM Corp., 2013) kullanılmıştır. Önerilen modeli test etmek için ise AMOS 18.0 programı (Arbuckle, 2009) ile Yapısal Eşitlik Modeli (YEM) analizi kullanılmıştır.

## BULGULAR

Araştırmada kullanılan deęişkenlerin ortalama ve standart sapma deęerleri hesaplanmış (Bkz. Tablo 18) ve bu deęişkenlerin kendi aralarındaki ilişkiler Pearson korelasyon analizi yapılarak Tablo 17’de gösterilmiştir. Önerilen modeli test etmek amacıyla Yapısal Eşitlik Modeli (YEM) analizi kullanılmıştır. YEM analizi sonucu, önerilen modelin anlamsız çıkan iki yola rağmen iyi uyum indeksleri gösterdiğini ortaya çıkarmıştır [ $\chi^2 (755) = 1787.248$ ,  $p = .00$ ;  $\chi^2/df = 2.37$ ;  $TLI = .91$ ,  $CFI = .91$ ,  $RMSEA = .05$ ,  $SRMR = .05$ ]. Beklenenin aksine, eşli ruminasyon ve depresyon, ayrıca kardeş ilişki kalitesi ve depresyon arasındaki yollar anlamsız bulunmuştur. Anlamsız bulunan yollar modelden çıkarılarak analiz tekrar edilmiştir. Yeni model veriye daha iyi uyum sağlamıştır [ $\chi^2 (757) = 1789.630$ ,  $p = .00$ ;  $\chi^2/df = 2.36$ ;  $TLI = .91$ ,  $CFI = .91$ ,  $RMSEA = .05$ ,  $SRMR = .05$ ]. Bu yeni modelin sonuçlarına göre, ruminasyon ve depresyon arasında pozitif ve yüksek (.57); ruminasyon ve kardeş ilişki kalitesi ile arasında negatif ve düşük ilişki (-.16) bulunmuştur. Buna ek olarak, eşli ruminasyonun, kardeş ilişki kalitesi ile pozitif ve yüksek ilişkili (.49); ruminasyon ile pozitif ve düşük ilişkili (.20) olduğu raporlanmıştır. MANOVA analizi, cinsiyetin depresyon dışında araştırmada kullanılan tüm deęişkenler üzerinde anlamlı bir etkisi olduğunu ortaya koymuştur ve bu sonuçlarına göre kadınlar, erkeklere oranla daha yüksek skorlar almışlardır.

## TARTIŞMA

### Sonuçların Tartışılması

Araştırmanın genel hipotezini test etmek için, önerilen modelin YEM analizi sonuçları incelenmiştir. Araştırma hipotezlerine dayanarak, bulgular tartışılacaktır:

**H<sub>1</sub>.** *Kardeş ilişki kalitesi, ruminasyon, eşli ruminasyon ve depresyon arasındaki bağlantıları araştıran önerilen yapısal model tüm katılımcılar için veriyle uyum sağlayacaktır.*

Önerilen yapısal modeli test etmek için yapısal eşitlik modellemesi ile yol analizi kullanılmıştır. Genel olarak, model depresyon değişkenindeki %32'lik varyansı ve kardeş ilişki kalitesi değişkenindeki %23'lük varyansı açıklamıştır. Daha uyumlu bir model elde etmek için anlamsız bulunan yollar çıkarılmış, ve yeni bir model elde edilmiştir. Bu yeni modelin uyum endekslerinin de yeterli ve ilk önerilen modelin uyum endekslerine çok benzer olduğu görülmüştür. YEM sonuçları, önerilen modelin eşli ruminasyon ve depresyon arasındaki, ayrıca kardeş ilişki kalitesi ve depresyon arasındaki iki önemsiz yola bakmazsınız tüm katılımcılar için yeterli uyum sağladığını göstermiştir. Böylece, araştırmanın ilk genel hipotezi doğrulanmış olmaktadır.

#### ***Spesifik Hipotezler:***

Spesifik hipotezleri test etmek için, nihai modelin standardize edilmiş beta yükleri incelenmiştir. Spesifik hipotezlere dayanarak, bulgular tartışılacaktır:

**H<sub>1a</sub>.** *Tüm katılımcılar için eşli ruminasyon, kardeş ilişki kalitesi ile pozitif ilişkili; ruminasyon ise kardeş ilişki kalitesi ile negatif ilişkilidir.*

Önceki araştırmalara benzer olarak, eşli ruminasyonun kardeş ilişki kalitesini pozitif yönde etkilediği görülmüştür (örn., Calmes ve Roberts, 2008; Rose, 2002; Rose ve ark., 2007, Starr ve Davila, 2009). Bu çalışmanın önceki kısımlarında tartışıldığı üzere bireyler eşli ruminasyon sürecinde, özel bilgilerini birbirleri ile paylaşmakta ve nihayetinde daha yakınlaşmaktadır; böylece ilişkilerinin kalitesi de artmaktadır. Mevcut çalışmanın sonuçlarına göre, eşli ruminasyon kardeş ilişki kalitesi üzerinde büyük bir etkiye sahiptir. Diğer taraftan, ruminasyonun ise beklendiği üzere, kardeş ilişki kalitesini negatif yönde etkilediği görülmüştür. Beliren yetişkinler ruminasyon

yapmaya devam ettiklerinde kardeşleri ile ilişki kaliteleri düşmektedir. Diğer bir deyişle, ruminatif davranışlar kardeşlerle ilişkiyi kötüleştirmektedir.

**H<sub>1b</sub>.** *Tüm katılımcılar için eşli ruminasyon ve ruminasyon, depresyon ile pozitif ilişkilidir.*

Beklentilerin aksine, eşli ruminasyonun depresyona etki etmediği görülmüştür. Her ne kadar eşli ruminasyon ve depresyonun ilişkili olduğu varsayılmış olsa da, eşli ruminasyon ve depresyon arasındaki yol anlamsız çıkmıştır. Bununla birlikte, bu bulgu önceki bazı çalışmalarla da örtüşmektedir. Örneğin, Calmes ve Roberts (2008) sevgili ile eşli ruminasyonun ve bir ebeveyn ile eşli ruminasyonun depresyonu yordamadığını ortaya koymuşlardır. Başka bir çalışmada, Starr ve Davila (2009), arkadaş temelli eşli ruminasyonun depresyonda boylamsal değişiklikleri öngörmediğini işaret etmişlerdir. Benzer olarak, mevcut çalışmadaki bu bulgu da, kardeş temelli eşli ruminasyonun, beliren yetişkinlerde depresif semptomları arttırmadığını; ancak kardeş ilişki kalitesinde önemli bir artışa sebep olduğunu işaret etmektedir. Önceki araştırmalar ile tutarlı olarak, ruminasyonun depresyonda büyük ölçüde artışa neden olduğu bulunmuştur. Beliren yetişkinlerin depresif semptomlarında, ruminatif eğilimlerinin büyük bir etkiye sahip olduğu bulunmuştur. Çalışmanın bu sonucu, ruminasyon üzerine yapılmış önceki araştırmalarla paralellik göstermektedir (örn., Abela ve Hankin, 2011; Butler ve Nolen-Hoeksema, 1994, Nolen-Hoeksema ve Morrow, 1991; Nolen-Hoeksema, Parker, ve Larson, 1994; Stone, Hankin, Gibb, ve Abela, 2011).

**H<sub>1c</sub>.** *Tüm katılımcılar için kardeş ilişki kalitesi depresyonla negatif ilişkilidir.*

Şaşırtıcı bir şekilde, kardeş ilişki kalitesi ile depresyon arasındaki doğrudan yol anlamsız çıkmıştır. Diğer bir deyişle, her ne kadar depresyon ile negatif ilişkisi olduğu varsayılmış olsa da, beliren yetişkinlerin kardeş ilişki kalitesi, depresyonu anlamlı bir şekilde yordamamaktadır. Bu da demek oluyor ki, olumlu veya olumsuz bir kardeş ilişkisine sahip olmak depresif semptomlarda düşüş veya yükselişle ilişkili değildir. Bu bulgu önceki araştırmanın aksi yöndedir (örn., Milevsky, 2011; Padilla-Walker ve

ark., 2010; Richmond, Stocker, ve Rienks, 2005). Sonuç olarak, bu spesifik hipotez doğrulanmamıştır.

***H<sub>1d</sub>.** Tüm katılımcılar için eşli ruminasyon ve ruminasyon arasında pozitif bir ilişki bulunmaktadır.*

Eşli ruminasyon ve ruminasyon arasındaki anlamlı yol temel alındığında, bunların anlamlı ölçüde birbirleriyle bağlantılı oldukları söylenebilir. Ancak, aralarındaki korelasyonun zayıf olduğu görülmüştür. Önceki araştırmayla tutarlı olarak, eşli ruminasyon ve ruminasyonun farklı yapılar oldukları ancak, zayıf ilintili oldukları görülmüştür (örn., Brown ve Tompkins, 2013; Calmes ve Roberts, 2008).

### **Cinsiyet Farklılıklarının Tartışılması**

***H<sub>4</sub>.** Kadın beliren yetişkinler, eşli ruminasyon, ruminasyon, kardeş ilişki kalitesi ve depresyonda erkek beliren yetişkinlere göre anlamlı derecede daha yüksek skorlar bildirecektir.*

Çalışma değişkenlerinin (ruminasyon, eşli ruminasyon, kardeş ilişki kalitesi ve depresyon) ortalama skorlarını kıyasladıktan sonra, kadın beliren yetişkinlerin, erkek beliren yetişkinlerden daha yüksek skorlara ulaştığı görülmüştür. Bu farklılıkların anlamını test etmek adına tek yönlü bir MANOVA testi uygulanmıştır. Kadın beliren yetişkinlerin, erkek beliren yetişkinlerden önemli oranda daha yüksek ortalama skorlara eriştiği bildirilmiştir. Sonuçlar, cinsiyetin kardeş ilişki kalitesi, ruminasyon ve eşli ruminasyon üzerinde istatistiksel olarak anlamlı bir etkisinin olduğunu ortaya koymuştur. Bu bulgular ruminasyon üzerine (örn., Bugay ve Erdur-Baker, 2011, Butler ve Nolen-Hoeksema, 1994; Erdur-Baker, 2009; Ziegert ve Kistner, 2002) ve eşli ruminasyon üzerine yapılan önceki çalışmalarla (örn., Bugay ve Erdur-Baker, 2015; Calmes ve Roberts, 2009; Rose, 2002; Rose ve ark., 2007) tutarlılık göstermektedir. Beklentilerin aksine, mevcut çalışmada erkekler ve kadınlar

depresyonla ilgili olarak önemli bir farklılık sergilememişlerdir. Diğer bir deyişle, kadın ve erkek beliren yetişkinler benzer düzeylerde depresif semptomlar göstermişlerdir.

### **Uygulamaya Yönelik Çıkarımlar**

Mevcut çalışma, psikolojik danışmanlık alanında hizmet veren profesyoneller ve özellikle de bir üniversite ortamında beliren yetişkinlerle çalışanlar için önemli bulgular içermektedir.

İlk olarak, üniversite danışmanlık merkezlerinde çalışan psikolojik danışmanlar bu ergenlikten yetişkinliğe geçiş dönemiyle karakterize edilmiş belli gelişimsel değişimlerin farkında olmadırlar. Hayatın bu geçiş döneminde, pek çok birey aile evini terk etme, üniversiteye gitme veya kariyer planı yapma gibi önemli değişiklikleri deneyimler. Genellikle ev hasretinden, maddi zorluklardan ve yeni ortamlarına uyum sorunlarından yakınırırlar. Bu spesifik dönemde, beliren yetişkinler hayatlarının geri kalanını etkileyecek kritik seçimler de yaparlar (Zarret ve Eccles, 2006). Nihayetinde, bütün bu yeni zorluklar hayatlarında yeni bir stres kaynağına dönüşebilir. Beliren yetişkinler hayatın bu geçiş dönemine ilişkin stresli yaşam olaylarını deneyimledikleri zaman genellikle konuşabilecekleri bir kişi ararlar ve sorunlarını bu özel kişiyle paylaşırlar. Önceki araştırmalar da beliren yetişkinlerin yetişkinliğe etkili ve sağlıklı bir geçiş yapabilmesi için sosyal desteğin önemini vurgulamaktadır. Danışmanların sorunlarıyla ilgilenirken, deneyimledikleri stres veya depresif semptomlarla mücadele edebilmek için onları rahatlatacak ve destekleyecek herhangi bir destekleyici ilişkilerinin olup olmadığını danışmanların kendi sosyal çevreleri içerisinde araştırmak önemlidir. Mevcut çalışmanın önceki kısımlarında tartışıldığı üzere yakın ve destekleyici bir kardeş ilişkisine sahip olmanın beliren yetişkinlerin dirayetini arttıran önemli bir koruyucu faktör olduğu bildirilmiştir. Kardeş desteğinin, yetersiz arkadaş ve ebeveyn desteğini de telafi ettiği ortaya konulmuştur (Milevsky, 2005). Beliren yetişkinlerin arkadaşlar, ebevenyler veya kardeşler gibi kendi sosyal ağlarında

destekleyici bir ilişkileri yoksa, yalnız başlarına iken ruminatif eğilimlere girişmeye başlayabilirler.

Bu çalışmanın sonuçlarına göre, ruminasyonun beliren yetişkinlerde ve özellikle de kadınlarda büyük bir etkisinin olduğu görülmektedir. Beliren yetişkin gruplarıyla çalışan profesyonel danışmanlar, danışanların olumsuz ve depresif hisleriyle ilgilenirken ruminasyonun rolünü de hesaba katmalıdırlar. Bu araştırmanın bulgularıyla, danışmanlar, depresif semptomlarının altında yatan faktörleri anlamaları konusunda danışanlara yardımcı olabilir ve ayrıca mevcut sorunlarında kardeşlerinin rolünün önemini anlamalarını sağlayabilirler. Sonuç olarak, danışanın kardeş ilişkisini araştırmak ve kardeş ilişkisinin kalitesini ölçmek, danışanların mevcut sosyal destek ağlarını tespit etmek için faydalı olabilir. Bu şekilde, danışmanlar, danışanlarının davranışlarını, hislerini ve algılarını daha iyi şekilde canlandırabilir.

Mevcut çalışmanın uygulamaya diğer bir katkısı da, Türk beliren yetişkinlerin kardeş ilişkisini değerlendirmek için Yaşam Boyu Kardeş İlişkisi Ölçeği'nin (Riggio, 2000) Türk diline uyarlamasıdır. Yeterli psikometrik özelliklere sahip olduğu bulunan bu ölçek araştırmacıların, kardeş ilişkisine yaşam boyu bir perspektiften odaklanmalarını sağlayacaktır. Dahası, bu ölçek danışmanlar tarafından danışanların aile bağlamındaki sorunlarını anlamak için geçerli ve güvenilir bir araç olabilir ve kardeş desteğinin yokluğunu/varlığını daha iyi anlamayı sağlayabilir.

### **Teoriye Yönelik Çıkarımlar**

Bu araştırmadaki bulgular bazı teorik çıkarımlara sahiptir. Rose'un (2002) teorisine göre, eşli ruminasyon "kendini açma ve ruminasyon yapıları arasındaki örtüşmeyi ifade eder" (syf. 1830). Arkadaş temelli eşli ruminasyonun, kendini açma sebebiyle yüksek kalite arkadaşlıkla ve ruminasyon ile örtüşmesi sebebiyle depresif semptomlarla bağlantılı olduğunu belirlenmiştir. Ancak, bu çalışmada kardeş temelli eşli ruminasyonun erkek veya kadın beliren yetişkinler arasında depresif semptomlarla

bir ilişkisinin olmadığı görülmüştür. Kardeş temelli eşli ruminasyonun yalnızca yüksek kaliteli kardeş ilişkisi ile bağlantılı olduğu bulunmuştur. Mevcut çalışmanın bu bulgusu eşli ruminasyonun depresyona yönlendiren işlevsiz bir başa çıkma tarzı olduğu algısını doğrulamakta yetersiz kalmaktadır. Bu durumda, eşli ruminasyon Türk beliren yetişkinler arasında depresif semptomların artışında bir risk faktörü olmayabilir. Diğer taraftan, önceki kısımlarda tartışıldığı üzere pek çok kardeş, beliren yetişkinlik döneminde kardeşleriyle aynı yerde yaşamamaktadır. Belki de kardeş temelli eşli ruminasyon kardeşler arası coğrafi mesafe sebebi ile arkadaş temelli eşli ruminasyondan daha az sıklıkta olabilir. Mevcut çalışma, kardeş ilişkisi bağlamında eşli ruminasyonu inceleyen ilk araştırma olduğundan, kesin çıkarımlarda bulunabilmek için benzer çalışmalara ihtiyaç duyulmaktadır. Ancak, sırdaş ile daha yüksek kalitede ilişkisinin bağlantısı doğrulanmıştır. Diğer bir deyişle, Türk beliren yetişkinler kardeşleriyle eşli ruminasyon yaparken, kardeşle olan ilişkinin kalitesi Rose'un (2002) işaret ettiği gibi artmaya eğilimlidir.

## APPENDIX O: TEZ FOTOKOPİ İZİN FORMU

### ENSTİTÜ

Fen Bilimleri Enstitüsü

Sosyal Bilimler Enstitüsü

Uygulamalı Matematik Enstitüsü

Enformatik Enstitüsü

Deniz Bilimleri Enstitüsü

### YAZARIN

Soyadı : Cıralı

Ad : Bengü

Bölümü : Eğitim Bilimleri Bölümü, Psikolojik Danışmanlık ve Rehberlik

**TEZİN ADI:** Modeling the Associations among Sibling Relationship Quality, Co-rumination, Rumination, and Depression

**TEZİN TÜRÜ:** Yüksek Lisans  Doktora

1. Tezimin tamamı dünya çapında erişime açılsın ve kaynak gösterilmek şartıyla tezimin bir kısmı veya tamamının fotokopisi alınsın.

2. Tezimin tamamı yalnızca Orta Doğu Teknik Üniversitesi kullanıcılarının erişimine açılsın. (Bu seçenekle tezinizin fotokopisi ya da elektronik kopyası Kütüphane aracılığı ile ODTÜ dışına dağıtılmayacaktır.)

3. Tezim bir (1) yıl süreyle erişime kapalı olsun. (Bu seçenekle tezinizin fotokopisi ya da elektronik kopyası Kütüphane aracılığı ile ODTÜ dışına dağıtılmayacaktır.)

Yazarın imzası.....

Tarih.....