FAMILY RELATIONSHIPS DURING EMERGING ADULTHOOD:
LONGITUDINAL COURSE AND ASSOCIATIONS WITH
EMOTIONAL AND ACADEMIC ADJUSTMENT

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by
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And hereby certify that, in their opinion, it is worthy of acceptance.

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DEDICATION

This dissertation is dedicated to my family: to my husband, Tommy, for his unyielding support and selflessness throughout my entire academic journey; to my daughter, Nora, for pushing me to be the best role model I can be, and for helping me seek balance in my life; to my siblings, Sarah and John, for showing me the importance and joy of sibling relationships; and to my parents, Kari and Eric, who continue to love me unconditionally, encourage me to be curious, and give me the confidence to pursue my dreams.

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ABSTRACT

During emerging adulthood (ages 18 through the mid-twenties), parents and siblings become more peripheral in daily life compared to earlier in development. While family relationship quality often improves significantly during the initial transition to emerging adulthood, less is known about how these relationships function and impact development across this period, especially for college students who may remain closer to their families due to financial need. The present study, therefore, examined longitudinal changes in parent-child and sibling relationships from the first to the fourth years of college, as well as longitudinal associations between family relationship qualities and emotional adjustment and academic/vocational adjustment. Study 1 included first- and second-born college students (between-families), while Study 2 included first-born college students and their second-born adolescent siblings (within-families). Overall, parent-child relationship quality was mostly stable across emerging adulthood, while sibling relationships experienced dynamic changes in power structure, as well as increased communication and self-disclosure. Family relationships also had positive implications for emotional and academic adjustment, but receiving high levels of financial assistance from parents was detrimental for these outcomes. Future research should further investigate the implications of parental financial assistance, and ways the family can promote healthy autonomy development for emerging adults.

CHAPTER 1

INTRODUCTION

During adolescence, the family is centrally located within youth's social spheres, but the period of emerging adulthood is characterized by a significant shift in social networks, where peers and romantic partners gain increasing importance (Fraley & Davis, 1997; Tanner, 2006). Such profound shifts have been largely attributed to emerging adults' focus on identity exploration and the development of independence, two of the hallmark characteristics of this developmental period (Arnett, 2000; 2006; Morton & Markey, 2009). While separation from the family begins during adolescence as youth begin to negotiate greater autonomy from their parents (e.g., Dornbusch, Ritter, Mont-Reynaud, & Chen, 1990; Smetana, Crean & Campione-Barr, 2005), the semiautonomous nature of emerging adulthood makes this period particularly ripe for the rapid acceleration of changes within family relationships (Conger & Little, 2010; Smetana, Metzger & Campione-Barr, 2004).

As a result, researchers have begun to vigorously examine the role of peers and romantic relationships in emerging adults' lives (see Chow, Roelse, Buhrmester, & Underwood, 2012; Furman & Winkles, 2012 for reviews). However, relatively little is known about the longitudinal course of parent-child and sibling relationships across emerging adulthood, or how these relationships impact individual development during this period. The lack of research on these topics is surprising for two key reasons. First, family interactions during emerging adulthood are far more voluntary compared to earlier years due to the fact that many emerging adults leave the family home to pursue

postsecondary education or employment, and thus the functions of these relationships likely change significantly (Aquilino, 2006). Second, despite the more voluntary nature of these relationships, many emerging adults remain at least partially financially dependent on their parents, especially if they attend college (Padilla-Walker, Nelson & Carroll, 2012). Thus, the family may remain particularly salient for these individuals.

While not all emerging adults in the U.S. attend college, a large minority do (40%; U. S. Department of Education, 2014), and gaining an understanding of the family relationships of this particular group may help illuminate processes salient to many emerging adults, as well as inform the literature about the maintenance of long-distance family relationships. Nevertheless, we acknowledge the vast variability in lifestyle choices that are afforded to emerging adults, and thus recognize that family relationships may function differently during this period for those who pursue other endeavors besides college post-high school. Family relationships may also differ significantly for emerging adults depending on other factors, such as family structure (e.g., single-parent home, presence of step-parents, step- or half-siblings), socioeconomic status, race/ethnicity, and nativity status. Unfortunately, the present study employed a sample that is relatively homogenous, in that it was comprised entirely of college students who were mostly White, middle- to upper-middle-class, and living in two-parent households. Nevertheless, as the proceeding literature review will illuminate, very little is known about emerging adult family relationships even among this narrow group. The present study aims to provide a first step in understanding family relationship processes that future research will undoubtedly need to expand to and replicate among a significantly more diverse sample.

However, while these other groups of non-college students, and emerging adults with more diverse family contexts, have been severely understudied in the emerging adulthood literature, work by Cohen, Kasen, Chen, Hartmark and Gordon (2003) suggests that variability in emerging adult development may differ considerably more within-groups than between-groups, indicating that other factors beyond college enrollment status may be more important indicators of developmental variability, including in the development of family relationships. Thus, important information may be gleaned by examining the development and implications of family relationships among emerging adults enrolled in college.

Therefore, in order to gain a more complete understanding of the longitudinal course and importance of family relationships during the transitory stage of emerging adulthood for these individuals, the present study had three central aims. *The first aim* was to examine several provisional aspects of parent-child and sibling relationships across the college years to better understand the stability (or instability) of these relationships. In line with several theoretical perspectives (e.g., Bronfenbrenner, 1989; Minuchin, 1985), as well as empirical evidence, changes in these familial relationships should also have direct implications for individual development. General well-being typically improves post-adolescence (Buhl, 2007; Galambos, Barker & Krahn, 2006), but it is possible that the quality of family ties is an important moderator in this trend. Therefore, *the second aim* of this study was to examine longitudinal implications of parent-child and sibling relationships for emotional adjustment. Such an examination may be particularly important given the increased incidence of some types of psychopathology during emerging adulthood compared to adolescence (Schulenberg &

Zarrett, 2006). Finally, since the successful preparation for adult roles is a key task of emerging adulthood (Arnett, 2000), *the third aim* was to examine longitudinal associations between family relationships and academic and vocational identity achievement, two important predictors of employment success (Roth, BeVier, Switzer & Schippmann, 1996) and life satisfaction during adulthood (Hirschi & Herrmann, 2012).

Additionally, these aims were examined both between- and within-families. Specifically, in Study 1, we employed a between-families design to investigate these processes in both first-born and second-born college students from the same age cohort (but from different families). We examined the course of family relationships from individuals' first to fourth years of college, and their implications for individual adjustment that may be dependent on one's ordinal position within the family. By employing a large between-subjects design, we hoped to gain a broad understanding of these processes as they occurred at the same developmental period for both first-born and second-born individuals, as well as to examine possible differences in the course of these relationships between first-born and second-born emerging adults.

As previous researchers have noted, however, between-families investigations of family relationship processes are less powerful than within-families examinations of potential mechanisms of familial influence on development (Crouter, Whiteman, McHale & Osgood, 2007). Between-families designs are often useful for gaining a general understanding of family functioning, which was an important aspect of the present study. However, these designs unfortunately operate under the assumption that multiple children within the same family have been socialized in a nearly identical manner (McHale, Crouter & Whiteman, 2003). There is much evidence that siblings have different familial

experiences from one another (e.g., parental differential treatment, sibling deidentification), and thus different developmental trajectories, despite many shared aspects of their family environment (Crouter et al., 2007). Examining sibling relationship processes in particular from a within-families approach would allow for the ability to both confirm the findings gleaned from a larger between-families design, as well as investigate potential differences in family relationships that may be due, in part, to siblings' unique socialization experiences within their families. Therefore, in Study 2, we examined these same longitudinal processes (focusing primarily on sibling relationship processes) in a smaller sample of first-born college students and their second-born adolescent siblings to highlight potential *within-family differences*. By examining both between- and within-family processes, we hoped to gain a more complete understanding of over-time changes in family relationships and their implications for emotional and academic outcomes.

Longitudinal Course of Family Relationships

Emerging adulthood is a distinct developmental period that is unique to Western industrialized societies and situated between the relatively dependent years of adolescence and the fully autonomous period of adulthood (approximately ages 18-25; Arnett, 2000). In line with Erikson's (1968) conceptualization of a *psychosocial moratorium*, emerging adulthood is typically characterized by a sense of semi-autonomy, where truly adult roles are delayed as individuals experiment with new identities separate from those previously shaped by the family. As such, this period is thought to involve a significant "re-centering" of familial relationships as emerging adults explore various facets of their identity (Arnett, 2006; Conger & Little, 2010).

As a result of this re-centering process, the functions of family relationships change. Specifically, a central task within parent-child relationships involves parents' acknowledgement of their children's maturing status and autonomy while still providing their not-yet-adult children with appropriate levels of both emotional and financial support (Aquilino, 2006). Siblings, on the other hand, must not only reconcile any remaining power imbalances within their relationship (Shortt & Gottman, 1997), but must also negotiate the suddenly more voluntary nature of their relationship. Importantly, siblings must still maintain their relationship to a level that will set the stage for fulfilling important support functions to one another (Aquilino, 2006; Connidis, 1992) and for collaborating successfully in caring for elderly parents (Cicirelli, 1995) later in adulthood. Thus, the functions of parent-child and sibling relationships shift toward a focus on relationship maintenance across the emerging adulthood period (e.g., Myers & Weber, 2004).

Social convoy theory posits that across the life course, an individual's system of relationships changes, with some relationships receding and others increasing in importance across adulthood (Bertram, 2000; Kahn & Antonucci, 1980). Similarly, a social relational perspective (Collins & Laursen, 1992) argues that as the functions and contexts of family relationships change (as they do across emerging adulthood), specific aspects of these relationships, such as the nature of conflict (Laursen & Collins, 1994), should also change. Socioemotional selectivity theory further suggests that beginning in early adulthood, individuals become increasingly selective in their range of social partners, and despite a significant reduction in the rate of interaction, individuals increase their emotional closeness to significant others (particularly family members) across

adulthood (Carstensen, 1992). Thus, active participation in many aspects of family functioning (e.g., communication) should decline across the emerging adult period, as the actual function of family relationships shifts toward a focus on relationship maintenance. However, the overall quality and emotional closeness of these relationships should generally improve or stabilize as individuals become more selective in their social contacts. Indeed, empirical work suggests that despite a decline in active family processes across emerging adulthood (e.g., communication, conflict, assistance to family members), individuals simultaneously report significant increases in family cohesion (Parra, Oliva & Reina, 2014) and family identity, and a stabilizing of family respect (Tsai, Telzer & Fuligni, 2013). This provides evidence that despite increasing separation from the family, emerging adults perceive improvements in the quality of their family relationships.

Much of the previous research has focused on understanding the improvement in family relationships as a whole, but a family system is made up of several interrelated yet separate subsystems (Minuchin, 1985), including the mother-child(ren), father-child(ren) and sibling subsystems. While dyadic relationships within the family have important implications for the broader family system, social provisions theory (Weiss, 1974) provides an important reminder that each type of social relationship is specialized and provides unique types of social provisions or social support. Thus, changes in family relationships across emerging adulthood may follow somewhat different patterns depending on the type of dyadic relationship being examined, necessitating the importance of considering the unique qualities of mother-child, father-child and sibling relationships.

Transition to emerging adulthood. The first aim of the present study, therefore, was to examine longitudinal changes in parent-child and sibling relationships over the first four years of college. Most empirical work examining emerging adults' family relationships has focused on over-time changes during the initial *transition to* emerging adulthood, however (see Galambos & Kotylak, 2012, and Shanahan, Waite & Boyd, 2012, for reviews). Such work has found evidence that communication (Parker, Lütke, Trautwein, & Roberts, 2012; Parra et al., 2013) and shared time (Aquilino, 1997; Scharf, Shulman & Avigad-Spitz, 2005) with parents and siblings decrease significantly during the initial transition to emerging adulthood, particularly when adolescents move out of the family home. Thus, the initial transition to emerging adulthood appears to be characterized by a marked decline in active family interaction.

In terms of the actual *quality* of family relationships, however, evidence points to improved relationship quality with parents and siblings as individuals move from adolescence to emerging adulthood. Emerging adults' relationships with mothers, fathers and siblings are significantly more egalitarian than adolescents' relationships (with sibling relationships being the most egalitarian; Furman & Buhrmester, 1992), indicating a movement away from parental dependence and hierarchical relationships with siblings. Longitudinal work suggests that, at least for first-borns, parent-child relationships become significantly less conflictive (Shanahan, McHale, Osgood & Crouter, 2007b) and more intimate (Shanahan, McHale, Crouter & Osgood, 2007a) in the years post-adolescence. Whiteman, McHale and Crouter (2011) examined how these processes differed by emerging adults' residential status, and found that these improvements in mother-child relationships, as well as similar improvements between siblings, only

occurred for first-borns who actually moved out of the family home during this transition. Father-child relationships improved regardless of emerging adults' residential status (also see Dubas & Petersen, 1996). Of particular note, however, changes in family relationships during later-born (i.e., non-first-born) children's transition to emerging adulthood were not examined in these studies, highlighting a potential gap in the literature.

Changes across emerging adulthood. Although the vast majority of research on emerging adult family relationships has focused on the transition *to* emerging adulthood, a small body of longitudinal work has begun to examine changes in some aspects of family relationships *across* emerging adulthood. Intimacy (Rice & Mulkeen, 1995) and emotional support (Guan & Fuligni, 2015) from parents appears to increase significantly from the end of high school through the early twenties, and start of emerging adults' first careers (Buhl, 2007). Conflict and significant relative power differences between parents and their children decline across the transition from college to employment (Buhl, 2007). Tsai, Telzer and Fuligni (2013) found that an ethnically diverse group of emerging adults reported stable levels of relationship cohesion with mothers (but declining cohesion with fathers) across emerging adulthood. Yet, overall relationship satisfaction with mothers has been shown to increase at least across the first two years of college, while satisfaction with fathers appears to be relatively stable (Levitt, Silver & Santos, 2007). Even less work has examined changes in the quality of sibling relationships across emerging adulthood, but siblings do appear to decrease their communication and instrumental support to one another across this period (Carstensen, 1992; White, 2001), while emotional support remains relatively stable (Guan & Fuligni, 2015).

As evidenced by the very limited longitudinal work examining changes in the quality of family relationships across the emerging adulthood years, there is still much to be learned. Most of the research examining such changes has investigated periods of time that include a major developmental transition (e.g., Buhl, 2007; Mulkeen & Rice, 1995). Thus, it is unclear how the quality of parent-child and sibling relationships changes *during* emerging adulthood. Specifically, it is currently unknown whether improvements in familial positivity, negativity, and power structure continue past the initial transition to emerging adulthood, or whether improvements are limited to the initial departure from the family home and the transition *out of* emerging adulthood. Thus, the following research question is proposed:

RQ 1A: How does communication, positivity, negativity, and relative power (for siblings only) change within parent-child and sibling relationships from emerging adults' first to fourth years of college?

Previous work suggests large improvements in the quality of these relationships during significant transitions *to* and *from* emerging adulthood (e.g., Buhl, 2007; Whiteman et al., 2011) despite significant declines in communication (White, 2001), and we expect that similar changes will occur *across* emerging adulthood as well. Given the re-centering (and often reduced geographic proximity) of familial relationships during emerging adulthood, we expect communication with parents and siblings to continue to decrease across the college years. However, we expect these relationships to become more positive, more egalitarian in the case of sibling relationships, and less negative over time given evidence of improvements in family cohesion across this period (Tsai et al., 2013)

and the active identity exploration that likely drives emerging adults' perceptions of these improvements (Arnett, 2000; 2007; Erikson, 1968).

Second, intimacy (at least with parents) appears to increase across emerging adulthood, yet communication (particularly with siblings) decreases significantly (White, 2001). Self-disclosure is a key feature of many intimate relationships, and involves the voluntary sharing of intimate, personal information (Jourard, 1971; Rotenberg, 1995) as a means to either aid in parents' monitoring of their children's behaviors (as it has often been studied within adolescent parent-child relationships; e.g., Smetana, Metzger, Gettman & Campione-Barr, 2006) or as a way to maintain and enhance the intimacy of relationships (as with siblings; Howe, Aquan-Assee, Bukowski, Lehoux & Rinaldi, 2001; Howe, Aquan-Assee, Bukowski, Rinaldi & Lehoux, 2000). As such, self-disclosure requires both active communication and feelings of trust and intimacy. Self-disclosure has rarely been studied within families during the emerging adult years (for an exception, see Campione-Barr, Lindell, Giron, Killoren & Greer, 2015), and it is unclear how its frequency to different family members changes across this period. Thus, we propose the following research question:

RQ 1B: How does emerging adults' frequency of self-disclosure within mother-child, father-child and sibling relationships change from the first to fourth years of college?

On one hand, one might expect self-disclosure to decrease in frequency as communication with family members decreases in general; on the other hand, increases in self-disclosure when emerging adults *do* communicate may partly explain why family relationships become more intimate across this period. Although we do not put forth

specific hypotheses, this interesting pattern of relational provisions lends itself to an investigation of whether intimate self-disclosure to parents and siblings decreases in frequency along with the decrease in communication, or whether it increases in frequency (and also perhaps the scope of topics) as perceived intimacy increases.

Ordinal position. One important omission from previous research examining changes in familial relationships during emerging adulthood is an examination of potential differences in the longitudinal course of these relationships as a function of an individual's ordinal position within the family. While some researchers have examined changes in family relationships for first-borns specifically (e.g., Lindell, Campione-Barr & Greer, 2014; Whiteman et al., 2011), the experiences of second-born children have either not been examined, or ordinal position has not been considered at all. There is considerable evidence that family relationships differ for first-born and later-born children within the same family due to a variety of processes including sibling deidentification, parental differential treatment, and aspects of siblings' non-shared environment (Crouter et al., 2007). Additionally, a family systems perspective (Minuchin, 1985) and empirical evidence suggests that first-borns' experiences should subsequently impact the entire family system, including the possibility of their experiences spilling over into other family subsystems (e.g., during first-borns' transitions to puberty, Shanahan, McHale, Osgood & Crouter, 2007; first-borns' exit from the family home, Whiteman et al., 2011). Similarly, parents may also learn from their experiences with earlier-born children and apply similar (or modified) tactics to later-born children once they reach that age (Shanahan, McHale, Crouter & Osgood, 2007; Whiteman & Buchanan, 2002). Thus, we propose the following research question:

RQ 1C: Are changes in communication, positivity, negativity, relative power, and self-disclosure moderated by ordinal position?

In Study 1, which examines between-family differences in first- and second-borns, we expected that first-borns would report more drastic changes in their parent-child and sibling relationships than second-borns. In line with a *learning-from-experience* hypothesis, parents should apply what they learned during their earlier-born child's movement across emerging adulthood to their experiences with their second-born children, resulting in more stability in their relationships with second-borns (e.g., Shanahan, McHale, Crouter & Osgood, 2007). First-borns and their parents, in contrast, are progressing through uncharted territory, and thus more drastic changes should be present. However, these differences may only be modest, as parents will need to negotiate more autonomous relationships with both first- and second-born children alike as a function of their changing developmental status rather than solely as a result of broader family dynamics.

Regarding sibling relationships, because second-borns should have already experienced many of these relationship changes when their older siblings moved through emerging adulthood, they should report fewer changes in their sibling relationships than first-borns. Importantly, however, second-born siblings are expected to report lower-quality relationships than first-born siblings (in Study 2 as well) given their often more accurate assessment of these relationships (Melby, Conger, & Puspitawati, 1999).

In Study 2, which examines siblings within the same family, we expect that both first- and second-borns will experience similar changes (i.e., *spillover*) in their family relationships since first-borns' experiences should simultaneously affect the entire family

system (Minuchin, 1985). However, given that many second-borns in our sample will still likely live with their parents throughout the duration of the study, their trajectories may differ depending on their residential status at Time 2 (living with parents vs. not). Younger siblings still living at home may not experience the same relationship quality improvements or declines in communication, conflict or self-disclosure (Whiteman et al., 2011).

Gender. As in other types of close relationships (e.g., Rose & Rudolph, 2006), family relationships tend to function and change differently for boys and girls across development. We therefore proposed the research question:

RQ 1D: Are changes in communication, positivity, negativity, relative power, and self-disclosure moderated by emerging adult, sibling, and parent gender?

Females place a high value on intimacy within their close relationships (Maccoby, 1998) and often serve as the “kin keepers” of their families as adults (Lee, Mancini & Maxwell, 1990). Additionally, females tend to feel less powerful within their dyadic family relationships than boys during adolescence (Furman & Buhrmester, 1992), but some work suggests that females (particularly those growing up with younger brothers) may surpass males in their perceptions of interpersonal power by adulthood (Todd, Friedman & Steele, 1993). Thus, in Study 1 and Study 2, we expected that girls’ communication, conflict, negativity and self-disclosure with family members would decrease less than boys’, and that girls’ perceived positivity and power within their relationships would increase more than boys’. Regarding parents’ and siblings’ gender, we similarly expected that emerging adults would generally report less of a decline in communication, negativity and self-disclosure, and greater increases in positivity (and power) in their

relationships with mothers and sisters than with fathers and brothers (with the exception of older sisters with younger brothers, who should report the greatest increases in relative power over siblings than all other sibling gender compositions).

Financial dependence on parents. One of the most tangible indicators of adult status attainment is financial independence (Arnett, 2000), but among emerging adult college students, most parents provide their children with some degree of financial assistance (Padilla-Walker et al., 2012). In addition to hindering feelings of adult status and maintaining the salience of the family for a group who should be moving *away* from reliance on the family, greater financial reliance on parents has been shown to be related to increased risk-taking behaviors and lower identity achievement during emerging adulthood (Padilla-Walker et al., 2012). However, it is less clear how financial dependence is related to the longitudinal course of emerging adults' relationships with their family members. We therefore included the following research question:

RQ 1E: Are changes in communication, positivity, negativity, relative power, and self-disclosure moderated by financial dependence on parents?

Buhl (2007) found that as emerging adults transitioned from college (and financial dependence) to the work force (and financial independence), emerging adults reported more egalitarian, less conflictive and more intimate relationships with parents over time. This work suggests that financial dependence on parents (and thus lower autonomy) may hinder the development of more positive family relationships. Indeed, Smetana, Metzger and Campione-Barr (2004) found that semi-autonomous late adolescents (especially girls) reported fewer negative interactions with their mothers than less autonomous late adolescents. Similarly, less autonomous emerging adults have been shown to maintain

more frequent communication with their parents than those with greater reported autonomy (O'Connor, Allen, Bell, & Hauser, 1996). Thus, in both Study 1 and Study 2, we expected that less financially dependent (and thereby more autonomous) emerging adults would become less actively involved in their family relationships, yet report higher-quality relationships than those who are more dependent. Specifically, less dependent emerging adults were expected to report greater declines in communication, negativity, and self-disclosure, and greater increases in positivity and (relative power) in their relationships with parents (and also perhaps siblings) than emerging adults who were more financially dependent on their parents.

Implications of Family Relationships for Developmental Outcomes

The family is one of the most important sources of socialization for children and adolescents (Maccoby & Martin, 1983), and its influence on individual development endures across the lifespan (Carstensen, 1992). Although the growing importance of peers and romantic partners relegates the family to a more peripheral location within emerging adults' social spheres (Tanner, 2006), the family represents a "closed" relationship system in that it is a relatively permanent and not easily dissolved fixture in an individual's life (Collins & Laursen, 1992). Thus, the family should continue to exert influence on emerging adults' development across a variety of domains.

This continued influence can largely be understood through the lens of Bronfenbrenner's (1989) ecological systems theory, which argues that individuals are couched within layers of contextual influences. According to Bronfenbrenner (1989), one's microsystem (made up of those with whom individuals directly interact, including family members), in concert with the chronological passage of time, has key implications

for development. Thus, a complete understanding of emerging adults' developmental outcomes must necessarily include an examination of the interplay between individuals, their family relationships, and the passage of time.

An additional layer of complexity in understanding the influence of family relationships on emerging adult development is the fact that the family system is made up of multiple interdependent subsystems (e.g., mother-child, father-child, sibling), all of which are influenced by one another. A family systems perspective (Bratcher, 1982; Minuchin, 1985) therefore highlights the importance of understanding how multiple family members (e.g., mothers, fathers, siblings) impact individual development, as well as how individuals' interactions may impact both their own and their relationship partner's development. For example, not only may an individual's self-disclosure to his or her sibling influence his or her own development, but it may also impact the development of their sibling who receives that interaction.

Given these theoretical assertions, the specific practices and behaviors (Darling & Steinberg, 1993) that occur within multiple family relationships may have important implications for individual adjustment across emerging adulthood. Two areas that are particularly salient to the emerging adult years are emotional adjustment (e.g., depression, anxiety, self-esteem) and academic adjustment (e.g., academic achievement, vocational identity achievement). Good emotional adjustment is particularly important for emerging adults, not only because it promotes effective day-to-day functioning, but also due to its positive implications for engagement (Bakker, Schaufeli, Leiter & Taris, 2008; Salmela-Aro & Upadyaya, 2012; Upadyaya & Salmela-Aro, 2013), confidence (Shulman, Kalnitzki & Shahar, 2009) and satisfaction (Howard, Galambos & Krahn,

2010) in academic and work settings. Positive functioning in the areas of academics and vocation are important because central tasks of the emerging adulthood period include the development of a coherent sense of self based on a period of exploration surrounding values and work (Arnett, 2000; 2007), and a successful period of preparation for the responsibilities of adulthood. The second and third aims of the present study are therefore to examine how emerging adults' family relationships contribute to positive functioning in both emotional and academic domains.

Emotional adjustment. Various facets of emotional adjustment, including depressive symptoms, anxiety and self-esteem, generally improve across the emerging adult period (Schulenberg & Zarrett, 2006). While several factors related to the transition to a more autonomous lifestyle likely play a large role in such improvements (or lack thereof; Schulenberg, Bryant & O'Malley, 2004), another related explanation may lie within the quality of emerging adults' family relationships. Specifically, Rosenberg's (1979) theory of self-concept formation suggests that individuals' views of themselves are deeply influenced by the attitudes held by close others including family members. Additionally, attachment theorists would argue that positive family attachment experiences should promote positive working models of the self and healthy emotion regulation strategies (Buist, Deković, & Prinzie, 2013; DeKlyen & Greenberg, 2008), even well beyond infancy and childhood (Ainsworth, 1989; Kobak & Sceery, 1988). Thus, positive relationships with parents and siblings should make emerging adults feel valued and supported, which should contribute to the development of positive self-appraisals and effective emotion regulation, and thus help buffer against poor emotional

adjustment. On the other hand, negative relationships with family members may contribute to worse emotional functioning.

Linkages between family relationships and emotional adjustment during adolescence. Relatively little work has examined possible familial influences on emotional functioning during emerging adulthood, but a wealth of research has found evidence of these associations with both parents (Brumariu & Kerns, 2010) and siblings (Buist et al., 2013) during adolescence. Specifically, longitudinal studies have found improvements in adolescent emotional adjustment to be related to earlier maternal warmth (Chen, Liu & Li, 2000), low levels of maternal criticism (Nelemans, Hale, Branje, Hawk & Meeus, 2014), and overall relationship quality with mothers and fathers (Branje, Hale, Frijns & Meeus, 2010). Sibling relationships are also longitudinally related to adolescent emotional adjustment, with conflict predicting worse emotional adjustment over time (Campione-Barr, Greer & Kruse, 2013; Kim, McHale, Crouter & Osgood, 2007), and positivity predicting improvements (Richmond, Stocker & Rienks, 2005; Yeh & Lempers, 2004). Thus, across adolescence, well-functioning family relationships appear to have positive implications for emotional adjustment over time.

Linkages between family relationships and emotional adjustment during emerging adulthood. Similar findings have been illustrated by the few empirical studies examining these processes during emerging adulthood, but most investigations have been limited to non-longitudinal designs, and thus the directionality of these associations is less clear. For example, secure attachment to parents (Kenny & Sirin, 2006), low parental control, high parental warmth (Nelson, Padilla-Walker, Christensen, Evans & Carroll, 2011), and supportive and harmonious sibling relationships (Milevsky, 2005; Sherman,

Lansford & Volling, 2006) are concurrently associated with better emotional adjustment during the emerging adult years.

Although less commonly examined, longitudinal work suggests that the quality of emerging adults' family relationships predicts changes in emotional adjustment over time. Galambos, Barker and Krahn (2006) found that higher parent-emerging adult conflict at age 18 was concurrently related to greater depression and lower self-esteem, yet predicted steeper improvements in depressive symptoms through age 25 compared to those with less conflictive parent-child relationships at age 18. In a longitudinal investigation of the role of parent and sibling emotional support for the emotional adjustment of a diverse sample, Guan and Fuligni (2015) found that increases in parental support from 12th grade through 4 years post-high school were related to increases in self-esteem. Increases in sibling support during this period were related to decreases in depression for females.

While these two studies provide an important foundation for the present study, neither study included a separate examination of mothers and fathers, a consideration of sibling ordinal position, or an investigation of potential associations with anxiety, another important aspect of emotional adjustment. In addition, although two important aspects of family relationships were examined, parent-child conflict and emotional support, it seems likely that additional relational processes may also have important implications for emotional adjustment. Finally, and perhaps most importantly, both studies examined associations beginning during the period when youth were still fully dependent on their families at the conclusion of high school. Since major transitions, such as high school graduation, serve as major catalysts for changes in family dynamics (Minuchin, 1985),

however, it will be important to understand whether family relationships *after* this transition also have long-term implications for mental health. For example, longitudinal research by Desjardins and Leadbeater (2016) illustrated that decreases in parental psychological control across young adulthood were associated with decreases in depressive and anxious symptoms; however, other aspects of parent-child relationships that are more salient during emerging adulthood have rarely been considered.

As evidenced by the significant lack of research on linkages between family relationships and emotional adjustment during emerging adulthood, a critical question that must be answered is whether other family relationships outside the parent-child relationship are important for emerging adults' emotional functioning over time. There is considerable evidence that siblings are important in this regard during adolescence, so it seems possible that they may remain influential during later years. Additionally, of the few (mostly correlational) studies that have been conducted during the emerging adult years, a large focus has been on conflict and warmth within family relationships, but other aspects of these relationships, such as general negativity and positivity, communication and self-disclosure may also have important implications. Thus, we proposed the following research question:

RQ 2A: Do high-quality relationships (high communication, high positivity, low negativity, low sibling relative power, and high self-disclosure) with mothers, fathers and siblings during the first year of college predict improved emotional adjustment (lower depression and anxiety, higher self-esteem) at the fourth year of college?

Although emerging adulthood is characterized by a marked re-centering of family relationships within individual social spheres, multiple theoretical perspectives (e.g., Bronfenbrenner, 1989; Carstensen, 1992; Collins & Laursen, 1992) suggest that the family should retain its influence beyond adolescence nevertheless. This lingering influence is more possible now than ever before due to the prominence of various information-communication technologies, which may allow family members to maintain contact despite the reduced geographic proximity that often accompanies college attendance. Previous research suggests that high-warmth, low-conflict relationships with parents (e.g., Chen et al., 2000) and siblings (e.g., Campione-Barr et al., 2013) are longitudinally related to positive emotional adjustment during adolescence. Additionally, youth's voluntary disclosure of information to parents is concurrently related to fewer internalizing problems during adolescence (though the direction of effects is less clear; Kerr & Stattin, 2000). Thus, we hypothesized that in both Study 1 and Study 2, emerging adults (and adolescents) who reported more frequent communication, more positivity, less conflict, less negativity, less sibling relative power, and more self-disclosure with their mothers, fathers and siblings at Time 1 would report fewer depressive and anxiety symptoms, and higher self-esteem at Time 2, controlling for Time 1 adjustment.

In line with a family systems perspective, it is also possible that an individual's reflection of their sibling relationship may be related to the emotional adjustment of their sibling. Although reporting on the same relationship, siblings tend to differ somewhat in their assessment of the quality of their relationship (Melby et al., 1999). Thus, it is possible that a sibling's appraisal of their relationship may have a different implication for youth adjustment than that youth's own appraisal (such as in the case of adolescent

sibling conflict, e.g., Campione-Barr et al., 2013). Because we have reports from two siblings within the same families in Study 2, we were able to pose the following research question:

RQ 2B: Do high-quality sibling relationships (high communication, high positivity, low negativity, low sibling relative power, and high self-disclosure), as reported by one sibling at Time 1 predict emotional adjustment (depression and anxiety, self-esteem) for the other sibling at Time 2?

In general, we expected that youths' reports of high-quality sibling relationships would be related to their siblings' improved emotional adjustment over time.

Ordinal position. As discussed earlier, first-born and second-born offspring tend to have different interpretations of and experiences within their family relationships, even when comparing children growing up in the same family (Crouter et al., 2007). Thus, the emotional adjustment of first- and second-born emerging adults (and adolescents) may be differentially related to earlier relationships with parents and siblings. We therefore proposed the following research question:

RQ 2C: Are the associations between family relationships and emotional adjustment moderated by ordinal position?

Most studies examining associations between parent-child relationships and youth adjustment have unfortunately taken an approach that has not included ordinal position as a possible factor, operating under the naive assumption that parents' interactions operate similarly with all children in the home (McHale et al., 2003). Thus, we did not put forth specific hypotheses regarding how the associations between mother-child and father-child relationships and emotional adjustment differ between first- and second-born

emerging adults (and adolescents) in Study 1. When considering the possible influence of sibling relationships on emotional adjustment, however, we expected that these associations would be stronger for later-born emerging adults and adolescents in Study 1 and 2 than for earlier-borns. Later-born siblings are more likely to model their older siblings than vice versa (Whiteman & Christiansen, 2008), and they also tend to be more invested in (and thereby more strongly affected by) their sibling relationships (Buhrmester & Furman, 1990; McHale & Crouter, 1996; Yu & Gamble, 2008). Thus, we expected sibling relationships to predict later emotional adjustment more strongly for second-borns than first-borns.

Gender. As discussed earlier, family relationships also tend to function differently for boys and girls across development. It is also the case that males and females respond to interpersonal difficulties differently, with girls being more sensitive to aberrations in their close relationships than boys (Rudolph, 2002). Thus, girls' emotional adjustment may be more strongly influenced by their family relationships than boys'. We therefore proposed the research question:

RQ 2D: Are the associations between family relationships and emotional adjustment moderated by emerging adult, sibling, and parent gender?

There has been considerable research examining gender differences in the implications of parental support for adolescent emotional adjustment. Although not all studies have found gender differences (e.g., Amato, 1994), there seems to be growing evidence that adolescent girls (Slavin & Rainer, 1990) are particularly likely to experience depressive symptoms in the absence of parental support, especially when there is a deficit in support from mothers (Meadows, Brown & Elder, 2006). Similarly, adolescent boys appear to be

at risk for greater depressive symptoms in the absence of support from fathers (Branje et al., 2010), highlighting the potentially gendered nature of this association. Thus, in Study 1, we expected the associations between parent-child relationship quality and emotional adjustment to be strongest when considering mothers and daughters, and fathers and sons.

Gender may also play a large role when considering sibling relationships as a predictor of emotional adjustment. When examining the positive longitudinal associations between adolescent sibling conflict and emotional adjustment, Campione-Barr and colleagues (2013) found that these associations tended to be strongest within mixed-gender sibling dyads (i.e., brother-sister pairs). Given that it is quite normative for same-gender sibling pairs (especially sisters) to have intense relationships characterized by both positive and negative features (Tucker, McHale & Crouter, 2001), it may be that the quality of sibling relationships has a larger impact on the emotional adjustment of members of mixed-gender dyads. Thus, we predicted that the association between sibling relationship qualities and emotional adjustment would be strongest for emerging adults and adolescents with an opposite-gender sibling, and for females, who tend to be more sensitive to relationship difficulties than males (Rudolph, 2002).

Financial dependence. To date, there has been only a limited investigation of the implications of emerging adults' financial dependence on parents for individual development (Padilla-Walker et al., 2012), and thus, the implications of this for emotional adjustment is currently unknown. We therefore proposed the following question:

RQ 2E: Are the associations between family relationships and emotional adjustment moderated by emerging adults' financial dependence on parents?

For emerging adults who are financially dependent on their families, their family relationships should remain more salient and thus continue to exert more influence on their individual development. This, coupled with the fact that emerging adults who are financially dependent are at greater risk for developing other types of adjustment problems (e.g., externalizing; Padilla-Walker et al., 2012), led us to predict that the associations between these aspects of family relationships and emotional adjustment would be stronger for more financially dependent emerging adults than those who were less financially dependent.

Academic/vocational identity achievement. For college students, a successful transition to adulthood also involves excelling academically and achieving a sense of vocational identity. Having a high academic achievement is particularly important for this group because it is an indicator of desirable traits for the work place or post-graduate education: the development of a specific skill set, and motivation to achieve (Roth et al., 1996). Also important for work-related endeavors is a vocational identity, defined by Holland, Johnston and Asama (1993, p. 1) as the possession of a “clear and stable picture of one’s goals, interests, and talents,” which makes one more likely to be able to make, and be confident in, their career-related decisions. Thus, greater academic and vocational identity achievement help pave the way for obtaining and succeeding in competitive positions in the workforce.

An important question is how the family might foster these achievements for emerging adults. While there is no doubt that parents are integral in promoting academic success during childhood and adolescence, multiple theorists including Bratcher (1982) and Grotevant and Cooper (1988) have proposed that parent-child relationships should

continue to play a dynamic role in vocational decisions and outcomes across the lifespan. Although parent-child relationships should become more distant as emerging adults explore new opportunities and gain increasing autonomy (Tanner, 2006), an attachment theory framework suggests that secure attachment relationships with parents, and even siblings, should persist beyond adolescence, and thereby continue to benefit development (Ainsworth, 1989). First, positive and supportive relationships with parents and siblings should enhance emerging adults' confidence in their abilities, thereby promoting academic achievement (Bandura, Barbaranelli, Caprara & Pastorelli, 1996). Second, maintaining positive and secure relationships with family members should allow emerging adults to use these attachment figures as a secure base from which to effectively explore and solidify their vocational identity (Grotevant & Cooper, 1988). As such, high-quality relationships with parents and siblings should predict greater academic and vocational identity achievement for emerging adults over time.

Adolescence. A large body of research has emphasized the important role that parents play in their children's academic success during childhood and adolescence. Much of this research has highlighted the importance of active parental involvement, monitoring (Spera, 2005; Steinberg, Elmen & Mounts, 1989), and open communication (Masselam, Marcus & Stunkard, 1990). The quality of parent-child relationships has also been indicated as important, as the presence of warmth and support (Chen, Liu & Li, 2000) along with low levels of conflict (Dotterer, Hoffman, Crouter & McHale, 2008), are also related to improvements in academic achievement over time. Mothers, fathers, and even older siblings, are also important sources of advice for adolescents that help

bolster their confidence in their future educational success and vocational decisions (Tucker, Barber & Eccles, 1997; 2001).

Emerging Adulthood. By the time that youth enter college, however, the active involvement of the family in academic life is much less pronounced, and in some cases even precluded. In fact, in the United States, the Family Educational Rights and Privacy Act (FERPA; 1974) prohibits the disclosure of college students' educational records to their family members without the explicit consent of the student. However, despite the lower involvement of parents in college students' academic affairs, there is evidence that college students who maintain a supportive relationship with their parents experience greater academic achievement, even beyond the influence of support from friends and romantic partners (Cutrona, Cole, Colangelo, Assouine & Russell, 1994). Positive family relationships may also enhance college students' vocational decisions. Those with stronger attachment relationships to their mothers and fathers tend to engage in more career-oriented exploration (Ketterson & Bustein, 1997), and female college students tend to develop stronger vocational identities when they have warm relationships with their parents (Graef, Wells, Hyland & Muchinsky, 1985). There has even been some suggestion that siblings may play a positive role in vocational outcomes, with low levels of conflict (Graef et al., 1985) and high levels of support from older siblings (Schultheiss, Palma, Predragovich & Glasscock, 2002) benefitting the development of college students' vocational identity.

Despite the wealth of research linking parents to academic success both concurrently and longitudinally during childhood and adolescence (Spera, 2005), over-time linkages between family relationships and college students' academic and vocational

outcomes have yet to be examined. The types of family involvement that may predict positive outcomes during emerging adulthood also likely differ from those that are beneficial earlier in development. Although emerging adults may still rely on their parents to help fund their education, they are technically autonomous in their academic and career-related decisions. Therefore, it is likely the case that the inherent quality and maturity of their relationships with their parents will be the most important predictor of their academic and vocational success.

Also missing from previous research is a consideration of how siblings may contribute to positive academic and vocational outcomes over time. Similar to peer relationships in that they are quite egalitarian by early adulthood (Furman & Buhrmester, 1992), yet protected from dissolution by the norms of kinship, siblings may be able to offer unique forms of academic and vocational support. Older siblings in particular may have a unique perspective to offer their younger siblings in that they may have recently faced similar academic challenges and vocational decisions. Thus, the presence of high-quality relationships with both parents *and* siblings may have important benefits for emerging adults' academic achievement and vocational identity achievement over time. We proposed the following research question:

RQ 3A: Do high-quality relationships (high communication, high positivity, low negativity, low sibling relative power, and high self-disclosure) with mothers, fathers and siblings during the first year of college predict academic achievement and vocational identity achievement at the fourth year of college?

Work from both family systems (Bracher, 1982) and attachment theory (Ainsworth, 1989) perspectives suggests that the family of origin should continue to have a significant

influence on academic and vocational patterns and beliefs during the post-secondary education period. If emerging adults are able to maintain positive relationships with their parents and siblings during their first year of college, then this should have a continued positive effect on their academic work and the development of an integrated vocational identity (Erikson, 1968). Specifically, we expected that emerging adults who reported higher levels of positivity, lower levels of negativity, and lower sibling relative power in their relationships during their first year of college would report higher academic achievement and vocational identity achievement by their fourth year of college. We expected this to be the case for the emerging adults in Studies 1 and 2, as well as for the adolescents participating in Study 2.

How often emerging adults communicate and self-disclose to their family members may have a unique set of implications for these outcomes, however. During adolescence, high levels of parental involvement and monitoring are consistently related to better academic functioning (Spera, 2005). Thus, for the adolescents participating in Study 2, we expected that higher levels of communication and self-disclosure to siblings to be related to higher academic and vocational identity achievement over time. By emerging adulthood, however, frequent communication with family members is much less normative (Scharf, Shulman & Avigad-Spitz, 2005; White, 2001), and continued high levels may indicate a failure to develop healthy levels of autonomy (O'Connor, Allen, Bell & Hauser, 1996). Indeed, there has been a recent surge in the *over*-parenting (“helicopter parenting”) of college students, where parents maintain high levels of contact, monitoring and control over multiple aspects of their children’s lives. This type of parenting appears to have detrimental effects for students’ engagement with school

(Padilla-Walker & Nelson, 2012), autonomy, emotional adjustment and overall well-being (Schiffrin, Liss, Miles-McLean, Geary, Erchull & Tashner, 2014). Thus, maintaining high levels of communication and self-disclosure during emerging adulthood may inhibit academic achievement and the development of a fully integrated vocational identity. On the other hand, maintaining some communication with family members (rather than none) and continuing to voluntarily disclose to them about personal issues may also be a sign of positive relational functioning that may enhance one's confidence in their academic endeavors and in making vocational decisions. Thus, in both Study 1 and 2, we did not put forth specific hypotheses regarding the relationship between communication and self-disclosure to parents and siblings, and academic and vocational identity achievement.

It is also possible that one youth's perception of their sibling relationship quality may have important implications for their sibling's academic and vocational outcomes. Although this is not something that has been investigated previously, both siblings' interpretations of the same relationship may be unique and therefore have different implications. Because we had data from two siblings within the same family in our Study 2 sample, we proposed the following question:

RQ 3B: Do high-quality sibling relationships (high communication, high positivity, low negativity, low sibling relative power, and high self-disclosure), as reported by one sibling at Time 1, predict academic achievement and vocational identity achievement for the other sibling at Time 2?

This question is highly exploratory in nature, so we did not put forth any formal hypotheses. However, if siblings perceive their relationship in similar ways, then we

would expect to see similar effects of sibling relationships on achievement as we would expect to see based on Research Question #3A. If siblings disagree, the effects would likely be different.

Ordinal position. As in our investigation of family influences on emotional adjustment, we were also interested in whether the academic and vocational outcomes of the first-born and second-born youth in our studies were similarly influenced by the quality of their family relationships. While the role of older versus younger siblings has been an issue of interest for many scholars, potential differences in the ways that parent-child relationships are related to multiple children within their family have not been considered previously. We therefore proposed the following question:

RQ 3C: Are the associations between family relationships and academic and vocational identity achievement moderated by ordinal position?

Beginning with the role of ordinal position in terms of sibling influences on academic and vocational identity achievement, we expected that these associations would be stronger for later-born than earlier-born siblings in both studies. Younger siblings are more likely to solicit and receive advice from their older siblings than vice versa in both adolescence (Buhrmester, 1992; Tucker et al., 1997) and emerging adulthood (Schultheiss et al., 2002). Although sibling relationships do become increasingly egalitarian with age (Buhrmester & Furman, 1990), older siblings still often have the advantage of previous related experiences that they may be able to use to guide their younger siblings – experiences that younger siblings would not be able to recount to their older siblings. Thus, the academic and vocational success of younger siblings should benefit the most by

having high-quality relationships with their older siblings who may be able to impart some wisdom.

Due to the lack of research investigating how parent-child relationships may have unique implications for earlier- and later-born children, we approached the potential moderating role of ordinal position in terms of parental influence from an exploratory perspective. It is possible that the quality of parent-child relationships would be equally important for both first- and second-borns' academic and vocational identity achievement. However, it is also possible that later-born children would have a larger number of resources from which to gain support for their academic and vocational endeavors than earlier-born children, since earlier-born children have the additional resource of an older sibling. Thus, we expected that the quality of parent-child relationships may be more important for the academic and vocational functioning of first-borns than for second-borns.

Gender. We were also interested to see whether these associations were moderated by gender, given gender differences in what boys and girls value in their close relationships (Maccoby, 1998), and their likelihood of utilizing advice received from their family members (Greene & Grimsley, 1990; Tucker et al., 1997). We therefore proposed the question:

RQ 3D: Are the associations between family relationships and academic and vocational identity achievement moderated by gender?

Although some aspects of parenting appear to be more important for boys' academic achievement than girls' during adolescence (Crouter, MacDermid, McHale & Perry-Jenkins, 1990), the quality of family relationships appears to have similar implications for

males and females' academic achievement during emerging adulthood (e.g., Cutrona et al., 1994). However, in terms of implications for vocational identity achievement, girls appear to benefit from their relationships with family members (especially mothers and sisters) more than boys (Graef et al., 1985; Tucker et al., 1997). Therefore, while we did not necessarily expect gender to moderate the associations for academic achievement given the lack of such associations in recent previous research, we did expect that the associations for vocational identity achievement would be stronger for girls than for boys, in both Study 1 and 2.

Financial Dependence. One benchmark for achieving a fully autonomous, adult status is financial independence (Arnett, 2000). However, for emerging adults who maintain dependence on the family in this domain, the family should remain a particularly salient aspect of their life due to continued negotiations of the terms of this dependence or feelings of obligation to maintain an active relationship. We were therefore interested in whether maintaining some level of financial dependence on parents moderated the potential relationship between family relationship quality and academic and vocational identity development:

RQ 3E: Are the associations between family relationships and academic and vocational identity achievement moderated by emerging adults' financial dependence on parents?

Because financially dependent emerging adults should maintain closer ties to their family members than those who are less dependent, we expected that the association between family relationships and academic achievement would be strongest for those who are more financially dependent. However, theory suggests that low differentiation from the

nuclear family inhibits vocational identity development (Zingaro, 1983), and Padilla-Walker and colleagues' (2012) empirical investigation of the role of financial dependence on parents during college corroborates this notion. We therefore expected that for financially dependent emerging adults, high-quality family relationships would result in lower vocational identity achievement over time, while less dependent emerging adults with high-quality family relationships would report stronger vocational identity achievement.

The Present Study

The present study investigated the longitudinal course and implications of parent-child and sibling relationships for key developmental outcomes across emerging adulthood. In Study 1, we investigated the ways in which communication, positivity, negativity, relative power, and self-disclosure with mothers, fathers and siblings change from a sample of college students' first to fourth years of undergraduate study. We also investigated how these relationship qualities during the first year of college were related to individual functioning by the fourth year of college in two important domains: emotional adjustment, and academic and vocational identity achievement. Importantly, we examined the potential moderating effects of key family constellation variables (gender, birth order) and financial dependence on parents, on these associations.

In Study 2, we asked the same research questions that were proposed in Study 1, but narrowed our focus to focus on only the sibling relationship, limited our sample of college students to a smaller subset of those who were the first-born child in their family, and included an additional investigation of these students' second-born adolescent siblings to investigate potential within-family differences in these associations. We also

extended our level of analysis to the level of the dyad to obtain a more comprehensive picture of how siblings may impact development during late adolescence and emerging adulthood.

CHAPTER 2

METHOD (STUDY 1)

Participants

First-year college students were recruited through the first-author's departmental undergraduate data pool at a large public university in the Midwestern U.S. during the 2012-2013 academic year, where at the start of the fall and spring semester students completed an online battery of inclusion criteria for several studies within the department. Students were invited via e-mail to participate in the present study if they were the first- or second-born child in their family and not a twin. Of 727 college students contacted, 260 agreed to participate (35.76%).

At Wave 1, our final sample included 139 first-born and 121 second-born college freshmen (101 males, 159 females) averaging 18.52 years of age ($SD = .87$; range 17-27). Most participants reported living in university housing (including residence halls and fraternity and sorority houses) during their first year of college (92.3%), with 6.2% living in an off-campus apartment, and 1.5% living at home with their parents. Most participants reported White ethnicity (86.9%; 5.8% Black or African American; 3.8% Asian or Pacific Islander; 2.3% Hispanic; 0.8% Other, 0.4% Not reported).

Three years later at Time 2, 57.7% ($n = 150$) of the original sample agreed to continue their participation. A larger percentage of males discontinued their participation compared to females ($t(258) = -2.41, p = .017$), though a similar number of males ($n = 52$) and females ($n = 58$) dropped out of the study. In addition, participants who discontinued their participation reported less negative relationships with their mothers (t

(258) = -2.63, $p = .009$), and less communication with fathers ($t(258) = -2.04$, $p = .042$) at Time 1 compared to those who participated at both waves. There were no other differences between those who participated at both waves and those who participated only at Time 1 in terms of demographic or study variables. As described in detail in the Results section, data for those who did not participate at Time 2 were estimated using a multiple imputation procedure so that all of the original sample could be retained for analysis.

Parents of participants. At Time 1, the majority of participants reported that their biological (or adoptive) parents were married to one another (72.3%), while 18.1% reported divorced parents, 7.7% reported that their biological parents had never married one another, and 1.9% reported that one of their parents had been widowed. When answering questionnaires about their relationships with their mothers, 98.1% reported about their biological mother (0.8% adoptive mother; 0.4% step-mother; 0.4% other; 0.4% not reported). When answering questions about their relationships with their fathers, 95.0% reported about their biological father (0.8% adoptive father; 2.7% step-father; 0.8% deceased or unknown; 0.8% not reported).

At Time 1, most participants reported living more than 30 minutes away from their mothers (92.7%) and fathers (91.2%) during the school year. More than half of mothers had completed either a bachelor's (54.6%) or graduate (15.4%) degree, 16.9% had completed some college, 12.3% graduated from high school, and 0.8% had not completed high school. More than half of fathers had completed either a bachelor's (41.9%) or graduate (30.4%) degree, 15.0% had completed some college, 10.4%

graduated from high school, and 1.2% had not completed high school (1.2% not reported). Median annual parental income ranged from \$85,000 to \$99,999.

Siblings of participants. In the present study, we were primarily interested in studying the relationships between first- and second-born siblings in the family. Thus, first-born participants reported about their relationship with their second-born sibling, and second-born participants reported about their relationship with their first-born sibling. Participants were members of the following first-born/second-born sibling gender compositions: older brother-younger brother ($n = 48$), older sister-younger sister ($n = 78$), older brother-younger sister ($n = 63$), older sister-younger brother ($n = 75$). At Time 1, younger siblings of first-born participants averaged 15.56 years of age ($SD = 1.76$) and older siblings of second-born participants averaged 21.64 years of age ($SD = 2.27$). On average, first- and second-born siblings were separated in age by 3.12 years ($SD = 1.79$), and 84.6% of participants reported living more than 30 minutes away from their sibling during the school year. Total sibship size averaged 2.64 ($SD = .86$) children, with 56.2% of participants reporting coming from a two-child family (28.1% three-child family, 11.2% four-child family, 4.6% five or more children in their family).

Procedures

At Time 1, eligible participants who agreed to participate for class credit were sent an individualized link to an online questionnaire that was completed at home, where they gave their consent and answered demographic questions and items about several aspects of close relationships, including those described below. Students received class credit for participating.

During the fall of 2015 and spring of 2016 (when participants were in the equivalent of their 4th year of college), participants were re-recruited via e-mail, phone and mail to complete another online questionnaire at home, where they gave their consent and answered demographic questions and items about several aspects of close relationships as described below. All participants received a \$25 gift card to Amazon.com and the chance to win an additional gift card for their participation.

Measures

Relationship Quality. The Network of Relationships Inventory (NRI; Furman & Buhrmester, 1985) is a 39-item measure (composed of 13 3-item subscales) that was used to assess mother-child, father-child and sibling relationship quality. Previous research (Adams & Laursen, 2007; Furman, 1996) has illustrated that the 13 subscales load on three factors: relationship positivity (affection, companionship, instrumental help, intimacy, nurturance, reliable alliance, support, and admiration), relationship negativity (conflict, criticism, antagonism) and relative power (relative power, dominance). Sample items included “How much do you turn to this person for support with personal problems?” (positivity), “How much do you and this person get annoyed with each other’s behavior?” (negativity), and “How much does this person tell you what to do?” (relative power).

Participants reported separately how often their mother, father and sibling exhibited each of the items in the measure on a scale from 1 (little or none) to 5 (the most). First-born participants rated the quality of their relationship with their second-born sibling; second-born participants rated the quality of their relationship with their first-born sibling. Only the positivity and negativity subscales were used in analysis for

relationships with mothers and fathers, while positivity, negativity and relative power were examined with regard to sibling relationships.

Cronbach alphas were as follows at Time 1 and Time 2, respectively: mother positivity (.93; .91), mother negativity (.93; .94), father positivity (.94; .93), father negativity (.92; .92), sibling positivity (.94; .94), sibling negativity (.94; .93), sibling relative power (.85; .87). Mean scores for positivity, negativity and relative power (separately for mothers, fathers and siblings) were used in the final analyses. Higher values of the positivity and negativity scale indicated greater positivity and greater negativity. Higher values of the relative power scale indicated that participants perceived their sibling to have greater levels of power within their relationship.

Communication. A scale previously used to examine emerging adult sibling communication (Killoren, Alfaro, Lindell & Streit, 2014) assessed the frequency of emerging adults' communication to mothers, fathers and siblings via 7 separate communication methods (e.g., face-to-face, on the phone, texting, e-mail, sending a private message or chatting on Facebook). Participants indicated how frequently they utilized each communication method (separately for mothers, fathers and siblings) from 0 (not applicable/never) to 5 (multiple times per day). Mean scores of the seven items, separately by family member, were used in final analyses. Higher values indicated more frequent communication. Cronbach alphas were as follows for Time 1 and Time 2, respectively: mothers (.60; .69), fathers (.68; .68), siblings (.76; .70).

Self-Disclosure. A 29-item scale adapted from previous work on parent-adolescent disclosure (Smetana et al., 2006; Smetana, Villalobos, Tasopoulos-Chan, Gettman, & Campione-Barr, 2009; Yau, Tasopoulos-Chan, & Smetana, 2009) assessed

participants' self-disclosure toward their mothers, fathers and siblings across three social domains (Smetana, 2006; Turiel, 2002): personal (13 items), prudential (6 items), and multifaceted (9 items). In previous work, items asked adolescents to rate their voluntary disclosure of each topic to their parents, but in the present study, participants also rated their frequency of disclosing each topic to their sibling from 1 (never tell) to 5 (always tell). Items were updated to be applicable to college students (e.g., "Whether I join any clubs, groups or sports teams") rather than adolescents (e.g., "Whether I go out for after school sports or clubs"). Sample items included "What I talk about on the phone" (personal domain), "Whether I drink beer, wine, or other alcoholic drinks" (prudential), and "Whether I finish my homework or assignments" (multifaceted). For the present study, items were collapsed across all domains to create an overall measure of self-disclosure. Participants had the option of indicating that they had never done the activity mentioned in each item, and those responses were coded as missing values. See

Cronbach alphas at Time 1 and Time 2 for self-disclosure were as follows: mothers (.96; .96), fathers (.96; .97), siblings (.96; .98). Mean scores of participants' completed items for mother, father and sibling self-disclosure were used in the final analyses, with higher values indicating more frequent self-disclosure.

Depression. The Center for Epidemiologic Studies Depression Scale (CES-D; Radloff, 1977) is a 20-item scale used to assess depressive symptoms on a scale from 1 (rarely or none of the time) to 4 (most or all of the time). Sample items included "I felt lonely" and "I talked less than usual." Cronbach alphas at Time 1 and Time 2 were .90 and .89, respectively. Mean scores (with some items reverse-scored) were used in the final analyses, with higher values indicating greater depression. Mean reports of

depressive symptoms were as follows: $M = 1.73$, $SD = .46$ (Time 1); $M = 1.69$, $SD = .36$ (Time 2).

Anxiety. The Revised Children's Manifest Anxiety Scale (Reynolds & Richmond, 1978) is a 28-item scale that assesses anxiety symptoms on a scale from 1 (not at all true of me) to 5 (really true of me). Sample items included "I am nervous" and "I am afraid of a lot of things." Cronbach alphas at both Time 1 and Time 2 were .93. Mean scores were used in the final analyses, with higher values indicating greater anxiety. Mean reports of anxiety were as follows: $M = 2.17$, $SD = .61$ (Time 1); $M = 2.21$, $SD = .50$ (Time 2).

Self-Esteem. The Rosenberg Self-Esteem Scale (Rosenberg, 1989) is a 10-item scale that assesses global self-esteem on a scale from 1 (strongly disagree) to 5 (strongly agree). Sample items included "I certainly feel useless at times" and "On the whole, I am satisfied with myself." Cronbach alphas at Time 1 and Time 2 were .92 and .91, respectively. Mean scores (with some items reverse-scored) were used in the final analyses, with higher values indicating higher self-esteem. Mean reports of self-esteem were as follows: $M = 4.06$, $SD = .76$ (Time 1); $M = 4.12$, $SD = .56$ (Time 2).

Academic Achievement. Participants reported their previous semester's grades (or high school grades if they did not yet have a semester's worth of college coursework complete) at Time 1 and Time 2. Possible responses included "mostly As" (4), "mostly Bs" (3), "mostly Cs" (2), "mostly Ds" (1), "mostly Fs" (0). Mean reports of academic achievement were as follows: $M = 3.48$, $SD = .60$ (Time 1); $M = 3.44$, $SD = .60$ (Time 2).

Vocational Identity. The Vocational Identity Scale (Holland, Daiger & Power, 1980) is an 18-item scale that measures the strength of one's vocational identity. At Time

2, participants responded 0 (True) or 1 (False) to 18 items related to the possession of a vocational identity; scores were summed across all items, with lower scores indicating a stronger vocational identity. Sample items included “No single occupation appeals strongly to me” and “If I had to make an occupational choice right now, I’m afraid I would make a bad choice.” Cronbach alpha at Wave 2 was .91. Mean reports of vocational identity were as follows: $M = 6.50$, $SD = 3.89$ (Time 2).

Financial Dependence. Participants’ level of financial dependence on their parents was assessed at Wave 2 using a scale adapted from Padilla-Walker, Nelson and Carroll (2012). Participants responded to 5 items asking how much money their parents provided for their tuition, school expenses, housing expenses, daily expenses and entertainment. Participants responded from 1 (none) to 4 (all), with higher scores indicating greater financial dependence on parents. Cronbach alpha was .80, and mean scores were used in analyses. Higher values indicated greater financial dependence on parents. Mean reports of financial dependence on parents were as follows: $M = 2.71$, $SD = .59$ (Time 2).

CHAPTER 3

RESULTS (STUDY 1)

Analytical Plan

Several analytical strategies were employed to address our three primary research aims. First, we investigated longitudinal changes in family relationships (Aim 1) via a series of repeated-measures ANCOVAs. Specifically, to examine over-time changes in parent-child relationship qualities (communication, positivity, negativity, self-disclosure) we computed four separate 2 (Time; Time 1 vs. Time 2) X 2 (Parent Gender; Mother vs. Father) X 2 (Ordinal Position; 1st-born vs. 2nd-born) X 2 (Emerging Adult Gender; Male vs. Female) ANCOVAs. Sibling Age Difference, Time 1 Distance from Mother, and Time 2 Financial Dependence on Parents were entered as covariates, and Time and Parent Gender were entered as repeated-measures. To examine over-time changes in sibling relationship qualities (communication, positivity, negativity, relative power, self-disclosure), we computed five separate 2 (Time; Time 1 vs. Time 2) X 2 (Ordinal Position; 1st-born vs. 2nd-born) X 2 (Gender; Male vs. Female) X 2 (Sibling Gender; Male vs. Female) ANCOVAs. Sibling Age Difference, Time 1 Distance from Sibling, and Time 2 Financial Dependence on Parents were entered as covariates, and Time was entered as a repeated-measures variable. Significant interactions were probed via correlations and *t*-tests, and results are only reported if post-hoc examinations revealed significant effects. See Tables 1 and 2 for means and standard deviations of relationship quality variables with parents and siblings, respectively.

Next, we investigated potential longitudinal associations between family relationship qualities and emotional adjustment (Aim 2) and achievement (Aim 3). Mother-child and father-child relationship qualities were tested in the same models via multilevel modeling given that college students' reports of mothers and fathers were nested within families. Specifically, we examined whether parent-child relationship quality at Time 1 (communication, positivity, negativity, self-disclosure in separate models) was associated with emerging adults' emotional adjustment (depression, anxiety, self-esteem) and achievement (academic achievement, vocational identity achievement) at Time 2. Within each model, we also examined the moderating roles of emerging adult and parent gender (0 = *female*, 1 = *male*), ordinal position (0 = *second-born*, 1 = *first-born*), and emerging adults' financial dependence on parents. All models also controlled for emerging adults' age at Time 1, distance from their parents at Time 1, and the Time 1 report of each model's outcome variable (with the exception of vocational identity, which was not collected at Time 1).

For each association, models were first run with all possible interactions between relationship quality, emerging adult gender, parent gender, ordinal position, and financial dependence (up through five-way interactions). If the five-way interaction for that model was not significant, the model was re-run with only four-way interactions and below; if those four-way interactions were all not significant, the model was re-run with only three-way interactions and below; if those three-way interactions were all non-significant, the model was re-run with only two-way interactions and below; if those interactions were not significant, a model with main effects only was retained as the final model. When interactions that were not subsumed under higher-order interactions were significant,

simple slopes were calculated according to procedures outlined by Aiken and West (1991). For parsimony, interactions are only discussed if simple slope analyses yielded significant results, and if they are not subsumed under a significant higher-order interaction.

Sibling relationship qualities were tested in separate hierarchical linear regression models to examine associations with emotional adjustment (Aim 2; depression, anxiety, self-esteem) and achievement (Aim 3; academic achievement, vocational identity). Specifically, in each model, the first step included control variables of emerging adults' age at Time 1, distance from their sibling at Time 1, and the Time 1 report of each model's outcome variable (with the exception of vocational identity, which was not collected at Time 1). The second step included emerging adult gender, sibling gender, ordinal position, and financial dependence on parents. The third step included the main effect of sibling relationship quality (communication, positivity, negativity, relative power, self-disclosure included in separate models). The fourth step included all possible 2-way interactions between relationship quality and the moderators. The fifth step included all possible 3-way interactions between relationship quality and the moderators. The sixth step included all possible 4-way interactions between relationship quality and the moderators. Finally, the seventh step included the 5-way interaction between relationship quality and the moderators. The final models were determined based on the significance of *F*-change from the previous step. Interactions were probed following procedures outlined by Aiken and West (1991), and interactions are only discussed if simple slope analyses yielded significant results.

Missing data. Because of sample attrition across the two waves of data collection, as well as non-completion of all questionnaire items, there was a fair amount of missing data in the present study. At Wave 1, missing data on measures of parent-child and sibling relationship quality, depression, anxiety, and self-esteem ranged from 0.38-1.38% missing, and Little's MCAR test indicated that all of these data were missing completely at random (relationship quality: $X^2 [4835] = 4923.71, p = .183$; depression: $X^2 [207] = 234.98, p = .088$; anxiety: $X^2 [615] = 614.31, p = .500$; self-esteem: $X^2 [45] = 45.51, p = .451$). For the communication and self-disclosure measures, participants had the option to indicate if they never communicated using a particular type of technology, or never discussed a particular topic, respectively, so there was greater missingness (communication: 21.22%, self-disclosure: 17.63%).

At Wave 2, missing data from participating emerging adults on measures of parent-child and sibling relationship quality, depression, anxiety, self-esteem, vocational identity, and financial dependence on parents ranged from 0.48-6.19% missing, and Little's MCAR test indicated that all of these data except the measure of self-esteem were missing completely at random (relationship quality: $X^2 [2022] = 2096.66, p = .121$; depression: $X^2 [94] = 98.52, p = .355$; anxiety: $X^2 [349] = 296.38, p = .981$; self-esteem: $X^2 [36] = 64.073, p = .003$; vocational identity: $X^2 [85] = 65.44, p = .943$; financial dependence: $X^2 [20] = 15.24, p = .762$). Once again, missingness was greater for the measures of communication (22.72%) and self-disclosure (19.26%).

Prior to analysis, missing data were estimated using a multiple imputation approach in order to retain the full sample for analysis (Enders, 2010). Specifically, we first estimated data (individual items) that were missing completely at random (MCAR)

due to participants not completing all items. This included Wave 1 reports of relationship quality, depression, anxiety, and self-esteem, and Wave 2 reports of these variables from participants who completed Wave 2. Then, data (mean-level variables) were estimated for those participants who did not continue their participation at Wave 2. By separating our imputation process into this two-step process based on the reason for missingness, we hoped to produce the most accurate estimations. Based on Ender's (2010) recommendations, we produced 20 unique data sets using a Markov chain Monte Carlo (MCMC) methodology, and pooled the imputed values for data analysis. Auxiliary variables of age, gender, birth order, sibling gender, and distance from mothers or siblings were included in all imputation procedures. Wave 1 measures were included as additional auxiliary variables during the estimation of Wave 2 data.

Longitudinal Changes in Parent-Child Relationships (Aim 1)

Means and standard deviations of variables related to parent-child relationships can be found in Table 1, and correlations between variables can be found in Table 2.

Communication. For the ANCOVA examining parent-child communication, there was a significant Time x Distance Interaction, $F(1, 253) = 5.37, p = .021, \eta_p^2 = .02$. Although communication did not change significantly from Time 1 to Time 2, emerging adults did report greater communication with parents at Time 1 the closer they lived to their parents, $r = .14, p = .020$.

There was also a significant Parent Gender X Emerging Adult Gender interaction, $F(1, 253) = 6.75, p = .010, \eta_p^2 = .03$. Overall, females reported greater communication with mothers than males ($t(258) = -2.01, p = .046$), but both males and females reported

greater communication with mothers than with fathers ($ts (100-158) = 7.15-8.73, ps < .001$).

Finally, there was a significant Parent Gender X Financial Dependence interaction, $F (1, 253) = 7.25, p = .008, \eta_p^2 = .03$. Overall, emerging adults who were more financially dependent on their parents reported greater communication with fathers compared to those who were less financially dependent ($t (258) = -1.99, p = .048$; Low financial dependence $M = 2.13, SD = .46$; High financial dependence $M = 2.24, SD = .46$).

Positivity. For the ANCOVA examining parent-child positivity, there was a significant Parent Gender X Emerging Adult Gender interaction, $F (1, 253) = 9.92, p = .002, \eta_p^2 = .04$. Overall, females reported greater positivity with mothers than males ($t (258) = -3.66, p = .000$), but both males and females reported greater positivity with mothers than with fathers ($ts (100-158) = 5.27-8.50, ps < .001$).

There was also a significant main effect of Financial Dependence, $F (1, 253) = 7.66, p = .006, \eta_p^2 = .03$, but this was qualified by a significant Parent Gender X Financial Dependence interaction, $F (1, 253) = 6.96, p = .009, \eta_p^2 = .03$. Emerging adults who were more financially dependent on their parents reported greater positivity with fathers compared to those who were less financially dependent ($t (258) = -2.46, p = .015$; Low financial dependence $M = 3.35, SD = .59$; High financial dependence $M = 3.52, SD = .56$).

Negativity. For the ANCOVA examining parent-child negativity, a significant Parent Gender X Financial Dependence interaction, $F (1, 253) = 12.88, p < .001, \eta_p^2 = .05$, but this was qualified by a significant Time X Parent Gender X Financial

Dependence interaction, $F(1, 253) = 3.97, p = .047, \eta_p^2 = .02$. At Time 1, those who were more financially dependent on their parents as indicated by a median split (but not those who were less financially dependent) reported greater negativity with mothers than fathers ($t(130) = 3.70, p < .001$; Mothers $M = 2.07, SD = .89$; Fathers $M = 1.78, SD = .70$). At Time 2, emerging adults reported greater negativity with mothers than fathers regardless of their level of financial dependence ($t(128) = 2.52-4.96; ps < .013$). In addition, emerging adults who reported low financial dependence reported a significant decline in negativity with fathers from Time 1 ($M = 1.95, SD = .82$) to Time 2 ($M = 1.76, SD = .58$), $t(128) = 2.75, p = .007$.

Self-disclosure. For the ANCOVA examining self-disclosure to parents, there was a significant main effect of Financial Dependence, $F(1, 253) = 9.23, p = .003, \eta_p^2 = .04$. Emerging adults who were more financially dependent on their parents ($M = 2.86, SD = .58$) reported greater self-disclosure overall compared to those who were less financially dependent ($M = 2.67, SD = .56$), $t(258) = -2.46, p = .015$.

There was also a significant main effect of Emerging Adult Gender, $F(1, 253) = 6.08, p = .014, \eta_p^2 = .023$, but this was qualified by a significant Parent Gender X Emerging Adult Gender interaction, $F(1, 253) = 13.28, p < .001, \eta_p^2 = .05$. Overall, females reported greater self-disclosure to mothers than males ($t(258) = -4.09, p < .001$), but both males and females reported greater self-disclosure to mothers than to fathers ($ts(100-158) = 6.11-9.29, ps < .001$).

Summary. Overall, in the analyses examining longitudinal changes in parent-child relationships, there were few significant changes across emerging adulthood, however, there were significant differences in relationship quality based on the gender of

parent and emerging adult, and emerging adults' level of financial dependence. Overall, emerging adults reported more communication, positivity and self-disclosure, and lower-negativity, with mothers compared to fathers, and females reported stronger relationships with mothers than did males. In addition, emerging adults who were more financially dependent with their parents generally reported more active and affectively intense relationships compared to those who were less financially dependent (e.g., greater communication, positivity, negativity and self-disclosure).

Longitudinal Changes in Sibling Relationships (Aim 1)

Means and standard deviations of variables related to sibling relationships can be found in Table 3, and correlations between variables can be found in Table 4.

Communication. For the ANCOVA examining communication to siblings, there was a significant main effect of age difference, $F(1, 247) = 5.48, p = .020, \eta_p^2 = .02$, such that communication decreased as age difference increased ($r = -.14, p = .025$).

There was also a significant Emerging Adult Gender X Sibling Gender interaction, $F(1, 247) = 35.24, p < .001, \eta_p^2 = .13$. Tukey post-hoc comparisons indicated that males communicated with brothers more than sisters ($p = .002$), and more than females did with brothers ($p = .039$). In addition, females communicated with sisters more than brothers ($p < .001$), and more than males did with sisters ($p < .001$).

Positivity. For the ANCOVA examining positivity, there was a significant Emerging Adult Gender X Sibling Gender interaction, $F(1, 247) = 21.70, p < .001, \eta_p^2 = .08$. Tukey post-hoc comparisons indicated that females reported more positive relationships with sisters than with brothers ($p < .001$), and more than males did with sisters ($p < .001$).

Negativity. There were no significant effects in the ANCOVA examining negative sibling relationship quality.

Relative power. For the ANCOVA examining relative power, there was a significant main effect of ordinal position, $F(1, 247) = 7.83, p = .006, \eta_p^2 = .03$, but this was qualified by a significant Time X Birth Order interaction, $F(1, 247) = 7.12, p = .008, \eta_p^2 = .03$. At Time 1, younger siblings reported that their older siblings held significantly more power than older siblings reported about their younger siblings ($t(235.11) = -4.12, p < .001$), and younger siblings reported significant decreases in their older sibling's relative power from Time 1 to Time 2 ($t(120) = 3.43, p < .001$).

There was also a significant main effect of Financial Dependence on Parents, $F(1, 247) = 6.21, p = .013, \eta_p^2 = .03$. Emerging adults with greater financial dependence also reported greater power held by their siblings within their relationship ($r = .16, p = .010$).

Self-disclosure. For the ANCOVA examining self-disclosure to siblings, there was a significant main effect of Emerging Adult Gender, $F(1, 247) = 5.56, p = .019, \eta_p^2 = .02$, but this was qualified by two interactions. First, there was a significant Time X Emerging Adult Gender interaction, $F(1, 247) = 11.95, p = .001, \eta_p^2 = .05$. At Time 1, males reported significantly less self-disclosure than females ($t(258) = -3.70, p < .001$), but males' self-disclosure significantly increased from Time 1 to Time 2 ($t(100) = -4.68, p < .001$).

There was also a significant Emerging Adult Gender X Sibling Gender interaction, $F(1, 247) = 34.08, p < .001, \eta_p^2 = .12$. Tukey post-hoc comparisons indicated that males disclosed significantly more to brothers than to sisters ($p = .031$), and that

sisters disclosed significantly more to sisters than to brothers ($p < .001$) or than males did to sisters ($p < .001$). Females disclosed marginally more to sisters than males did to brothers ($p = .060$).

There were two additional main effects. A significant main effect of Age Difference ($F(1, 247) = 8.17, p = .005, \eta_p^2 = .03$) indicated that self-disclosure decreased as age difference increased ($r = -.15, p = .013$). Finally, a significant main effect of Financial Dependence on Parents ($F(1, 247) = 6.29, p = .013, \eta_p^2 = .03$) indicated that self-disclosure increased as financial dependence increased ($r = .14, p = .027$).

Summary. Overall, in the analyses examining longitudinal changes in sibling relationship qualities across emerging adulthood, there were few significant changes over time. However, males did report significant increases in self-disclosure to siblings across emerging adulthood, and sibling relationships generally became more egalitarian over time. There were also significant differences in relationship quality based on the gender of emerging adults and their siblings. Overall, communication, positivity, and self-disclosure was greater among same-gender siblings than mixed-gender siblings. Finally, there were also some differences with regard to age difference and financial dependence on parents that suggested that emerging adults who were closer in age to their siblings and who were more financially dependent on their parents tended to have more involved relationships (i.e., greater communication and self-disclosure, greater relative power held by siblings).

Longitudinal Associations between Parent-Child Relationships and Emotional Adjustment (Aim 2)

Depression. For all models examining associations between parent-child relationship qualities and depression, depression at Time 1 was significantly associated with depression at Time 2. See Table 5 for final model parameter estimates.

Communication. For the final model examining associations between Time 1 parent-child communication and Time 2 depression, there was a significant Birth Order X Emerging Adult Gender X Financial Dependence X Communication interaction. Simple slopes analyses indicated that among older males who were highly financially dependent on their parents, greater communication with parents at Time 1 was associated with greater depressive symptoms at Time 2 ($b = .30, t(487.00) = 2.15, p = .032$).

Positivity. For the final model examining associations between Time 1 parent-child positivity and Time 2 depression, there was a significant Birth Order X Emerging Adult Gender X Financial Dependence X Positivity interaction. Simple slopes analyses indicated that among both older ($b = -.32, t(475.05) = -3.19, p = .002$) and younger ($b = -.26, t(472.84) = -2.85, p = .005$) females with low financial dependence on parents, greater positivity with parents at Time 1 was associated with fewer depressive symptoms at Time 2.

Negativity. For the final model examining associations between Time 1 parent-child negativity and Time 2 depression, there was a significant Emerging Adult Gender X Negativity interaction. Simple slopes analyses indicated that among females, lower negativity at Time 1 was associated with lower depression at Time 2 ($b = .16, t(483.06) = 2.85, p = .005$).

There was also a significant Birth Order X Financial Dependence X Negativity interaction, where simple slopes analyses indicated that among younger emerging adults

with low financial dependence on parents, lower negativity at Time 1 was associated with lower depression at Time 2 ($b = .22, t(490.45) = 2.52, p = .012$).

Finally, there was a significant Birth Order X Emerging Adult Gender X Financial Dependence interaction, where simple slopes analyses indicated that among older males, greater financial dependence on parents at Time 2 was associated with greater depressive symptoms at Time 2 ($b = .35, t(491.91) = 2.93, p = .004$).

Self-disclosure. For the final model examining associations between Time 1 self-disclosure to parents and Time 2 depression, there was a significant Birth Order X Emerging Adult Gender X Financial Dependence X Self-Disclosure interaction. Simple slopes analyses indicated that among both older males ($b = .45, t(486.94) = 2.48, p = .014$) and younger females ($b = .29, t(485.07) = 2.58, p = .010$) who were highly financially dependent on their parents at Time 2, greater self-disclosure at Time 1 was associated with greater depression at Time 2. In contrast, among younger females with low financial dependence on parents, greater self-disclosure at Time 1 was associated with fewer depressive symptoms at Time 2 ($b = -.33, t(485.33) = -3.08, p = .002$).

Summary. Overall, the analyses examining associations between parent-child relationships and depressive symptoms indicated that these relationships have various implications for depressive symptoms, and in many cases this depends on the level of emerging adults' financial dependence on their parents. In particular, among emerging adults who were highly financially dependent on their parents, greater communication and self-disclosure at Time 1 was associated with greater depression. On the other hand, among emerging adults who reported low financial assistance from their parents, greater positivity, lower negativity, and greater self-disclosure were associated with fewer

depressive symptoms. There were some nuanced gender differences in these associations, however.

Anxiety. For all models examining associations between parent-child relationship qualities and anxiety, anxiety at Time 1 was significantly associated with anxiety at Time 2. See Table 6 for final model parameter estimates.

Communication. For the final model examining associations between Time 1 parent-child communication and Time 2 anxiety, there was a significant Birth Order X Emerging Adult Gender X Financial Dependence X Communication interaction. Simple slopes analyses indicated that among older males who were highly financially dependent on their parents at Time 2, greater communication at Time 1 was associated with greater anxiety at Time 2 ($b = .44, t(486.99) = 3.34, p = .001$).

Positivity. For the final model examining associations between Time 1 parent-child positivity and Time 2 anxiety, there was a significant Birth Order X Emerging Adult Gender X Financial Dependence X Positivity interaction. Simple slopes analyses indicated that among older males who were highly financially dependent on their parents at Time 2, greater positivity at Time 1 was associated with greater anxiety at Time 2 ($b = .57, t(486.36) = 2.90, p = .004$). In contrast, for both older ($b = -.27, t(475.49) = -2.82, p = .005$) and younger ($b = -.32, t(473.48) = -3.67, p < .001$) females with low financial dependence, greater positivity at Time 1 was associated with fewer anxious symptoms at Time 2.

Negativity. For the final model examining associations between Time 1 parent-child negativity and Time 2 anxiety, there was a significant Birth Order X Emerging Adult Gender interaction. Simple slopes analyses indicated that for younger emerging

adults, males reported lower anxiety than females ($b = -.16$, $t(491.62) = -2.68$, $p = .008$), and that among females, first-borns reported lower anxiety than second-borns ($b = -.12$, $t(492.00) = -2.34$, $p = .020$).

There was also a significant Birth Order X Financial Dependence X Negativity interaction, where simple slopes analyses indicated that among younger emerging adults who were highly financially dependent on parents, lower negativity at Time 1 was associated with greater anxiety at Time 2 ($b = -.23$, $t(490.73) = -2.49$, $p = .013$). In contrast, among younger emerging adults with low financial dependence on parents, lower negativity at Time 1 was associated with lower anxiety at Time 2 ($b = .22$, $t(490.28) = 2.64$, $p = .009$).

Self-disclosure. For the final model examining associations between Time 1 self-disclosure to parents and Time 2 anxiety, there was a significant Birth Order X Emerging Adult Gender interaction. Simple slopes analyses indicated that for younger emerging adults, males reported lower anxiety than females ($b = -.13$, $t(500.99) = -2.14$, $p = .033$), and that among females, first-borns reported lower anxiety than second-borns ($b = -.12$, $t(500.91) = -2.28$, $p = .023$).

There was also a significant Financial Dependence X Self-disclosure interaction, where simple slopes analyses indicated that for those who were highly financially dependent on their parents at Time 2, greater self-disclosure at Time 1 was associated with greater anxiety at Time 2 ($b = .20$, $t(500.76) = 3.31$, $p = .001$). In contrast, for those with low financial dependence at Time 2, greater self-disclosure at Time 1 was associated with lower anxiety at Time 2 ($b = -.16$, $t(500.45) = -2.77$, $p = .006$).

Summary. Similar to the results related to depression, the analyses examining associations between parent-child relationships and anxiety symptoms indicated that the quality of these relationships appears to have unique implications for anxiety symptoms, and in many cases this depends on the level of emerging adults' financial dependence on their parents. In particular, among emerging adults who were highly financially dependent on their parents, greater communication, greater positivity, lower negativity, and greater self-disclosure at Time 1 was associated with greater anxiety symptoms. On the other hand, among emerging adults who reported low financial assistance from their parents, greater positivity, lower negativity, and greater self-disclosure were associated with fewer anxiety symptoms. Once again, there were some nuanced gender differences in these associations.

Self-Esteem. For all models examining associations between parent-child relationship qualities and self-esteem, self-esteem at Time 1 was significantly associated with self-esteem at Time 2. See Table 7 for final model parameter estimates.

Communication. For the final model examining associations between Time 1 parent-child communication and Time 2 self-esteem, there was a significant Birth Order X Emerging Adult Gender X Financial Dependence interaction. Simple slopes analyses indicated that for older males, greater financial dependence on parents was associated with lower self-esteem at Time 2 ($b = -.21$, $t(491.96) = -1.97$, $p = .050$).

Positivity. For the final model examining associations between Time 1 positivity and Time 2 self-esteem, there were no additional significant effects.

Negativity. For the final model examining associations between Time 1 negativity and Time 2 self-esteem, there were no additional significant effects.

Self-disclosure. For the final model examining associations between Time 1 self-disclosure and Time 2 self-esteem, there was a significant Birth Order X Emerging Adult Gender X Financial Dependence X Self-Disclosure interaction, but no significant simple slopes were produced.

Summary. Overall, the analyses examining associations between parent-child relationship quality and self-esteem indicated few significant associations, although being financially dependent on parents was associated with lower self-esteem in one case

Longitudinal Associations between Sibling Relationships and Emotional Adjustment (Aim 2)

Depression. For all models examining associations between sibling relationship qualities and depressive symptoms, depression at Time 1 was significantly associated with depression at Time 2. See Table 8 for final model parameter estimates.

Communication. For the final model examining associations between Time 1 sibling communication and Time 2 depressive symptoms, there was a significant Birth Order X Communication interaction. Simple slopes analyses indicated that for younger emerging adults, greater communication at Time 1 was associated with lower depression at Time 2 ($b = -.09$, $t(248) = -1.98$, $p = .049$).

Positivity. For the final model examining associations between Time 1 positivity and Time 2 depression, there were no additional significant effects.

Negativity. For the final model examining associations between Time 1 sibling negativity and Time 2 depressive symptoms, there was a significant main effect of Negativity, such that greater negativity at Time 1 was associated with greater depression at Time 2.

Relative power. In the final model examining associations between Time 1 sibling relative power and Time 2 depressive symptoms, there was a significant Emerging Adult Gender X Financial Dependence X Relative Power interaction. Simple slopes analyses revealed that for females who were highly financially dependent on their parents, greater relative power held by their sibling at Time 1 was associated with greater depression at Time 2 ($b = .13, t(149) = 2.94, p = .004$). In contrast, for females with low financial dependence, greater relative power held by their sibling at Time 1 was associated with lower depression at Time 2 ($b = -.09, t(149) = -2.01, p = .046$).

There was also a significant Birth Order X Financial Dependence X Relative Power interaction. Simple slopes analyses revealed that for older emerging adults who were highly financially dependent on their parents, greater relative power held by their younger sibling at Time 1 was associated with greater depression at Time 2 ($b = .12, t(129) = 2.42, p = .017$). In contrast, for younger emerging adults with low financial dependence, greater relative power held by their older siblings at Time 1 was associated with less depression at Time 2 ($b = -.14, t(111) = -3.26, p = .001$).

Finally, there was a significant Sibling Gender X Financial Dependence X Relative Power interaction. Simple slopes analyses revealed that for emerging adults who were highly financially dependent on their parents, greater relative power held by their brothers was associated with greater depression at Time 2 ($b = .17, t(119) = 3.08, p = .003$). In contrast, for emerging adults with low financial dependence on their parents, greater relative power held by their brothers was associated with lower depression at Time 2 ($b = -.14, t(119) = -2.37, p = .020$).

Self-disclosure. For the final model examining associations between Time 1 self-disclosure and Time 2 depression, there were no additional significant effects.

Summary. The analyses examining associations between sibling relationships and depressive symptoms indicated that the quality of sibling relationships appears to have some important longitudinal implications for depressive symptoms. Communication with older siblings is protective against depressive symptoms for younger emerging adults, and lower negativity is also associated with lower depression over time. In addition, the level of emerging adults' financial dependence also had implications for associations between sibling relative power and depression. Specifically, perceiving that siblings held greater relative power was associated with greater depressive symptoms for highly financially dependent emerging adults (particularly for females, older siblings, and emerging adults with brothers). In contrast, perceiving that siblings held greater relative power was associated with fewer depressive symptoms for emerging adults with low financial dependence (particularly for females, younger emerging adults, and emerging adults with brothers).

Anxiety. For all models examining associations between sibling relationship qualities and anxiety symptoms, anxiety at Time 1 was significantly associated with anxiety at Time 2. See Table 9 for final model parameter estimates.

Communication. For the final model examining associations between Time 1 communication with siblings and Time 2 anxiety, although there were several two-way interactions with communication, there were no significant simple slopes.

Positivity. For the final model examining associations between Time 1 positivity and Time 2 anxiety, there were no additional significant effects.

Negativity. For the final model examining associations between Time 1 negativity and Time 2 anxiety, there were no additional significant effects.

Relative power. For the final model examining associations between Time 1 sibling relative power and Time 2 anxiety, there was a significant Emerging Adult Gender X Financial Dependence X Relative Power interaction. Simple slopes analyses revealed that for females who were highly financially dependent on their parents, greater relative power held by their siblings at Time 1 was associated with greater anxiety at Time 2 ($b = .15, t(149) = 2.58, p = .011$). In contrast, for females with low financial dependence, greater relative power held by their siblings at Time 1 was associated with lower anxiety at Time 2 ($b = -.13, t(91) = -2.23, p = .027$).

There was also a significant Birth Order X Financial Dependence X Relative Power interaction. Simple slopes analyses indicated that for both older ($b = .12, t(129) = 1.96, p = .052$) and younger ($b = .13, t(111) = 2.26, p = .026$) emerging adults who were highly financially dependent on their parents, greater relative power held by their siblings at Time 1 was associated with greater anxiety at Time 2. In contrast for younger emerging adults with low financial dependence, greater relative power held by their older siblings at Time 1 was associated with lower anxiety at Time 2 ($b = -.26, t(111) = -4.55, p < .001$).

Self-disclosure. For the final model examining associations between Time 1 self-disclosure and Time 2 anxiety, there were no additional significant effects.

Summary. The analyses examining associations between sibling relationships and anxiety symptoms indicated that although communication, positivity, negativity, and self-disclosure within sibling relationships were not significantly associated with anxiety,

sibling relative power at Time 1 was significantly associated with anxiety at Time 2, but particular associations depended on the gender of emerging adults and their siblings, as well as their level of financial dependence on parents. These results were similar to those examining associations with depression. Specifically, perceiving that siblings held greater relative power was associated with greater depressive symptoms for highly financially dependent emerging adults (particularly for females, and for both older and younger emerging adults). In contrast, perceiving that siblings held greater relative power was associated with fewer anxiety symptoms for emerging adults with low financial dependence (particularly for females, and younger emerging adults).

Self-Esteem. For all models examining associations between sibling relationship qualities and self-esteem, self-esteem at Time 1 was significantly associated with self-esteem at Time 2. See Table 10 for final model parameter estimates.

Communication. For the final model examining associations between Time 1 communication with siblings and Time 2 self-esteem, although there were two two-way interactions with communication, there were no significant simple slopes.

Positivity. For the final model examining associations between Time 1 positivity and Time 2 self-esteem, there were no additional significant effects.

Negativity. For the final model examining associations between Time 1 negativity and Time 2 self-esteem, there were no additional significant effects.

Relative power. For the final model examining associations between Time 1 sibling relative power and Time 2 self-esteem, there were no additional significant effects.

Self-disclosure. For the final model examining associations between Time 1 self-disclosure and Time 2 self-esteem, there were no additional significant effects.

Summary. Overall, the analyses examining associations between sibling relationships and self-esteem indicated the quality of sibling relationships did not appear to have longitudinal implications for emerging adults' self-esteem.

Longitudinal Associations between Parent-Child Relationships and Achievement (Aim 3)

Academic Achievement. For all models examining associations between parent-child relationship qualities and academic achievement, academic achievement at Time 1 was significantly associated with academic achievement at Time 2. See Table 11 for final model parameter estimates.

Communication. For the final model examining associations between Time 1 parent-child communication and Time 2 academic achievement, there was a significant Birth Order X Emerging Adult Gender X Communication interaction. Simple slopes analyses revealed that for older males, greater communication with parents at Time 1 was associated with lower academic achievement at Time 2 ($b = -.20$, $t(492.00) = -2.16$, $p = .031$).

Positivity. For the final model examining associations between Time 1 positivity and Time 2 academic achievement, there were no additional significant effects.

Negativity. For the final model examining associations between Time 1 negativity and Time 2 academic achievement, there was a significant Parent Gender X Financial Dependence X Negativity interaction, but no significant simple slopes were produced.

Self-disclosure. For the final model examining associations between Time 1 self-disclosure and Time 2 academic achievement, there was a significant Birth Order X Emerging Adult Gender X Self-disclosure interaction, but no significant simple slopes were produced.

Summary. Overall, the analyses examining associations between parent-child relationships and academic achievement indicated the quality of parent-child relationships had few longitudinal associations with emerging adults' academic achievement, with the exception that first-born males who engaged in greater communication with their parents at Time 1 reported lower academic achievement at Time 2.

Vocational Identity Achievement. Parameter estimates for the final models examining associations between parent-child relationship qualities and vocational identity achievement can be found in Table 12.

Communication. For the final model examining associations between Time 1 parent-child communication and Time 2 vocational identity achievement, there was a significant Birth Order X Financial Dependence interaction. Simple slopes analyses revealed that for younger emerging adults, greater financial dependence on parents was associated with lower vocational identity achievement ($b = .30, t(492.92) = 4.51, p < .001$).

There was also a significant Emerging Adult Gender X Financial Dependence X Communication interaction. Simple slopes analyses revealed that for females who were highly financially dependent on their parents, greater communication at Time 1 was

associated with a stronger vocational identity at Time 2 ($b = -.25$, $t(492.86) = -2.94$, $p = .003$).

Positivity. For the final model examining associations between Time 1 parent-child positivity and Time 2 vocational identity achievement, there was a significant Birth Order X Financial Dependence interaction. Simple slopes analyses revealed that for younger emerging adults, greater financial dependence on parents was associated with lower vocational identity achievement ($b = .39$, $t(493.00) = 5.52$, $p < .001$).

There was also a significant Emerging Adult Gender X Financial Dependence X Positivity interaction. Simple slopes analyses revealed that for males who were highly financially dependent on their parents, greater positivity at Time 1 was associated with a weaker vocational identity at Time 2 ($b = .32$, $t(492.43) = 2.24$, $p = .026$). In contrast, for males with low financial dependence, greater positivity at Time 1 was associated with a stronger vocational identity at Time 2 ($b = -.34$, $t(491.20) = -2.91$, $p = .004$).

Negativity. For the final model examining associations between Time 1 parent-child negativity and Time 2 vocational identity achievement, there was a significant main effect of Emerging Adult Gender, where females had a stronger vocational identity than males.

There was also a significant main effect of parent-child Negativity, where emerging adults with less negative relationships with parents at Time 1 had a stronger vocational identity at Time 2.

Finally, there was a significant Birth Order X Financial Dependence interaction. Simple slopes analyses revealed that for younger emerging adults, greater financial

dependence on parents was associated with lower vocational identity achievement ($b = .30, t(501.98) = 4.52, p < .001$).

Self-disclosure. For the final model examining associations between Time 1 self-disclosure to parents and Time 2 vocational identity achievement, there was a significant Birth Order X Financial Dependence interaction. Simple slopes analyses revealed that for younger emerging adults, greater financial dependence on parents was associated with lower vocational identity achievement ($b = .37, t(492.96) = 5.28, p < .001$).

There was also a significant Emerging Adult Gender X Financial Dependence X Self-disclosure interaction. Simple slopes analyses revealed that for males with low financial dependence, greater self-disclosure to parents at Time 1 was associated with a stronger vocational identity at Time 2 ($b = -.42, t(492.99) = -3.89, p < .001$).

Summary. The analyses examining associations between parent-child relationships and vocational identity achievement indicated that there were several significant associations between parent-child relationship quality and emerging adults' vocational identity achievement. Overall, emerging adults with less negative relationships with parents reported a stronger vocational identity three years later than emerging adults with more negative relationships. However, emerging adults' financial dependence moderated other associations. Among emerging adults who were highly financially dependent on their parents, greater positivity and self-disclosure were associated with a weaker vocational identity, but among those with low financial dependence, greater positivity was associated with a stronger vocational identity. Interestingly, however, for females who were highly financially dependent on their parents, greater communication at Time 1 was associated with a stronger vocational identity at Time 2. In addition,

second-born emerging adults who were more financially dependent on their parents generally tended to report weaker vocational identities.

Longitudinal Associations between Sibling Relationships and Achievement (Aim 3)

Academic Achievement. For all models examining associations between sibling relationship qualities and academic achievement, academic achievement at Time 1 was significantly associated with academic achievement at Time 2. However, there were no significant associations between any of the five sibling relationship qualities at Time 1 and academic achievement at Time 2. See Table 13 for final model parameter estimates.

Vocational Identity Achievement. For all models examining associations between sibling relationship qualities and vocational identity achievement, there were significant main effects of Emerging Adult Gender, such that females reported a stronger vocational identity than males, and Financial Dependence on Parents, such that emerging adults who were more financially dependent on parents reported a weaker vocational identity. Parameter estimates for the final models examining associations between parent-child relationship qualities and vocational identity achievement can be found in Table 14.

Communication. For the final model examining associations between Time 1 sibling communication and Time 2 vocational identity achievement, there was a significant Birth Order X Emerging Adult Gender X Sibling Gender X Financial Dependence X Communication interaction. Simple slopes analyses revealed that for older males with younger sisters who were both highly financially dependent ($b = 5.75$, $t(21) = 4.46$, $p < .001$) and low in financial dependence ($b = 4.63$, $t(21) = 4.63$, $p = .001$), greater communication with younger sisters was associated with a weaker vocational identity. In addition, greater communication with siblings was also associated with a weaker

vocational identity for highly financially dependent younger males with older brothers ($b = 3.16, t(16) = 2.19, p = .044$). In contrast, among younger emerging adults with low financial dependence, greater communication between males and older brothers ($b = -3.00, t(16) = -2.25, p = .036$), and between females and older sisters ($b = -1.76, t(30) = -2.03, p = .051$), was associated with a stronger vocational identity, while greater communication between younger males and older sisters was associated with a weaker vocational identity ($b = 3.18, t(20) = 2.63, p = .016$).

Positivity. For the final model examining associations between Time 1 positivity and Time 2 vocational identity achievement, there were no additional significant effects.

Negativity. For the final model examining associations between Time 1 negativity and Time 2 vocational identity achievement, there were no additional significant effects.

Relative power. For the final model examining associations between Time 1 sibling relative power and Time 2 vocational identity achievement, there were no additional significant effects.

Self-disclosure. For the final model examining associations between Time 1 self-disclosure to siblings and Time 2 vocational identity achievement, there was a significant Birth Order X Emerging Adult Gender X Sibling Gender X Financial Dependence X Self-disclosure interaction. Simple slopes analyses revealed that for highly financially dependent older males with younger sisters ($b = 4.89, t(21) = 4.55, p < .001$), highly financially dependent younger males with older brothers ($b = 2.27, t(16) = 2.77, p = .014$), and less financially dependent younger males with older sisters ($b = 2.35, t(20) = 2.30, p = .032$), greater self-disclosure to their siblings at Time 1 was associated with a weaker vocational identity at Time 2. In contrast, for highly financially dependent

younger males with older sisters ($b = -3.00$, $t(20) = -2.75$, $p = .012$), and for less financially dependent older males with younger sisters ($b = -4.24$, $t(21) = -3.83$, $p = .001$), greater self-disclosure to siblings at Time 1 was associated with a stronger vocational identity at Time 2.

Summary. The analyses examining associations between sibling relationships and academic achievement indicated that although sibling relationship positivity, negativity and relative power were not significantly associated with vocational identity achievement over time, communication and self-disclosure to siblings did have some nuanced implications for vocational identity, where financial dependence, gender and birth order played a significant role. In general, greater communication and self-disclosure tended to be associated with weaker vocational identity achievement among highly financially dependent emerging adults, among mixed-gender dyads, and when older siblings were communicating or disclosing to their younger siblings. In contrast, the overall pattern of results suggested that more frequent communication and self-disclosure tended to be beneficial for vocational identity development among emerging adults with low financial dependence on parents, and when younger siblings were communicating or disclosing to older siblings (particularly same-gender older siblings in the case of general communication).

CHAPTER 4

DISCUSSION (STUDY 1)

Emerging adulthood is characterized by a significant re-centering of close relationships as individuals enter a new developmental phase that focuses on increasing independence, identity exploration, and the acquisition of skills and worldviews that will assist in the transition to adulthood (Conger & Little, 2010; Tanner, 2006; Arnett, 2000, 2001, 2006). As such, relationships with friends and romantic partners become more central to daily life, while relationships with parents and siblings become more peripheral. However, for emerging adults who attend college, relationships with family members may remain more salient, as the majority of parents provide at least some financial assistance to their children when they attend college (Padilla-Walker et al., 2012). While a growing body of research has documented positive changes in family relationships during the initial transition out of the family home (see Lindell & Campione-Barr, 2017, for a review), less is known about the development of these relationships across emerging adulthood and their role in individual development. Study 1 therefore examined changes in college students' parent-child and sibling relationships from their first to fourth years of college (or equivalent), and longitudinal associations between family relationship qualities and emotional and academic outcomes.

Longitudinal Changes in Family Relationships (Aim 1)

The first aim of Study 1 was to examine changes in parent-child and sibling relationship qualities from college students' first to fourth years of college. Specifically, we examined changes in communication frequency, relationship positivity, relationship

negativity, and self-disclosure frequency in mother-child, father-child, and sibling relationships. In addition, we examined changes in sibling relative power, though this was not examined in parent-child relationships given that these relationships are naturally hierarchical and were not generally expected to change or show much variability in hierarchical structure. In general, we expected communication to decrease over time, but other aspects of these relationships to improve, including increases in positivity, and decreases in negativity and sibling relative power. It was less clear whether self-disclosure would change over time, as communication was expected to decline, yet relationships were expected to become more intimate across this period. Importantly, we also examined whether various structural and contextual factors moderated these changes. As described below, Study 1 revealed nuanced patterns of longitudinal changes and structural and contextual differences in family relationships.

Parent-child relationships. Overall, our analyses revealed significant stability in parent-child relationship qualities across emerging adulthood, with little change in communication frequency, positivity, negativity, or self-disclosure over time. Emerging adults generally reported high-quality relationships, with high mean levels of positivity, low negativity, and moderate levels of communication and self-disclosure frequency. Previous research has illustrated marked improvement in parent-child relationship quality during the initial transition to emerging adulthood (especially the transition out of the family home; Whiteman et al., 2011), and our findings indicate that these positive changes persist across the first several years of emerging adulthood (specifically, among a relatively homogenous group of mostly White, middle- to upper-middle class college students from two-parent families). This is also consistent with a family systems

perspective that argues that family relationships are adaptive, stable, and seek to achieve a state of homeostasis (Cox & Paley, 2010; Minuchin, 1985). Therefore, once the initial transition to emerging adulthood has occurred, the family is likely able to maintain its stability with relative ease. As new family transitions arise, however, such as emerging adults' transition to adulthood, there may once again be further changes in the quality and role of family relationships.

Interestingly, the quality of parent-child relationships was similar for first- and second-born emerging adults. It may be that lifestyle changes (e.g., attending college) similarly impact both first- and second-borns' abilities to communicate or disclose to their parents frequently. Parents may also apply a *learning-from-experience* approach to their relationships with their second-born children (Shanahan et al., 2007). If they were satisfied with their relationships with their first-borns when they were emerging adults, then they may see no reason to change their interaction patterns with their second-born children once they reach emerging adulthood. Although a wealth of research illustrates that parents interact with their children differently based on their children's unique characteristics (Kowal & Kramer, 1997), these differences in parenting behaviors are rarely perceived to be problematic to children (Kowal, Krull, & Kramer, 2006). By emerging adulthood, it therefore appears that both first- and second-born children perceive similar levels of positivity and negativity in their relationships with their parents.

Although emerging adults reported relatively high-quality relationships with parents overall, there were some important differences in relationships with mothers and fathers, as well as differences between male and female emerging adults. For example,

emerging adults reported more frequent communication and self-disclosure, and greater positivity with mothers than with fathers, and female emerging adults reported these relationship qualities with mothers at higher levels than males. These patterns of gender differences may reflect gender socialization processes that emphasize the importance of relational closeness and the provision of emotional support for females, while males are socialized to provide more material or informational support that may not necessarily be reflected in our operationalization of parent-child relationship quality (Maccoby, 1998). It is also possible that female emerging adults' closer relationships with their mothers compared to males is a further reflection of the notion that we are more likely to form close relationships with those who are more similar to us, including the same gender (Youniss & Smollar, 1985).

Despite modest gender differences, some of the most striking differences in parent-child relationship quality were contextual in nature – particularly surrounding the amount of financial assistance that parents provided to their emerging adult children. We found that emerging adults who were more financially dependent on their parents reported more involved and affectively intense relationships overall compared to emerging adults who relied less on parental financial support. In particular, communication and self-disclosure was more frequent, and relationships were more positive among emerging adults who were more financially dependent on their parents. These patterns could be the case for three reasons. First, emerging adults who are relying on financial assistance from their parents may feel indebted to their parents and obligated to maintain a positive relationship with them in order to either “repay” their parents in some way, or to ensure that their parents do not have a reason to financially “cut off”

their children who are no longer their parents' legal dependents. In addition, receiving financial assistance from parents may also make communication more necessary as emerging adults ask for additional funds or discuss the terms of their financial arrangements. Such communication may provide more opportunities for other topics of conversation or self-disclosure, as well as affection within these relationships that may not be present in families where emerging adults do not "need" to have frequent discussions with their parents. Finally, parents may also simply be more willing to provide financial assistance to their children when they have high-quality relationships with them, and be less likely to invest significant resources in their children if they have a more strained relationship.

On the other hand, we also found that financially dependent emerging adults reported more negative interactions with mothers overall, and did not report a decline in negativity with fathers over time (which was reported among more financially independent emerging adults). Maintaining financial ties and engaging in more communication with parents may also provide additional opportunities for conflict or negativity within these relationships, since conflicts may arise over the terms of the financial arrangements, or parents may feel that they can retain more control over their children since they provide them with financial support. Thus, overall, emerging adults who maintained financial dependence on their parents did not exhibit the same level of relationship re-centering that is typically expected during emerging adulthood (Tanner, 2006), but rather seemed to maintain more affectively intense relationships with their parents (i.e., both positive and negative), perhaps due to continued connection.

Sibling relationships. Similar to parent-child relationships, our analyses indicated that many aspects of sibling relationships remained stable across emerging adulthood, particularly in terms of communication frequency, positivity and negativity. Like parent-child relationships, sibling relationships often experience a significant improvement during the transition to emerging adulthood, especially when first-borns leave the family home and siblings experience some physical separation from one another (e.g., Lindell & Campione-Barr, 2017; Lindell, Campione-Barr & Greer, 2014; Whiteman et al., 2011). As such, many of the relationship patterns that siblings establish during their initial transition to emerging adulthood appear to continue across the college years.

However, despite the stability of some aspects of sibling relationships, our results indicated that other aspects of sibling relationships did experience significant changes across emerging adulthood, particularly regarding sibling power dynamics and self-disclosure. With respect to emerging adults' reports of their siblings' level of relative power within their relationship, we found that at Time 1, first-born emerging adults reported holding significantly more power in their sibling relationships than second-born emerging adults reported. By Time 2, however, first-borns emerging adults' power had declined significantly such that there were no longer significant differences between first- and second-born emerging adults' level of relative power, indicating that their relationships with their siblings became significantly more egalitarian across emerging adulthood. During childhood and adolescence, sibling relationships are considerably hierarchical, with older siblings holding a position of significant power and control within these relationships (Perlman, Siddiqui, Ram & Ross, 2000). However, as youth

move through adolescence, their relationships with their siblings begin to become more egalitarian (Buhrmester & Furman, 1990; Tucker, Updegraff & Baril, 2010), likely because siblings become less actively involved in their relationships and have fewer opportunities to engage in power struggles (Lindell & Campione-Barr, in press). Our findings suggest that an imbalance of power still exists during early emerging adulthood, but appears to evolve rather quickly across emerging adulthood to one that is more egalitarian. This shift toward a more egalitarian power structure has been theorized to be one of the most important tasks for emerging adult siblings (Aquilino, 2006), as this should help set the stage for more reciprocal forms of support between siblings and may make collaboration in caring for aging parents later in adulthood more harmonious and productive. Our results suggest that emerging adulthood may indeed be when these changes become most pronounced, likely because of siblings' increased separation and fewer opportunities to engage in power struggles (Lindell & Campione-Barr, in press).

The present study also indicated significant changes in emerging adults' self-disclosure to siblings, which were moderated by gender. At Time 1, males reported significantly less self-disclosure to their siblings compared to females, but they reported significant increases from Time 1 to Time 2, such that there were no longer any differences between males' and females' self-disclosure to siblings by Time 2. In general, males are socialized to be less emotionally expressive than girls (Maccoby, 1998), and these gendered norms are often exaggerated during adolescence during a period of gender intensification (Hill & Lynch, 1983). However, as males move through emerging adulthood, this focus on gender-consistent behavior may begin to subside, and they may be more willing to engage in more personal and emotional exchanges. In addition, greater

involvement in romantic relationships during emerging adulthood, which likely requires relatively frequent emotional exchanges, may also partly explain males' increased willingness and comfort in engaging in self-disclosure with their siblings. Increased self-disclosure to siblings may also be partly related to the idea that across adulthood, individuals begin to narrow their range of social contacts and often re-assign importance to their family relationships, including those with siblings (Carstensen, 1992). Research by Scharf and colleagues (2005) also indicates that emotional exchanges between siblings are more frequent later in emerging adulthood compared to earlier, which is consistent with our findings. Other research has indicated the special role that self-disclosure plays in sister relationships during the initial transition to emerging adulthood (Campione-Barr, Lindell, Giron, Killoren & Greer, 2015), but our results suggest that males may begin to "catch up" later in emerging adulthood. Nevertheless, despite males' increases in self-disclosure across emerging adulthood, in general, sister-sister relationships were still the most positive of all sibling relationships overall, and self-disclosure and communication were most frequent between same-gender siblings, consistent with other research on sibling relationships (Spitze & Trent, 2006) and theoretical models that suggest that relationships are closer when relationship partners are more similar to one another (Youniss & Smollar, 1985).

Finally, although not as pronounced as in parent-child relationships, emerging adults' level of financial dependence on their parents also had some implications for the overall quality of their sibling relationships. Specifically, emerging adults who received more financial assistance from their parents also reported that their siblings held more power in their relationship, and they also reported more self-disclosure to their siblings.

These findings are consistent with the role of financial dependence in parent-child relationships in that sibling relationships were more salient to those with stronger financial ties to their parents, but importantly, they also resembled the hierarchical power structure more common in adolescence and childhood rather than more mature and egalitarian sibling relationships that would usually be expected by this period. Once again, financially dependent emerging adults may have more contact with their siblings than those with fewer obligations to their family, and therefore they may have more opportunities to engage in both self-disclosure and power struggles.

Longitudinal Associations between Family Relationship Qualities and Emotional Adjustment (Aim 2)

The second aim of Study 1 was to examine associations between family relationship qualities during emerging adults' first year of college and emotional adjustment three years later, controlling for earlier levels of emotional adjustment. Specifically, we examined communication frequency, relationship positivity, relationship negativity, and self-disclosure frequency in mother-child, father-child, and sibling relationships, as well as relative power in sibling relationships, and their associations with depressive symptoms, anxiety, and self-esteem. In general, we expected family relationships to serve as important support systems for emerging adults, such that greater communication and self-disclosure to family members, greater positivity and lower negativity, and less sibling relative power, would be associated with lower depression and anxiety, and greater self-esteem over time. We also investigated the potential moderating role of various family structural and contextual factors in these associations. As described

below, Study 1 revealed nuanced associations between family relationship qualities and emotional adjustment that were moderated by various factors.

Parent-child relationships. Overall, our analyses revealed significant associations between parent-child relationships and emotional adjustment that were moderated by emerging adults' gender and their level of financial dependence. First turning to gender, we found that greater negativity in relationships with mothers and fathers at Time 1 was associated with greater depression three years later for females, but not males. Because females tend to be socialized to place a higher value on relational closeness compared to males (Maccoby, 1998), they may be particularly sensitive to low-quality relationships with their parents and develop depressive symptoms as a result. Interestingly, these associations did not differ for mothers and fathers. While there is some evidence that the quality of relationships with fathers may be more important for development than relationships with mothers (Khaleque & Rohner, 2012), it may be that since negativity with parents should be relatively low by emerging adulthood, negativity with either parent is detrimental.

We generally expected that high-quality relationships with parents would be protective against emotional adjustment problems. However, it is important to consider what characterizes a high-quality parent-child relationship during emerging adulthood. Given that emerging adulthood is a period that typically includes substantial personal exploration and growing independence (Arnett, 2000), it has been suggested that a key task for parents is to learn how to remain sufficiently supportive of their emerging adult children without being overly involved or controlling (Aquilino, 2006). Consistent with these notions, we found mixed implications of parent-child relationship quality and

involvement for emotional adjustment depending on the amount of financial assistance parents provided to their children. Specifically, our results indicated that having a close relationship with parents at Time 1 (e.g., frequent communication and self-disclosure, greater positivity and lower negativity) was associated with poorer emotional adjustment (e.g., greater depression and anxiety, lower self-esteem) at Time 2 when parents provided more financial assistance to their children, but close relationships were beneficial for emotional adjustment when emerging adults were less financially dependent on their parents. It may be that emerging adults who are more financially tied to their parents feel less competent and prepared to take on the challenges of adulthood, which may manifest in poor emotional adjustment. On the other hand, if emerging adults develop mental health problems, parents may be more willing to step in and provide new financial assistance as a way to help alleviate some of their burdens if they have a good relationship with their children. Indeed, correlations in the present study indicated that emerging adults with greater anxiety and lower self-esteem at Time 1 were more likely to receive financial assistance from their parents at Time 2. Unfortunately, in the present study we were unable to determine whether parents' financial assistance to their children at Time 2 was similar to the amount of assistance they provided earlier in emerging adulthood, or whether it was a new arrangement.

Interestingly, our results suggest that these nuanced associations related to financial dependence may be especially salient for first-born males. In many societies, older brothers are often expected to assume the role of the "man of the house," so there may be some expectation that older brothers in particular need to display considerable independence. Therefore, if first-born males have very warm and close relationships with

their families (which may be considered a stereotypically feminine trait and not particularly masculine) and are *also* not able to develop financial independence by the end of college, then they may feel distressed over the fact that they have not been able to achieve the more masculine archetype that society prescribes. In contrast, if first-born males develop worsening emotional adjustment problems, parents may be especially likely to provide them with additional resources to prevent further burdens for them, in an effort to help them avoid a stigma surrounding their mental health and maintain a strong, masculine image.

In contrast, our results generally indicated that having a close relationship with parents is beneficial for emotional adjustment when emerging adults are less financially dependent on their parents, and this appears to be the case especially for female emerging adults. Females tend to be more susceptible to developing emotional adjustment problems than males (e.g., Nolen-Hoeksema, 1987), so the combination of strong familial support in addition to a sense of purpose or achievement in developing some level of financial independence (e.g., through scholarships, employment) may help protect them from the development of emotional adjustment problems.

Sibling relationships. The results from Study 1 also revealed significant associations between sibling relationship quality and emotional adjustment. As with parents, emerging adults with more negative sibling relationships reported greater depressive symptoms over time. Sibling relationships typically undergo significant declines in conflict and negativity during the transition out of the family home as shared time decreases and communication becomes more voluntary (Whiteman et al., 2011), and most antagonistic adolescent sibling relationships likely become distant during emerging

adulthood given that they usually no longer reside together. Thus, if siblings continue to assert active negativity within their relationships, then this may be particularly distressing given the relative ease with which these relationships could be distanced.

Although maintaining a negative sibling relationship appears to be detrimental for depressive symptoms, engaging in more frequent communication with older siblings may be particularly protective against second-born emerging adults' depression. During adolescence, younger siblings typically look up to older siblings as models for behavior (Whiteman, Jensen & Maggs, 2014) and may seek their advice or guidance on a variety of issues (Tucker et al., 1997; 2001). Findings from the present study suggest that older siblings may continue to be an important source of advice and support for younger siblings during emerging adulthood.

Finally, the present study also indicated that sibling relative power has important implications for depression and anxiety, but that sibling ordinal position, gender, and the broader family context in terms of emerging adults' financial dependence on parents significantly contributed to these associations. First, our findings revealed that greater sibling relative power, particularly greater power held by *younger* siblings, contributed to greater depression and anxiety for first-born emerging adults who were financially dependent on their parents. During childhood and adolescence, older siblings typically hold more power within the sibling hierarchy (Perlman et al., 2000), so a younger-sibling-dominant relationship is non-normative and may be particularly detrimental to older siblings' adjustment (Tucker et al., 2010)– especially if older siblings also feel powerless in their ability to achieve greater financial independence. On the other hand, when second-born emerging adults perceived their older siblings to hold more power in

the relationship, this was not detrimental for their emotional adjustment. Rather, when these younger siblings had achieved some financial independence, they actually experienced lower depression and anxiety, perhaps because of their pride in developing power and independence in other areas of their life.

Importantly, the associations between sibling relative power and emotional adjustment were particularly true for female emerging adults rather than males. This is partly in line with gendered expectations about the importance of females' close relationships (Maccoby, 1998), but there is also empirical evidence that females may surpass males in their perceptions of interpersonal power by adulthood (Todd et al., 1993). If females are unable to do this within both their sibling relationships and their finances, then their feelings of powerlessness may contribute to greater depressive and anxiety symptoms.

Longitudinal Associations between Family Relationship Qualities and Achievement (Aim 3)

The third aim of Study 1 was to examine associations between family relationship qualities during emerging adults' first year of college and academic and vocational identity achievement three years later. Specifically, we examined communication frequency, relationship positivity, relationship negativity, and self-disclosure frequency in mother-child, father-child, and sibling relationships, as well as relative power in sibling relationships. In general, we expected family relationships to serve as important support systems for emerging adults, such that greater communication and self-disclosure to family members, greater positivity and lower negativity, and less sibling relative power, would be associated with greater academic achievement and a stronger vocational

identity. We also investigated the potential moderating role of various family structural and contextual factors in these associations. As described below, Study 1 revealed nuanced associations between family relationship qualities and academic and vocational identity achievement that were moderated by various factors.

Parent-child relationships. In the present study, we did not find significant associations between the quality of emerging adults' relationships with their parents and academic achievement over time. There is a wealth of research linking parents to academic success during both childhood and adolescence (Spera, 2005), particularly due to active parental involvement, monitoring, open communication (Masselam et al., 1990), warmth, and support (Chen et al., 2000). However, by emerging adulthood, parents have significantly less direct control over their children (Aquilino, 2006), and students are likely more strongly motivated by internal factors by the time they are entering more specialized areas of study that are characteristic of a college education. In addition, because we controlled for academic achievement at Time 1 in the present analyses, our results indicate that there were no associations between parent-child relationship quality and increases in academic achievement *over and above prior academic achievement*. Therefore, it is also possible that parents have already helped establish positive academic habits earlier in development, and that the overall quality of these relationships by emerging adulthood may no longer be as salient.

Although there was little evidence of the role of parent-child relationship quality in promoting academic achievement, parent-child relationships did have significant implications for emerging adults' vocational identity achievement, which involves the level of stability in a person's career-related goals, interests, and talents (Holland et al.,

1993). In general, we found that lower negativity within parent-child relationships was associated with the development of a stronger vocational identity by the fourth year of college. Conflict and antagonism within the parent-child relationship may be particularly detrimental for emotional adjustment during emerging adulthood given that high levels of negativity are relatively rare (Whiteman et al., 2011). Thus, emerging adults who experience more negativity with parents may lack the confidence or secure base from which to engage in career-related identity exploration (Ketterson & Bustein, 1997). In addition, emerging adults who are unable to successfully resolve disagreements with their parents by emerging adulthood may lack an appropriate level of maturity in general, which may also preclude them from having a clear idea of, or even thoughtful interest in, their vocational future.

Emerging adults' level of financial dependence on their parents also played a significant role in their vocational identity development. First, we found that overall, second-born emerging adults who were more financially dependent on their parents tended to have a weaker vocational identity compared to those who were more financially independent. First-born children may feel more pressure to think about their careers given their more mature status within the family system, but younger siblings are often in their older siblings' shadow and may need an added push to start thinking independently, and about their future. Staying financially tied to their parents may prevent them from thinking seriously about their future as adults.

Although financial dependence was generally related to weaker vocational identities, there were some gender differences in the role that parent-child relationship quality and receiving financial assistance play in emerging adults' vocational identity

development. For example, for males who received more financial assistance from their parents, greater positivity in their relationships with parents at Time 1 was associated with a weaker vocational identity at Time 2. In contrast, for females who received greater financial assistance from their parents, greater communication with parents at Time 1 was associated with a stronger vocational identity at Time 2. If males have a particularly warm and positive relationship with their parents, then they may feel content with their current financial arrangement, and not feel motivated to develop more independent thoughts about their future. On the other hand, females tend to feel stronger feelings of family obligation than males (Fuligni & Pedersen, 2002), so when they receive financial assistance from their parents, they may feel obligated to maintain active communication with their parents (perhaps even discussing their use of their financial assistance), and to actively use the financial assistance from their parents as a means of helping them succeed. One way to do this would be to take full advantage of the education their parents have helped finance and work to develop a clear vocational identity.

Although male emerging adults who received more financial assistance from their parents tended to develop weaker vocational identities when they had highly positive relationships with parents, the role of parents was different for those who received less financial assistance. For these males, greater positivity and self-disclosure in their relationships with parents were associated with the development of a *stronger* vocational identity. It may be that financing more of one's own education and personal needs makes emerging adults less willing to take any additional resources for granted, and parents may undoubtedly serve as an important resource for these emerging adults in terms of the support and guidance that they may be able to provide. Therefore, having more positive

and self-disclosive relationships with parents may help financially independent emerging adults (particularly males) develop a clearer sense of their vocational interests.

Sibling relationships. In our investigation of associations between sibling relationship qualities and academic and vocational identity achievement, we found similar associations to those that we identified with parents. First, the quality of sibling relationships was not significantly associated with academic achievement. Although siblings may help with homework and other academic tasks earlier in development (Fox, 2016), these types of behaviors are less likely to occur during emerging adulthood due to logistical constraints of often not living near one another (as was the case with the sample in the present study) and the greater independence that college students are likely to have with their academic work.

However, siblings did appear to play a role in vocational identity development in some key ways. First, greater communication and self-disclosure with younger sisters was associated with weaker vocational identity for first-born males, regardless of their level of financial dependence on their parents. Because of gender socialization norms, sisters are often seen as favorable sources of emotional support (Maccoby, 1998; Milevsky & Levitt, 2005), so it may be that older brothers who have a history of struggling with decisions seek out sisters to discuss their problems. However, given that younger siblings likely have less knowledge than their older siblings with regard to vocational decisions, this communication may be emotionally beneficial, but is less likely to be helpful in terms of actual vocational identity development, resulting in a weaker vocational identity development for older brothers.

On the other hand, communication and self-disclosure to older siblings appears to be much more beneficial for the development of second-born emerging adults' vocational identity, and this may especially be the case with older sisters or a same-gendered older sibling. Older siblings may have personal experiences regarding their own vocational identity development that they may be able to share with younger siblings, and they may also have information about resources that were useful to them. Indeed, this top-down pattern of sibling influence is a common theme throughout many domains of the role of sibling modeling and influence in development (Whiteman et al., 2014). It also makes sense that older sisters may be particularly useful, as they may be more willing to invest in their younger siblings' concerns and also address more of the emotional aspects of their younger siblings' vocational identity development (i.e., confidence). In addition, same-gender older siblings may also be uniquely helpful given that they likely have more similar interests that are relevant to their younger siblings than a different-gender older sibling may have (Youniss & Smollar, 1985).

Finally, the broader family context in terms of emerging adults' financial dependence on parents played a nuanced role in these associations, but overall, the general pattern of results suggested that communication and self-disclosure to siblings was more beneficial for vocational identity development among emerging adults who were less financially dependent on their parents. Similar to our findings regarding parents' role in vocational identity development, it may be that emerging adults who are financing their own education are particularly keen to take advantage of the resources available to them to help ensure their vocational success – including older, same-gendered siblings who may be able to provide them with the most relevant advice.

Conclusion

Study 1 examined changes in first- and second-born emerging adults' relationships with parents and siblings from their first to fourth year of college, and examined longitudinal associations between family relationships during the first year of college and emotional and academic adjustment during the fourth year of college. In general, parent-child relationships showed considerable stability in relationship quality, but sibling relationships were marked by dynamic changes in power structure, as well as self-disclosure. In addition, the quality of parent-child and sibling relationships had important implications for emotional adjustment, and, to a lesser extent, on vocational identity development. While the present study revealed some important gender differences in the course and influence of family relationships, perhaps most pronounced was the role of emerging adults' financial dependence on their parents, which suggested that greater financial dependence on parents was indicative of lower-quality relationships, and more emotional and academic adjustment problems for college students. In contrast, family relationships appear to be a particularly important resource for college students who are less financially dependent on their parents.

While Study 1 provided important insight on parent-child and sibling relationships during emerging adulthood, it relied on a single-reporter sample and did not consider the perspective of other family members. Individuals within a dyad may perceive the relationship differently, which we were unable to capture in Study 1. In addition, we were only able to investigate associations between emerging adults' perceptions of their family relationships and their own adjustment outcomes. Not surprisingly, relationship processes typically have implications for both members of the

dyad, often in different ways, but we were unable to examine these potential differences. Therefore, in Study 2, we addressed some of these limitations to examine longitudinal changes and associations with emotional and academic adjustment among a sample of sibling dyads, where at Time 1, first-borns were in their first year of college, and their second-born siblings were all adolescents no more than 5 years younger than them. We chose to focus on the sibling dyad in particular rather than parent-child relationships because of the more reciprocal nature of this relationship compared to parent-child relationships (Buhrmester & Furman, 1990), and because of our more limited understanding of emerging adults' sibling relationships. Indeed, research on emerging adult sibling relationships is only in its infancy (Padilla-Walker, Memmott-Elison & Nelson, 2017). As such, we were able to examine over-time changes in sibling relationships from *both* siblings' perspectives (Aim 1), as well as associations between sibling relationship qualities and *both* siblings' emotional (Aim 2) and academic (Aim 3) outcomes.

CHAPTER 5

METHOD (STUDY 2)

Participants

Participants included a subset of the first-born participants from Study 1 and their closest-in-age younger sibling ($n = 58$ sibling dyads, 116 youth). When they were recruited (see Study 1), first-born participants provided contact information (e-mail or phone number) for a parent if they had a second-born sibling who was at least 13 years of age or older. Younger siblings were recruited via e-mails and/or telephone calls to parents. Of 126 first-born participants who provided parental contact information, 58 younger siblings agreed to participate (46.8%).

At Wave 1, our sample included 58 first-born college students (20 male, 38 female) and their second-born younger siblings (30 male, 28 female). The sample included the following first-born/second-born sibling gender compositions: 11 older brother-younger brother, 19 older sister-younger sister, 9 older brother-younger sister, 19 older sister-younger brother. First-borns averaged 18.36 years of age ($SD = .52$), and second-borns averaged 15.64 years ($SD = 1.09$). On average, siblings were separated in age by 2.75 years ($SD = 1.01$), and reported a total sibship size of 2.66 ($SD = .96$) children in the family, with 59.3% of dyads reporting coming from a two-child family (23.7% three-child family, 8.5% four-child family, 8.5% five or more children in their family).

Most first-borns reported living in university housing (including residence halls and fraternity and sorority houses) during their first year of college (94.9%), with 3.4%

living in an off-campus apartment, and 1.7% living at home with their parents. Most participants reported White ethnicity (88.1%; 5.9% Black or African American; 1.7% Asian or Pacific Islander; 1.7% Hispanic; 0.8% Other, 1.7% Not reported). Most first-borns reported living more than 30 minutes away from their mothers (93.2%), fathers (89.5%) and siblings (94.8%) during the school year. Most second-borns reported living less than 30 minutes away from their mothers (96.6%) and fathers (91.4%) during the school year, but more than 30 minutes away from their siblings (84.7%) during the school year.

Three years later at Time 2, 58.6% ($n = 34$) of the original younger siblings and 69.0% ($n = 40$) of the original older siblings agreed to continue their participation. Younger siblings who discontinued their participation reported more frequent communication with their sibling at Time 1 ($t(56) = 2.03, p = .048$) compared to those who participated at both waves. There were no other differences between those who participated at both waves and those who participated only at Time 1 in terms of demographic or study variables. As described in detail in the Results section, data for those who did not participate at Time 2 were estimated using a multiple imputation procedure so that all of the original sample could be retained for analysis.

Parents of participants. At Wave 1, the majority of participants reported that their biological (or adoptive) parents were married to one another (76.3%), while 16.9% reported divorced parents, 5.1% reported that their biological parents had never married one another, and 1.7% reported that one of their parents had been widowed. At Wave 1, more than half of mothers had completed either a bachelor's (61.0%) or graduate (21.2%) degree, 10.2% had completed some college, and 7.6% graduated from high school. More

than half of fathers had completed either a bachelor's (44.9%) or graduate (33.9%) degree, 11.9% had completed some college, and 9.3% graduated from high school. Median annual parental income was above \$100,000.

Procedures

At Wave 1, eligible participants who agreed to participate were sent an individualized link to an online questionnaire that was completed at home, where they gave their consent and answered demographic questions and items about several aspects of close relationships, including those described below. Parents of younger siblings also provided consent and answered demographic questions via online questionnaires prior to sending questionnaire links to second-born minor children. First-born participants received class credit for participating, and second-born participants were mailed \$5 and were entered into a drawing for one of six \$50 gift cards.

During the fall of 2015 and spring of 2016 (when first-borns were in the equivalent of their 4th year of college), first- and second-borns were re-recruited via e-mail, phone and mail to complete another online questionnaire at home, where they gave their consent and answered demographic questions and items about several aspects of close relationships as described below. Four younger siblings were under age 18 at the time of data collection, so for these participants, consent was also obtained from a parent. All participants received a \$25 gift card to Amazon.com and the chance to win an additional gift card for their participation.

Measures

Relationship Quality. As in Study 1, participants completed the Network of Relationships Inventory (NRI; Furman & Buhrmester, 1985) to assess positivity,

negativity and relative power within their sibling relationships. First-born participants reported about their relationship with their participating second-born sibling; second-born participants reported about their relationship with their participating first-born sibling.

Cronbach alphas were as follows at Time 1 and Time 2 for first-born participants: sibling positivity (.96; .94), sibling negativity (.96; .95), sibling relative power (.79; .91).

Cronbach alphas were as follows at Time 1 and Time 2 for second-born participants: sibling positivity (.93; .92), sibling negativity (.93; .85), sibling relative power (.85; .93).

Mean scores for positivity, negativity and relative power were used in the final analyses.

Higher values of the positivity and negativity scale indicated greater positivity and greater negativity. Higher values of the relative power scale indicated that participants perceived their sibling to have greater power within their relationship.

Communication. As in Study 1, frequency of communication to siblings was assessed using a scale developed by Killoren et al. (2014). Cronbach alphas were as follows at Time 1 and Time 2 for first-born participants: .70, .50. Cronbach alphas were as follows at Time 1 and Time 2 for second-born participants: .60, .52. A mean of the items was used in analyses, and higher values indicated more frequent communication.

Self-Disclosure. As in Study 1, self-disclosure siblings was assessed using a scale adapted from previous work on parent-adolescent disclosure (e.g., Smetana et al., 2006). The alphas for first-borns' Time 1 and Time 2 overall disclosure to siblings could not be computed due to no participants completing 100% of these items). However, Cronbach alphas by domain at Time 1 and Time 2, respectively, were: personal (.93; .93), prudential (.87; .75), multifaceted (.73; .92)]. Cronbach alphas were as follows at Time 1 and Time 2 for second-borns' disclosure to siblings [overall (.89; .95), personal (.88; .95),

prudential (.92; .79), multifaceted (.82; .71)]. Mean scores overall self-disclosure to siblings were used in the final analyses, with higher values indicating more frequent self-disclosure.

Depression. As in Study 1, depression was assessed using the Center for Epidemiologic Studies Depression Scale (Radloff, 1977). Cronbach alpha at Time 1 was .90 for first-borns and .92 for second-borns. At Time 2, Cronbach alphas were .88 for first-borns and .93 for second-borns. Mean scores (with some items reverse-scored) were used in the final analyses, and higher values indicated greater depression. Mean reports of depressive symptoms were as follows: $M = 1.62$, $SD = .42$ (Time 1, first-borns); $M = 1.68$, $SD = .50$ (Time 1, second-borns); $M = 1.69$, $SD = .35$ (Time 2, first-borns); $M = 1.60$, $SD = .59$ (Time 2, second-borns).

Anxiety. As in Study 1, anxiety was assessed using the Revised Children's Manifest Anxiety Scale (Reynolds & Richmond, 1978). At Time 1, Cronbach alpha was .93 for first-borns and .94 for second-borns. At Time 2, Cronbach alpha was .89 for first-borns and .94 for second-borns. Mean scores were used in the final analyses, and higher values indicated greater anxiety. Mean reports of anxiety were as follows: $M = 2.15$, $SD = .59$ (Time 1, first-borns); $M = 2.23$, $SD = .69$ (Time 1, second-borns); $M = 2.24$, $SD = .44$ (Time 2, first-borns); $M = 2.05$, $SD = .75$ (Time 2, second-borns).

Self-Esteem. As in Study 1, self-esteem was assessed using the Rosenberg Self-Esteem Scale (Rosenberg, 1989). At Time 1, Cronbach alpha was .91 for first-borns and .92 for second-borns. At Time 2, Cronbach alpha was .90 for first-borns and .97 for second-borns. Mean scores (with some items reverse-scored) were used in the final analyses, and higher values indicated greater self-esteem. Mean reports of self-esteem

were as follows: $M = 4.11$, $SD = .69$ (Time 1, first-borns); $M = 4.13$, $SD = .78$ (Time 1, second-borns); $M = 4.07$, $SD = .55$ (Time 2, first-borns); $M = 4.28$, $SD = 1.04$ (Time 2, second-borns).

Academic Achievement. As in Study 1, participants reported their previous semester's grades at Time 1 and Time 2. Possible responses included "mostly As" (4), "mostly Bs" (3), "mostly Cs" (2), "mostly Ds" (1), "mostly Fs" (0). Mean reports of academic achievement were as follows: $M = 3.58$, $SD = .56$ (Time 1, first-borns); $M = 3.57$, $SD = .65$ (Time 1, second-borns); $M = 3.47$, $SD = .56$ (Time 2, first-borns); $M = 3.44$, $SD = .58$ (Time 2, second-borns).

Vocational Identity. As in Study 1, the Vocational Identity Scale (Holland et al., 1980) was administered at Wave 2 as a measure of the strength of one's vocational identity. Cronbach alpha for first-borns was .90, and for second-borns was .85. Scores were summed for use in final analyses, and lower values indicated a stronger vocational identity. Mean reports of vocational identity were as follows: $M = 5.56$, $SD = 4.05$ (Time 2, first-borns); $M = 8.66$, $SD = 5.30$ (Time 2, second-borns).

Financial Dependence. As in Study 1, participants will report their level of financial dependence on their parents at Wave 2 using a scale adapted from Padilla-Walker et al. (2012). An additional option of "not applicable" was added to the four-point scale to account for the possibility that not all younger siblings will have all of these expenses if they are not enrolled in college (e.g., tuition). Cronbach alpha for first-borns was .74, and for second-borns was .81. Mean scores were used in the final analyses, and higher values indicated greater financial dependence on parents. Mean reports of

financial dependence on parents were as follows: $M = 2.72$, $SD = .61$ (Time 2, first-borns); $M = 2.93$, $SD = .81$ (Time 2, second-borns).

CHAPTER 6

RESULTS (STUDY 2)

Analytical Plan

We addressed our three primary aims regarding sibling relationships in a manner similar to Study 1, but taking into account the dyadic structure of the data in Study 2. First, we investigated longitudinal changes in sibling relationships (Aim 1) via a series of repeated-measures ANCOVAs. Specifically, to examine over-time changes in sibling relationship qualities (communication, positivity, negativity, relative power, self-disclosure), we computed five separate 2 (Time; Time 1 vs. Time 2) X 2 (Ordinal Position; 1st-born vs. 2nd-born) X 2 (Gender; Male vs. Female) X 2 (Sibling Gender; Male vs. Female) ANCOVAs. Sibling age difference, Time 1 Distance from Sibling, and Time 2 Financial Dependence on Parents were entered as covariates, and Time and Ordinal position were entered as repeated-measures variables. Significant interactions were probed via correlations and *t*-tests, and results are only reported if post-hoc examinations revealed significant effects. See Tables 15 and 16 for means and standard deviations of sibling relationship quality variables, and correlations between variables, respectively.

Next, we investigated potential longitudinal associations between sibling relationship qualities and emotional adjustment (Aim 2) and achievement (Aim 3). Because of the dyadic structure of the data, we utilized Actor-Partner Interdependence Modeling (APIM) via a multilevel modeling approach. APIM allows for the examination of both actor and partner effects, where in the case of the present study, actor effects illustrate associations between one sibling's perception of the relationship at Time 1 and

their own outcome (emotional adjustment, achievement) at Time 2. In contrast, partner effects illustrate associations between one sibling's perception of the relationship at Time 1 and their sibling's outcome at Time 2. Five relationship qualities (communication, positivity, negativity, relative power, self-disclosure) were examined in separate models for each outcome variable (depression, anxiety, self-esteem, academic achievement, vocational identity achievement), resulting in a total of 25 models. In addition, within each model, we also examined the moderating roles of actor and partner gender (0 = *female*, 1 = *male*), actor ordinal position (0 = *second-born*, 1 = *first-born*), and the actor's financial dependence on parents. All models also controlled for the actor's age at Time 1, distance from their sibling at Time 1, and the Time 1 report of each model's outcome variable (with the exception of vocational identity, which was not collected at Time 1).

For each association, models were first run with all possible interactions between actor and partner relationship quality, actor and partner gender, ordinal position, and financial dependence (up through five-way interactions). If the five-way interaction for that model was not significant, the model was re-run with only four-way interactions and below; if those four-way interactions were all not significant, the model was re-run with only three-way interactions and below; if those three-way interactions were all non-significant, the model was re-run with only two-way interactions and below; if those interactions were not significant, a model with main effects only was retained as the final model. When interactions that were not subsumed under higher-order interactions were significant, simple slopes were calculated according to procedures outlined by Aiken and West (1991). For parsimony, only associations with relationship quality are discussed in

the text, and interactions are only discussed if simple slope analyses yielded significant results and if they are not subsumed under a significant higher-order interaction.

Missing data. Because of sample attrition across the two waves of data collection, as well as non-completion of all questionnaire items, there was a fair amount of missing data in Study 2. Imputed data from Study 1 was utilized for older siblings in the present study. For younger siblings, at Wave 1, missing data on measures of sibling relationship quality, depression, anxiety, and self-esteem ranged from 0.35-4.07% missing, and Little's MCAR test indicated that all of this data was missing completely at random (relationship quality: $X^2 [340] = 321.71, p = .755$; depression: $X^2 [131] = 131.10, p = .481$; anxiety: $X^2 [237] = 224.26, p = .714$; self-esteem: $X^2 [36] = 36.72, p = .435$). For the communication and self-disclosure measures, participants had the option to indicate if they never communicated using a particular type of technology, or never discussed a particular topic, respectively, so there was greater missingness (communication: 6.29%, self-disclosure: 30.20%).

At Wave 2, missing data from participating younger siblings on measures of sibling relationship quality, depression, anxiety, self-esteem, vocational identity, and financial dependence on parents ranged from 0.15-1.18% missing, and Little's MCAR test indicated that all of this data except the measure of self-esteem was missing completely at random (relationship quality: $X^2 [227] = 138.41, p = 1.00$; depression: $X^2 [19] = 24.05, p = .190$; anxiety: $X^2 [188] = 188.02, p = .490$; self-esteem: $X^2 [18] = 38.05, p = .004$; vocational identity: $X^2 [17] = 26.85, p = .060$; financial dependence: $X^2 [4] = 4.73, p = .317$). Once again, missingness was greater for the measures of communication (16.91%) and self-disclosure (25.15%).

Younger siblings' missing data was estimated using multiple imputation in a manner similar to that used in Study 1. Specifically, we followed the same two-step method where we used multiple imputation procedures in SPSS to first estimate data that was missing completely at random (MCAR) due to participants not completing all items. Then, data was estimated for those participants who did not continue their participation at Wave 2. Auxiliary variables of age, gender, birth order, sibling gender, sibling age, and distance from siblings were included in all imputation procedures. Wave 1 measures were included as additional auxiliary variables during the estimation of Wave 2 data. All imputed values were pooled for data analysis.

Longitudinal Changes in Sibling Relationships (Aim 1)

Communication. For the ANCOVA examining communication to siblings, there was a significant main effect of birth order, $F(1, 51) = 3.88, p = .054, \eta_p^2 = .07$, but this was qualified by a significant Time X Birth Order interaction, $F(1, 51) = 5.23, p = .026, \eta_p^2 = .09$. Both older and younger siblings reported increases in communication from Time 1 to Time 2 ($ts(57) = 2.31-3.32, ps = .002-.024$), and older siblings reported more communication than younger siblings at both Time 1 and Time 2 ($ts(57) = 2.04-3.90, ps = .001-.046$).

There was also a significant main effect of Emerging Adult Gender, $F(1, 51) = 7.77, p = .007, \eta_p^2 = .13$, which was qualified by a significant Emerging Adult X Sibling Gender interaction, $F(1, 51) = 5.74, p = .020, \eta_p^2 = .10$. Tukey post-hoc comparisons revealed that communication was greater in sister-sister dyads than all other sibling dyads, who did not differ significantly from one another ($ps = .003-.010$).

Positivity. For the ANCOVA examining sibling relationship positivity, there was a significant main effect of Emerging Adult gender, $F(1, 51) = 5.44, p = .024, \eta_p^2 = .096$, but this was qualified by a significant Emerging Adult X Sibling Gender interaction, $F(1, 51) = 7.16, p = .010, \eta_p^2 = .12$. Tukey post-hoc comparisons revealed that positivity was greater in sister-sister dyads than mixed-sex sibling dyads ($ps = .006-.010$).

Negativity. There were no significant effects in the ANCOVA examining negative sibling relationship quality.

Relative power. For the ANCOVA examining sibling relative power, there was a significant main effect of Age Difference, $F(1, 51) = 5.58, p = .022, \eta_p^2 = .10$, and a significant Birth Order X Age Difference interaction, $F(1, 51) = 15.74, p < .001, \eta_p^2 = .24$. However, these effects were qualified by a significant Time X Birth Order X Age Difference interaction, $F(1, 51) = 8.97, p = .004, \eta_p^2 = .15$. For siblings who were far apart in age (as determined by a median split), younger siblings reported that their older siblings held more power in the relationship (T1: $M = 2.77, SD = .73$; T2: $M = 2.58, SD = 1.05$) than older siblings reported about their younger siblings (T1: $M = 1.94, SD = .71$; T2: $M = 2.03, SD = .75$), at both Time 1 and Time 2 ($ts(29) = 2.29-5.06, ps = .001-.030$). However, for siblings who were closer in age, younger siblings reported that their older siblings held more power in the relationship ($M = 2.24, SD = .81$) than older siblings reported about their younger siblings ($M = 1.84, SD = .52$) at only Time 1 ($t(27) = 2.23, p = .034$). At Time 2, there were no significant differences between older and younger siblings' reports of sibling relative power among close-in-age siblings.

There was also a significant Emerging Adult Gender main effect, $F(1, 51) = 4.49$, $p = .039$, $\eta_p^2 = .08$, which suggested that females perceived their siblings to hold more relative power than did males.

Self-Disclosure. For the ANCOVA examining self-disclosure to siblings, there was a significant main effect of Emerging Adult Gender, $F(1, 51) = 9.42$, $p = .003$, $\eta_p^2 = .16$, but this was qualified by a significant Emerging Adult X Sibling Gender interaction, $F(1, 51) = 9.36$, $p = .004$, $\eta_p^2 = .16$. Tukey post-hoc comparisons revealed that communication was greater in sister-sister dyads than all other sibling dyads, which did not differ significantly from one another ($ps = .001-.010$).

Summary. Overall, the analyses examining changes in sibling relationships indicated that communication between siblings increased from Time 1 to Time 2, and these relationships became significantly more egalitarian over time in dyads where siblings were relatively close in age. In general, sister-sister dyads reported the most communication, positivity, and self-disclosure among all possible sibling gender compositions.

Longitudinal Associations between Sibling Relationships and Emotional Adjustment (Aim 2)

Depression. See Table 17 for final model parameter estimates for models examining associations between sibling relationship qualities and depression.

Communication. For the final model examining associations between Time 1 sibling communication and Time 2 depressive symptoms, there was a significant Birth Order X Partner Gender X Actor Communication interaction. Simple slopes analyses indicated that greater communication at Time 1 from younger siblings to older brothers

($b = -1.78, t(38.68) = -2.75, p = .009$) was associated with younger siblings' lower depression at Time 2.

There was also a significant Birth Order X Actor Gender X Financial Dependence X Actor Communication interaction. Simple slopes analyses indicated that greater communication from older males ($b = 2.02, t(51.65) = 2.12, p = .039$) and older females ($b = .59, t(34.67) = 2.52, p = .016$) with low financial dependence to younger siblings at Time 1 was associated with older siblings' greater depression at Time 2. In contrast, greater communication from younger males with low financial dependence to older siblings at Time 1 was associated with younger males' lower depression at Time 2 ($b = -1.70, t(35.97) = -2.91, p = .006$).

There were also significant Birth Order X Partner Gender X Partner Communication and Actor Gender X Partner Gender X Financial Dependence X Actor Communication interactions. However, no significant simple slopes were produced.

Positivity. For the final model examining associations between Time 1 sibling positivity and Time 2 depressive symptoms, there was a significant Partner Gender X Actor Positivity interaction. Simple slopes analyses indicated that the greater positivity youth reported in relationships with sisters at Time 1, the lower their depression at Time 2 ($b = -.55, t(60.56) = -2.74, p = .008$).

There was also a significant Birth Order X Financial Dependence X Actor Positivity interaction. Simple slopes analyses indicated that the greater positivity younger siblings with low financial dependence reported at Time 1, the lower their depression at Time 2 ($b = -.81, t(40.95) = -2.24, p = .031$).

All other significant interactions did not produce significant simple slopes.

Negativity. For the final model examining associations between Time 1 sibling negativity and Time 2 depressive symptoms, there was a significant Actor Gender X Actor Negativity interaction, but no significant simple slopes were produced.

Relative power. For the final model examining associations between Time 1 sibling relative power and Time 2 depressive symptoms, there was a significant Birth Order X Actor Relative Power interaction. Simple slopes analyses revealed that the more power younger siblings perceived their older siblings to have at Time 1, the greater younger siblings' depression was at Time 2 ($b = .38$, $t(55.20) = 2.27$, $p = .027$).

Self-disclosure. For the final model examining associations between Time 1 self-disclosure to siblings and Time 2 depressive symptoms, there were no significant associations between self-disclosure and depressive symptoms.

Summary. Similar to the results in Study 1, the analyses examining associations between sibling relationships and depressive symptoms indicated that the quality of sibling relationships has some important longitudinal implications for depressive symptoms. Communication with older siblings is protective against depressive symptoms for younger siblings, but in contrast, greater communication with younger siblings may exacerbate depressive symptoms for older siblings. In general, greater positivity with sisters and older siblings is associated with lower depression. However, greater relative power held by older siblings at Time 1 was associated with greater depressive symptoms for younger siblings at Time 2.

Anxiety. See Table 18 for final model parameter estimates for models examining associations between sibling relationship qualities and anxiety.

Communication. For the final model examining associations between Time 1 communication to siblings and Time 2 anxiety symptoms, there was a significant Birth Order X Actor Communication interaction. Simple slopes analyses indicated that for older siblings, greater communication with younger siblings at Time 1 was associated with more anxiety symptoms for older siblings at Time 2 ($b = .31, t(60.96) = 2.18, p = .033$), but for younger siblings, greater communication with older siblings at Time 1 was associated with fewer anxiety symptoms for younger siblings at Time 2 ($b = -.31, t(44.17) = -2.57, p = .014$).

There was also a significant Partner Gender X Actor Communication interaction. Simple slopes analyses revealed that greater communication with brothers at Time 1 was associated with fewer anxiety symptoms at Time 2 ($b = -.27, t(91.93) = -1.97, p = .052$).

Positivity. For the final model examining associations between Time 1 positivity and Time 2 anxiety symptoms, there was a significant Actor Gender X Partner Gender X Actor Positivity interaction. Simple slopes analyses revealed that greater positivity felt by males with their brothers at Time 1 was associated with greater anxiety at Time 2 ($b = .82, t(75.47) = 2.07, p = .042$).

Negativity. For the final model examining associations between Time 1 negativity and Time 2 anxiety symptoms, there was a significant Birth Order X Partner Gender X Financial Dependence X Partner Negativity interaction. Simple slopes analyses revealed that for older siblings with low financial dependence, the more negativity that their younger sisters reported at Time 1, the greater anxiety older siblings reported at Time 2 ($b = 1.05, t(32.80) = 2.43, p = .021$).

Relative power. For the final model examining associations between Time 1 sibling relative power and Time 2 anxiety symptoms, there was a significant Birth Order X Actor Gender X Actor Relative Power interaction. Simple slopes analyses revealed that the more power older males reported that their younger siblings had at Time 1, the lower older males' anxiety was at Time 2 ($b = -.63, t(37.70) = -.63, p = .024$). Similarly, the less power younger males reported that their older siblings had at Time 1, the lower younger males' anxiety was at Time 2 ($b = .44, t(47.11) = 2.13, p = .038$).

There was also a significant Birth Order X Partner Gender X Actor Relative Power interaction. Simple slopes analyses revealed that the more power older siblings reported that their younger sisters had at Time 1, the lower older siblings' anxiety was at Time 2 ($b = -.61, t(38.20) = -2.76, p = .009$). Similarly, the less power younger siblings reported that their older sisters had at Time 1, the lower younger siblings' anxiety was at Time 2 ($b = .40, t(47.71) = 2.11, p = .040$).

Finally, there was a significant Actor Gender X Partner Gender X Actor Relative Power interaction. Simple slopes analyses revealed that the more power males reported that their brothers had at Time 1, the greater males' anxiety was at Time 2 ($b = .51, t(73.00) = 2.55, p = .013$). In contrast, the more power males reported that their sisters had at Time 1, the lower males' anxiety was at Time 2 ($b = -.55, t(69.85) = -2.32, p = .023$).

Self-disclosure. For the final model examining associations between Time 1 self-disclosure to siblings and Time 2 anxiety symptoms, there were no significant associations between self-disclosure and anxiety.

Summary. Similar to the results related to depressive symptoms, the analyses examining associations between sibling relationships and anxiety symptoms indicated

that sibling relationship qualities have several important implications for anxiety, though these implications largely depend on birth order, as well as gender to some extent. Specifically, greater communication from younger to older siblings was associated with lower anxiety for younger siblings, but in contrast, greater communication from older to younger siblings was associated with greater anxiety for older siblings. In addition, greater positivity with brothers was associated with greater anxiety, while greater negativity was also associated with greater anxiety (particularly for older brothers with a younger sister). However, more egalitarian relationships, where younger siblings held more relative power, and older siblings held less relative power, tended to result in lower anxiety for both older and younger siblings. Interestingly, for males, greater power held by brothers was associated with greater anxiety, while greater power held by sisters was associated with lower anxiety.

Self-Esteem. See Table 19 for final model parameter estimates for models examining associations between sibling relationship qualities and self-esteem.

Communication. For the final model examining associations between Time 1 communication with siblings and Time 2 self-esteem, there was a significant Birth Order X Actor Gender X Partner Gender X Actor Communication interaction. Simple slopes analyses revealed that for younger females, greater communication with older brothers at Time 1 was associated with younger females' greater self-esteem at Time 2 ($b = 1.84$, $t(33.66) = 2.01$, $p = .053$).

Positivity. For the final model examining associations between Time 1 positivity and Time 2 self-esteem, there was a significant Actor Gender X Partner Gender X Actor Positivity interaction. Simple slopes analyses revealed that for males, greater positivity

with brothers at Time 1 was associated with lower self-esteem at Time 2 ($b = -1.33$, $t(67.00) = -2.06$, $p = .043$), while greater positivity with sisters was associated with greater self-esteem ($b = .71$, $t(55.62) = 2.76$, $p = .008$).

There was also a significant Birth Order X Financial Dependence X Partner Positivity interaction. Simple slopes analyses revealed that greater positivity reported by older siblings at Time 1 was associated with greater self-esteem for younger siblings with low financial dependence at Time 2 ($b = 1.76$, $t(60.51) = 2.43$, $p = .018$).

There was also a significant Partner Gender X Financial Dependence X Partner Positivity interaction. Simple slopes analyses revealed that the more positivity brothers reported in their relationship at Time 1, the greater self-esteem their siblings with high financial dependence reported at Time 2 ($b = 2.26$, $t(63.52) = 1.97$, $p = .053$).

There was also a significant Birth Order X Partner Gender X Financial Dependence X Actor Positivity interaction. Simple slopes analyses revealed that among younger siblings with an older brother, greater positivity was associated with a lower self-esteem for those with high financial dependence ($b = -3.73$, $t(66.86) = -2.89$, $p = .005$), while greater positivity was associated with a higher self-esteem for those with low financial dependence ($b = 1.35$, $t(56.21) = 2.29$, $p = .026$).

Finally, there was a significant Birth Order X Actor Gender X Partner Gender X Partner Positivity interaction. Simple slopes analyses indicated that the more positivity older brothers reported in their relationship at Time 1, the greater their younger brothers' self esteem was at Time 2 ($b = 2.80$, $t(66.19) = 2.68$, $p = .009$).

Negativity. For the final model examining associations between Time 1 negativity and Time 2 self-esteem, there was a significant Actor Gender X Financial Dependence X

Partner Negativity interaction. Simple slopes analyses revealed that the greater negativity youth reported in their relationship, the greater self-esteem their male siblings with high financial dependence reported at Time 2 ($b = .95, t(53.31) = 2.43, p = .019$).

There was also a significant Birth Order X Actor Gender X Partner Gender X Partner Negativity interaction. Simple slopes analyses revealed that the greater negativity younger sisters reported at Time 1, the greater self-esteem their older brothers reported at Time 2 ($b = .97, t(43.88) = 3.45, p = .001$).

Relative power. For the final model examining associations between Time 1 sibling relative power and Time 2 self-esteem, there was a significant Birth Order X Actor Gender X Financial Dependence X Actor Relative Power interaction. Simple slopes analyses revealed that the more power highly financially dependent older males reported their younger siblings had at Time 1, the greater self-esteem older males reported at Time 2 ($b = 2.33, t(47.25) = 2.26, p = .029$). In contrast, the less power younger females with low financial dependence reported their older siblings had at Time 1, the greater self-esteem younger females reported at Time 2 ($b = -1.65, t(59.02) = -1.99, p = .051$).

There was also a significant Birth Order X Partner Gender X Financial Dependence X Actor Relative Power interaction. Simple slopes analyses revealed that the more power highly financially dependent older siblings reported their younger sisters had at Time 1, the greater self-esteem older siblings had at Time 2 ($b = 1.90, t(56.50) = 2.70, p = .009$).

Finally, there was a significant Actor Gender X Partner Gender X Financial Dependence X Actor Relative Power interaction. Simple slopes analyses revealed that the

more power highly financially dependent males reported that their sisters had at Time 1, the greater self-esteem males reported at Time 2 ($b = 2.10$, $t(62.12) = 2.67$, $p = .010$).

Self-disclosure. For the final model examining associations between Time 1 self-disclosure to siblings and Time 2 self-esteem, there was a significant Birth Order X Actor Gender X Partner Gender X Actor Self-disclosure interaction. Simple slopes analyses revealed that the more that older males disclosed to their younger brothers at Time 1, the lower older males' self-esteem was at Time 2 ($b = -.95$, $t(26.18) = -2.74$, $p = .011$). In contrast, the more that older males disclosed to their younger sisters at Time 1, the greater older males' self-esteem was at Time 2 ($b = 1.66$, $t(29.78) = 1.66$, $p = .012$).

There was also a significant Birth Order X Actor Gender X Financial Dependence X Partner Self-disclosure interaction. Simple slopes analyses revealed that the more that older siblings disclosed to younger sisters with high financial dependence, the lower younger sisters' self-esteem was at Time 2 ($b = -2.06$, $t(37.09) = -2.09$, $p = .044$).

There was also a significant Birth Order X Partner Gender X Financial Dependence X Partner Self-disclosure interaction. Simple slopes analyses revealed that the more that older brothers disclosed to younger siblings with high financial dependence, the lower self-esteem younger siblings reported at Time 2 ($b = -2.88$, $t(34.67) = -2.07$, $p = .046$).

Finally, there was a significant Actor Gender X Partner Gender X Financial Dependence X Partner Self-disclosure interaction. Simple slopes analyses revealed that the more that brothers disclosed to sisters who were highly financially dependent, the lower their sisters' self-esteem was at Time 2 ($b = -2.44$, $t(43.50) = -2.06$, $p = .046$).

Summary. The analyses examining associations between sibling relationships and self-esteem indicated that the quality of sibling relationships also appears to have some important longitudinal implications for self-esteem. In general, communication with older siblings and highly positive relationships tend to be associated with greater self-esteem. However, among highly financially dependent males, having less positive and more negative relationships with brothers appeared to result in greater self-esteem. Similar to the results related to depression and anxiety symptoms, greater relative power held by younger siblings (and sisters), and less relative power held by older siblings tended to support greater self-esteem for both older and younger siblings. Finally, greater self-disclosure to younger siblings was generally associated with lower self-esteem for older siblings and the recipient of the disclosure (unless they were disclosing to a sister, which was beneficial for self-esteem), particularly those who were highly financially dependent on their parents.

Longitudinal Associations between Sibling Relationships and Achievement (Aim 3)

Academic Achievement. See Table 20 for final model parameter estimates for models examining associations between sibling relationship qualities and academic achievement.

Communication. For the final model examining associations between Time 1 communication with siblings and Time 2 academic achievement, there was a significant Birth Order X Actor Gender X Actor Communication interaction. Simple slopes analyses revealed that the more that older males communicated with their younger siblings at Time 1, the lower older males' academic achievement was at Time 2 ($b = -1.38$, $t(35.79) = -2.40$, $p = .022$). In contrast, the more that younger males communicated with their

older siblings at Time 1, the greater younger males' academic achievement was at Time 2 ($b = .77, t(35.87) = 2.04, p = .049$).

There was also a significant Birth Order X Partner Gender X Actor Communication interaction. Simple slopes analyses revealed that the more that older siblings communicated with younger brothers, the greater older siblings' academic achievement was at Time 2 ($b = .81, t(37.99) = 2.01, p = .052$). In contrast, the more that older siblings communicated with younger sisters, the lower older siblings' academic achievement was at Time 2 ($b = -1.61, t(36.43) = -3.86, p < .001$).

There was also a significant Birth Order X Financial Dependence X Actor Communication interaction. Simple slopes analyses revealed that the more highly financially dependent older siblings communicated with younger siblings at Time 1, the lower older siblings' academic achievement was at Time 2 ($b = -1.66, t(46.92) = -2.81, p = .007$).

There was also a significant Actor Gender X Partner Gender X Actor Communication interaction. Simple slopes analyses revealed that the more males communicated with brothers at Time 1, the greater males' academic achievement was at Time 2 ($b = 1.12, t(62.31) = 2.18, p = .033$). In contrast, the more males communicated with sisters at Time 1, the lower males' academic achievement was at Time 2 ($b = -1.39, t(52.72) = -3.05, p = .004$).

There was also a significant Actor Gender X Partner Gender X Partner Communication interaction. Simple slopes analyses revealed that the more sisters communicated with males at Time 1, the greater males' academic achievement was at Time 2 ($b = 1.16, t(66.62) = 2.82, p = .006$).

Finally, there was a significant Birth Order X Actor Gender X Financial Dependence X Partner Communication interaction. Simple slopes analyses revealed that the more that younger siblings communicated with highly financially dependent older brothers, the greater academic achievement older brothers reported at Time 2 ($b = 4.83$, $t(37.41) = 2.76$, $p = .009$). In contrast, the more that younger siblings communicated with older brothers with low financial dependence, the lower academic achievement older brothers reported at Time 2 ($b = -3.33$, $t(36.19) = -2.41$, $p = .021$).

Positivity. In the final model examining associations between Time 1 positivity and Time 2 academic achievement, there were no significant effects.

Negativity. For the final model examining associations between Time 1 negativity and Time 2 academic achievement, there was a significant Birth Order X Partner Gender X Partner Negativity interaction. Simple slopes analyses revealed that the more negativity younger sisters reported at Time 1, the greater older siblings' academic achievement was at Time 2 ($b = .73$, $t(40.88) = 3.35$, $p = .002$).

There was also a significant Birth Order X Actor Gender X Financial Dependence X Actor Negativity interaction. Simple slopes analyses revealed that the more negativity older males with low financial dependence reported at Time 1, the greater their academic achievement was at Time 2 ($b = 3.15$, $t(52.27) = 3.95$, $p < .001$).

Finally, there was a significant Actor Gender X Partner Gender X Financial Dependence X Actor Negativity interaction. Simple slopes analyses revealed that the more negativity highly financially dependent males reported in their relationships with sisters at Time 1, the lower their academic achievement was at Time 2 ($b = -1.39$, $t(66.99) = -2.59$, $p = .012$). In contrast, the more negativity males with low financial

dependence reported in their relationships with sisters at Time 1, the greater their academic achievement was at Time 2 ($b = 3.02$, $t(60.39) = 3.48$, $p = .001$).

Relative power. For the final model examining associations between Time 1 sibling relative power and Time 2 academic achievement, there was a significant Birth Order X Partner Relative Power interaction. Simple slopes analyses revealed that the more power younger siblings felt their older siblings held in the relationship at Time 1, the greater academic achievement older siblings reported at Time 2 ($b = -.41$, $t(59.89) = -2.19$, $p = .033$).

There was also a significant Partner Gender X Financial Dependence X Actor Relative Power interaction. Simple slopes analyses revealed that the more power siblings with low financial dependence felt their sisters held at Time 1, the greater academic achievement they reported at Time 2 ($b = .69$, $t(75.43) = 2.34$, $p = .022$).

Self-disclosure. For the final model examining associations between Time 1 self-disclosure to siblings and Time 2 academic achievement, there was a significant Partner Gender X Partner Self-disclosure interaction, but no significant simple slopes were produced.

Summary. The analyses examining associations between sibling relationships and academic achievement indicated that sibling relationship qualities had several nuanced associations with academic achievement. In general, greater communication from older to younger siblings was associated with lower academic achievement for older siblings, but greater communication from younger to older siblings was associated with greater academic achievement for younger siblings. Greater negativity was associated with lower academic achievement among highly financially dependent mixed-gender siblings, but

surprisingly, greater negativity was associated with greater academic achievement for older siblings in many cases. In addition, academic achievement was greater for older siblings with greater relative power, and for those with more powerful sisters.

Vocational Identity Achievement. See Table 21 for final model parameter estimates for models examining associations between sibling relationship qualities and vocational identity achievement.

Communication. For the final model examining associations between Time 1 communication with siblings and Time 2 vocational identity achievement, there were no significant effects.

Positivity. For the final model examining associations between Time 1 positivity and Time 2 vocational identity achievement, there was a significant Partner Gender X Financial Dependence X Actor Positivity interaction, but there were no significant simple slopes.

Negativity. For the final model examining associations between Time 1 negativity and Time 2 vocational identity achievement, there was a significant Actor Gender X Actor Negativity interaction. Simple slopes analyses revealed that the more negativity females reported in their sibling relationship at Time 1, the weaker their vocational identity was at Time 2 ($b = .31, t(92.20) = 2.28, p = .025$).

Relative power. For the final model examining associations between Time 1 sibling relative power and Time 2 vocational identity achievement, there was a significant Actor Gender X Partner Relative Power interaction, but simple slopes analyses revealed no significant effects.

Self-disclosure. For the final model examining associations between Time 1 self-disclosure to siblings and Time 2 vocational identity achievement, there were no significant effects.

Summary. Overall, the analyses examining associations between sibling relationships and vocational identity indicated that the quality of sibling relationships did not appear to have many longitudinal implications for vocational identity achievement, though negative relationships appeared to be somewhat detrimental for females' vocational identity development.

CHAPTER 7

DISCUSSION (STUDY 2)

The study of sibling relationships during emerging adulthood is only in its infancy (Padilla-Walker et al., 2017), but both theory (e.g., Conger & Little, 2010) and empirical work (e.g., Lindell et al., 2014; Scharf et al., 2005; Whiteman et al., 2011) suggests that sibling relationships undergo significant changes when first-borns leave the family home to attend post-secondary education. Typically, changes include decreases in conflict, and increases in relationship satisfaction and emotional connection, despite decreases in communication and shared time. Although sibling relationships generally undergo positive changes during first-borns' initial transition to college, less is known about how these relationships continue to function after this initial transition. Understanding how sibling relationships function and are maintained during one of the first voluntary periods of the life course if the longevity of these relationships is particularly necessary given the important support functions that siblings fulfill later in adulthood (Cicirelli, 1995). Thus, Study 2 examined longitudinal changes in sibling relationships from the perspective of first-born and second-born sibling dyads from first-borns' first through fourth year of college. Given siblings' documented role in various developmental outcomes during childhood and adolescence (Dunn, 2002; McHale et al., 2006) we also examined longitudinal associations between sibling relationship qualities and first- and second-borns' emotional and academic adjustment. We generally expected that sibling relationships would become more positive and less negative despite decreases in communication, and we also expected that these relationships would become more egalitarian over time. Finally, we

generally expected that high-quality sibling relationships would be positively associated with better emotional and academic outcomes. However, we expected that some of these longitudinal changes and associations would be moderated by sibling structural variables (ordinal position, gender) and also perhaps siblings' level of financial dependence on their parents, given that this may lead family relationships broadly to remain more salient than for those who are less financially tied to their families.

Longitudinal Changes in Sibling Relationships (Aim 1)

The first aim of Study 2 was to examine changes in sibling relationship qualities among first-born college students and their second-born siblings from first-borns' first to fourth years of college. Specifically, we examined changes in communication frequency, relationship positivity, relationship negativity, sibling relative power, and self-disclosure. As described below, our analyses revealed areas of both stability and change in sibling relationships, as well as some differences based on sibling structural characteristics.

First, the present study revealed increases in sibling communication from Time 1 to Time 2. Communication with siblings typically declines significantly during first-borns' initial transition to emerging adulthood, likely because siblings suddenly have less in common and fewer shared experiences once one sibling has moved out and established a more independent lifestyle away from the family, while the other is still at home (see Lindell & Campione-Barr, 2017, for a review). However, as younger siblings approach emerging adulthood, they likely develop new interests and experiences that are more salient to their older siblings, and thus communication likely increases due to more shared interests and younger siblings receiving information or advice from their older siblings. Interestingly, older siblings reported more communication than their younger

siblings, which may reflect the idea that older siblings often serve as the kin-keepers of the family and work to maintain the cohesion of their siblings' relationships (Spitze & Trent, 2006).

The present study also indicated significant changes in the hierarchical structure of siblings' relationships, with a shift toward more egalitarian relationships for siblings who were close in age. Specifically, for siblings who were farther apart in age, older siblings had significantly more relative power compared to their younger siblings at both Time 1 and Time 2. Siblings who are far apart in age experience a more natural hierarchy given major developmental differences in maturity, interests, and life experiences (Buhrmester & Furman, 1990). However, for siblings closer in age, while older siblings had significantly more power than younger siblings at Time 1, there were no longer differences in relative power at Time 2, indicating that these relationships had become more egalitarian over time. This is in line with Aquilino's (2006) theorizing that a major task for siblings during emerging adulthood is the elimination of power imbalances in order to allow for more reciprocal support as adults. Our particular data suggest that this may occur once younger siblings approach emerging adulthood and both siblings are out of the family home (or at least living more autonomous lifestyles).

Interestingly, our data revealed relative stability in sibling positivity, sibling negativity, and self-disclosure. It may be that first-borns' initial transition out of the family home is a major catalyst for improvements in the sibling relationship, and that how siblings navigate the initial transition has lasting impacts for the relationship across emerging adulthood. Indeed, both older and younger siblings reported relatively high

levels of positivity, low negativity, and moderate levels of self-disclosure at both time points, suggesting harmonious and emotionally close relationships on average.

Consistent with the literature, there were nevertheless some gender differences in sibling relationship qualities overall. Sister-sister dyads reported the highest levels of communication, self-disclosure and positivity of all sibling gender dyads. This is consistent with the *principle of femaleness*, which suggests that the more females who are in a relationship, the closer that relationship would be (Akiyama, Elliott, & Antonucci, 1996; Spitze & Trent, 2006). In addition, females tended to perceive their siblings to hold more relative power in their relationships than males perceived. It is possible that traditional gender stereotypes about female submission make it more likely for siblings to try to assert power over sisters than males (Maccoby, 1998). It is also possible that females are more sensitive to noticing power discrepancies than males because of current societal scrutiny over systematic discrimination against women (e.g., Uhlmann & Cohen, 2005).

Longitudinal Associations between Sibling Relationship Qualities and Emotional Adjustment (Aim 2)

The second aim of Study 2 was to examine associations between sibling relationship qualities during first-borns' first year of college and emotional adjustment three years later, controlling for earlier levels of emotional adjustment. Specifically, we examined communication frequency, relationship positivity, relationship negativity, sibling relative power, and self-disclosure frequency, and their associations with depressive symptoms, anxiety, and self-esteem. In general, we expected sibling relationships to serve as important support systems, such that greater communication and

self-disclosure, greater positivity and lower negativity, and less sibling relative power, would be associated with less depression and anxiety, and greater self-esteem over time. We also investigated the potential moderating role of sibling structural variables and family contextual factors in these associations. As described below, Study 2 revealed nuanced associations between sibling relationship qualities and emotional adjustment that were moderated by various factors.

First, we generally found that greater communication and positivity with older siblings at Time 1 was protective against poor emotional adjustment for younger siblings at Time 2. Given their greater maturity and experience, older siblings may be an important source of information and emotional support for younger siblings (Tucker et al., 2001b), and their support may also provide validation to younger siblings that may be beneficial for self-esteem (Guan & Fuligni, 2016). In addition, a social learning perspective (Bandura, 1977) would argue that learning how to develop high-quality relationships in one domain (such as with siblings) should serve as a model that can be carried over into other relationships (such as with peers, romantic partners) that should benefit adjustment (Doughty, Lam, Stanik, & McHale, 2014).

On the other hand, greater communication and self-disclosure from older to younger siblings was related to worse emotional adjustment for older siblings. Older siblings are less likely to turn to younger siblings for advice than vice versa, given their younger siblings' comparative lack of knowledge and life experience (Tucker et al., 2001b). Therefore, if older siblings are seeking advice or support from younger siblings, they may not receive as helpful or knowledgeable responses. In addition, if older siblings feel the need to seek out younger siblings for support, then they may be lacking other

support systems, such as high-quality relationships with parents or peers, which may contribute to poorer emotional adjustment over time. Importantly, our results also indicated partner effects, such that greater communication and self-disclosure to younger siblings was also problematic for younger siblings' adjustment, which may indicate a contagion effect wherein younger siblings internalize their older sibling's distress, if older siblings are seeking out younger siblings in the face of problems, as is often seen in friendships (Schwartz-Mette & Rose, 2012).

The present study also revealed that greater negativity as perceived by younger sisters at Time 1 was associated with greater self-esteem for their older brothers at Time 2. During childhood and adolescence, older siblings often use conflict and antagonism as a means by which to assert their power within sibling relationships (Perlman et al., 2000), and being in a position of power is generally associated with greater self-esteem (Harter, 2012). Therefore, if older brothers are able to successfully use negativity as a means of power assertion, then this may be beneficial for their feelings of self-worth. In addition, our results suggest that this may be particularly true for brothers who remain financially dependent on their parents. Because they have not been able to develop independence in the financial domain, perhaps they assert their power and independence at the detriment of their siblings as a means to bolster their self-esteem. On the other hand, the results of the present study also indicated that greater power held by older siblings at Time 1 was significantly associated with greater depression for younger siblings at Time 2. Once older siblings are out of the house, younger adolescent siblings who are still at home may feel that their older siblings' power is inappropriate given their greater distance and

separation from their prior family roles, resulting in depressive symptoms for younger siblings.

Nevertheless, the present study generally indicated that the development of more egalitarian sibling relationships by Time 1 when older siblings were in their first year of college were beneficial for both older and younger siblings' emotional adjustment.

Aquilino (2006) has stressed the importance of the development of more egalitarian relationships for the development of reciprocal support within these relationships, but our analyses indicate that this developmental task may also be important for individual emotional adjustment. If siblings are able to renegotiate the hierarchical form of their relationship, then older siblings gain an additional source of support, and younger siblings develop feelings of competence and maturity, both of which should be beneficial for emotional adjustment.

Finally, there were some interesting differences in the associations between sibling relationship quality and emotional adjustment for males based on the gender of their sibling. For example, greater positivity, self-disclosure, and relative power held by sisters was beneficial for males' emotional adjustment, but greater positivity, self-disclosure, and relative power held by brothers was detrimental for males' emotional adjustment. Traditional gender norms indicate that females should be relationship-oriented and emotionally supportive (Maccoby, 1998), so having particularly close relationships with sisters is likely to be viewed by society as socially acceptable, and males may ultimately benefit from this support. On the other hand, traditional masculine stereotypes call for more agentic and less emotional or relational behaviors, so having a

particularly warm relationship with a brother may call into question males' masculinity, resulting in poorer emotional adjustment.

Longitudinal Associations between Sibling Relationship Qualities and Achievement (Aim 3)

The third aim of Study 2 was to examine associations between sibling relationship qualities during first-borns' first year of college and academic and vocational identity achievement three years later. Specifically, we examined communication frequency, relationship positivity, relationship negativity, sibling relative power, and self-disclosure frequency. We also investigated the potential moderating role of sibling structural variables and family contextual factors in these associations. As described below, Study 2 revealed nuanced associations that were moderated by various factors.

In general, we expected that siblings would serve as important sources of support for academic achievement and vocational identity development (e.g., Alfaro & Umaña-Taylor, 2010; Bouchey, Shoulberg, Jodl & Eccles, 2010; Graef et al., 1985). A social learning perspective (Bandura, 1997) supports the idea that younger siblings in particular should model older siblings, especially those who are more similar to them (e.g., same gender). In addition, there may be social cognitive mechanisms, such as self-regulation, that underlie competence in both social relationships and academic performance that help explain the association between positive social relationships (e.g., with siblings) and academic achievement (Patrick, 1997). We found some consistencies with these hypotheses in the present study. For example, lower negativity in sibling relationships was associated with a stronger vocational identity for females. Females may be particularly strongly influenced by siblings given traditional gender norms emphasizing a

relationship orientation for females (Maccoby, 1998). In addition, communication with same-gender siblings was associated with greater academic achievement, consistent with a social learning perspective (Bandura, 1997), as well as empirical investigations of the role of sibling academic support during adolescence (Bouchey et al., 2010).

However, our results also revealed several instances in which more involved sibling relationships promoted *lower* academic achievement. In particular, greater communication with older siblings, especially those of a different gender, was associated with lower academic achievement for younger siblings. These paradoxical findings are actually consistent with some other research on adolescent sibling relationships (Bouchey et al., 2010), and may be an example of sibling deidentification processes (Schachter, Shore, Feldman-Rotman, Marquis, & Campbell, 1976). If older siblings attempt to provide too much support and appear to be particularly skilled in the academic domain, this may place additional pressure on younger siblings if they feel that they are unable to achieve the academic success of their older siblings. As such, younger siblings may deidentify with their older sibling and instead choose to emphasize non-academic domains of their lives more, resulting in lower academic achievement.

On the other hand, older siblings emphasizing their power over their younger siblings in the academic domain, even through negative and antagonistic mechanisms, appeared to be beneficial for older siblings' academic achievement in the present study. If older siblings assert their authority over academic issues, then this may serve to enhance their feelings of confidence and self-efficacy (Bandura, 1997), which may be beneficial for their own academic achievement. Indeed, research suggests that the act of teaching benefits one's own learning (Whitman & Fife, 1988).

Finally, some of our lack of findings, particularly on the benefits of positive sibling relationships with older siblings for younger siblings, may be related to the fact that the sample in the present study was very high achieving on average, as well as mostly White, and middle- to upper-middle class. Much of the research highlighting the benefits of siblings within the academic domain has focused on minority or at-risk samples where siblings may have more knowledge and expertise within the educational system or local language compared to parents (Alfaro & Umaña-Taylor, 2010; Bouchey et al., 2010; Fox, 2016). Perhaps the role of siblings in academic achievement is more pronounced among these samples.

Conclusion

Study 2 utilized a sample of first-born emerging adults and their second-born adolescent siblings to examine changes in sibling relationship qualities from first-borns' first to fourth years of college, as well as longitudinal associations between these relationship qualities and emotional adjustment and academic and vocational identity achievement. Overall, findings revealed both continuity and change in sibling relationship qualities. Consistent with socioemotional selectivity theory (Carstensen, 1992), communication between siblings increased as younger siblings approached a similar developmental age to their older siblings (i.e., emerging adulthood). In addition, sibling relationships became significantly more egalitarian over time, but remained relatively stable in terms of positivity, negativity, and level of self-disclosure. The initial transition to emerging adulthood may be the period when the largest changes occur in terms of these relationship qualities (Lindell et al., 2014; Whiteman et al., 2011). Finally, the quality of sibling relationships had longitudinal implications for several aspects of

emotional adjustment and academic and vocational identity achievement. In general, high-quality sibling relationships were particularly beneficial for younger siblings and females, but there were some instances where close sibling relationships were related to poorer outcomes for older siblings.

The study of sibling relationships during emerging adulthood is still in its infancy compared to research on other close relationships during this developmental period (Padilla-Walker et al., 2017). Thus, Study 2 provided important advances in our understanding of sibling relationships during this period. By including both members of first- and second-born sibling dyads in our sample, we were able to examine consistencies in sibling reports of relationship processes, and examine both actor and partner effects in our investigation of sibling relationships' associations with emotional and academic outcomes. Of particular importance was the present study's finding that both older and younger siblings agreed that sibling relationships become more egalitarian over time, which had positive implications for both siblings' emotional adjustment. As highlighted in family systems theory (Cox & Paley, 2003; Minuchin, 1985), examining sibling relationships at the level of the dyad rather than relying on single-reporter accounts provides a significantly more complete account of the functioning of these relationships than single-reporter methodologies, and should be researchers' preferred method for studying family relationships.

CHAPTER 8

GENERAL DISCUSSION

Emerging adulthood is a period of development that lies between adolescence and adulthood, and is typically unique to members of industrialized societies such as the U.S. where adult roles are delayed to the mid- to late-twenties (Arnett, 2000). A key aspect of this stage in the lifespan is a high degree of diversity in possible lifestyles, with many emerging adults pursuing post-secondary education or gaining work experience, living in one of a variety of different living situations (e.g., independently, with roommates, in dormitories, with parents), and having more opportunities for identity exploration than any other time in the lifespan. As adolescents leave a life of high parental dependence for a period of semi-autonomy, they ultimately experience significant shifts in their close relationships (or a “re-centering”) where relationships with friends and romantic partners become more central in daily life, while parents and siblings become more peripheral (Conger & Little, 2010; Tanner, 2006). A growing body of research has considered how relationships with family members change during the initial transition to emerging adulthood (see Laursen & Collins, 2012; Lindell & Campione-Barr, 2017, for reviews), but less is known about how relationships with parents and siblings may further change or stabilize during emerging adulthood, and how these relationships may continue to have implications for development, in line with an ecological systems perspective (Bronfenbrenner, 1989). The present study therefore examined potential changes in various relationship qualities in parent-child and sibling relationships across the first three years of emerging adulthood, and longitudinal implications of these relationship

qualities for emerging adults' emotional adjustment, college academic achievement, and vocational identity development.

Understanding how family relationships change and continue to impact development beyond adolescence is important given the changing role of the natal family across the lifespan. Eventually, adult children may need to provide care to their aging parents, and siblings become important sources of support as new adult milestones are reached (e.g., childbearing), and as they coordinate care for parents (Cicirelli, 1995). Emerging adulthood is one of the first periods in the life course when family interactions are relatively voluntary, and it is likely that this period sets the stage for the level of family involvement and obligation that will continue through adulthood (Fuligni & Pedersen, 2002). In particular, emerging adults and their parents must negotiate the appropriate balance of parental support in light of significant increases in independence, while siblings must learn how to renegotiate a more egalitarian power structure of their relationship and maintain it at a level that will prepare them for the support functions of their relationship as adults (Aquilino, 2006). While the initial transition from adolescence to emerging adulthood is generally marked by significant declines in communication and shared time with family members (Scharf et al., 2005), there is often an improvement in the overall quality and satisfaction in these relationships (e.g., Whiteman et al., 2011). The present study extended this work to further understand family relationship processes and their implications for development after this initial transition to emerging adulthood among a sample of first- and second-born college students, most of whom lived more than 30 minutes away from their parents (Study 1), and a subset of their second-born adolescent siblings (Study 2).

Overall Findings

The first aim of the present study was to examine longitudinal changes in parent-child and sibling relationship qualities across the first four years of college. Overall, our results revealed considerable stability in parent-child relationships, as well as many aspects of sibling relationships. However, in Study 1, which was a between-subjects examination of family relationships, as well as Study 2, which included first- and second-born sibling dyads, sibling relationships became significantly more egalitarian across emerging adulthood, as perceived by both first- and second-borns. In addition, siblings appeared to become increasingly important recipients of self-disclosure (where males eventually reached the high level of disclosure shared by sisters) and communication as younger siblings approached similar developmental stages to their older siblings. Thus, overall, the present findings suggest that the largest improvements in family relationships from adolescence likely occur during the initial transition to emerging adulthood, and those patterns that are set in place following that transition persist for the next several years. However, some aspects of sibling relationships remain more fluid during this period.

The second aim of the present study was to examine implications of parent-child and sibling relationship qualities during emerging adults' first year of college for their emotional adjustment three years later to understand how early patterns of these relationships following the initial transition to emerging adulthood may have lasting effects on development. In general, having highly negative and conflictive relationships with parents and siblings during the initial transition to emerging adulthood was detrimental for emotional adjustment over time. However, many aspects of these

relationships were protective against the further development of adjustment problems. In particular, the development of more egalitarian relationships with siblings was beneficial for both older and younger siblings' emotional adjustment, while more communication and self-disclosure to older siblings was particularly protective against younger siblings' emotional adjustment problems.

The final aim of the present study was to examine implications of parent-child and sibling relationship qualities at Time 1 for academic outcomes three years later, including academic achievement and vocational identity achievement. In Study 1, the quality of parent-child and sibling relationships were not significantly associated with academic achievement, but in Study 2, younger adolescent siblings in particular benefitted from greater communication with their older siblings, especially those who were the same gender. It may be that siblings are a useful resource for academic support during adolescence, which has been documented in previous research (Fox, 2016; Patrick, 1997; Tucker et al., 1997; 2001). However, once youth reach college, where there is a broader variety of subject matter, the expectation of more independence, and a plethora of academic resources available to students, family members may be less useful resources. Nevertheless, relationships with parents and siblings did appear to be beneficial for emerging adults' and adolescents' vocational identity development. Specifically, lower levels of negativity with parents promoted vocational identity achievement, while greater communication and self-disclosure to older and same-gender siblings were also particularly beneficial. Older siblings may be particularly helpful for their younger siblings' vocational identity development, as they may have recent experiences with career decision-making, be aware of helpful resources that may assist

their younger siblings' career exploration, and have the benefit of a shared history with younger siblings that may help them provide important perspectives in their conversations surrounding vocational topics.

Financial dependence on parents. Despite these overall patterns, however, many family relationship patterns were largely dependent on emerging adults' level of financial dependence on their parents, with those who were more financially dependent reporting more frequent communication and self-disclosure, as well as more positive and more negative relationships with their parents and siblings. This suggests that family relationships remain particularly salient when emerging adults maintain financial ties to their parents. However, the amount of financial assistance emerging adults received from their parents was also significantly associated with their emotional and vocational outcomes, as well as the implications that their family relationships had for these outcomes. In particular, emerging adults who were more financially dependent on their parents reported worse emotional adjustment and weaker vocational identities compared to more financially independent emerging adults. In addition, having high-quality relationships with family members under high levels of financial dependence was problematic for these outcomes, while high-quality relationships under lower levels of financial dependence were protective for emerging adults. Thus, greater financial dependence on parents appears to be linked to poorer outcomes for emerging adults overall.

Despite the significant associations identified in the present study, the precise mechanisms linking family relationship quality and financial assistance from parents remains unclear. For example, it may be that parents who have close relationships with

their children are more likely to be those that are willing to provide financial assistance during emerging adulthood. On the other hand, emerging adults who receive financial assistance from their parents may feel obligated to maintain high-quality relationships with their family members when they otherwise may not. Future research examining the conditions under which parents are more likely to provide financial support to their children is needed. For example, future research should delineate emerging adults' sources of income more precisely. Emerging adults who receive less financial assistance from their parents may be working and earning their own income that they use to pay for their expenses, they may have student loans, or they may have earned a merit-based scholarship. There may be important differences in the role of the family based on these various contexts.

Limitations of the Present Study

Despite the important insight the present study provided on emerging adults' family relationships, it was not without limitations. First, the generalizability of the present study is limited to a socially and economically advantaged group of emerging adults: college students who are predominantly White and middle- to upper-middle class. Although college students make up a large minority of emerging adults (40% U. S. Department of Education, 2014), the results of the present study must be interpreted with caution given that there may be differences in the developmental pathways for college students versus non-college students (Mitchell & Syed, 2015). For example, family relationships likely remain more salient and influential for development among college students (particularly those who are financially dependent on parents), whereas non-college students may be less strongly tied to their parents and siblings. In contrast, non-

college student emerging adults may also be more independent and mature (out of necessity), so they may have higher-quality (but less involved) relationships with parents and siblings compared to college students.

In addition, the present sample does not capture the increasing diversity of students in higher education, and therefore we lack the ability to account for the fact that family relationship qualities that may be beneficial for some emerging adults, may not be for others. In addition, we were unable to capture cultural variations in the importance of family relationships. For example, Latino emerging adults tend to feel stronger feelings of family obligation compared to European American emerging adults (Fuligni & Pedersen, 2002), and Latino college students also maintain much more active contact with siblings compared to less diverse samples of college students (Killoren et al., 2014; Lindell, Campione-Barr, & Killoren, 2015). The present sample also had highly educated parents, and future research is needed to understand the unique experiences of first-generation college students and their family relationships (e.g., Covarrubias & Fryberg, 2015).

Study 1 was also limited by its single-reporter design, which prevented us from being able to assess the quality of family relationships from the perspectives of all family members. This is particularly important given that perspectives about the same aspect of a relationship can differ significantly between different relationship partners within families (e.g., Campione-Barr, Lindell, Short, Greer & Drotar, 2015). Although Study 2 included both members of sibling dyads, it did not include second-born emerging adults and their older siblings, and future research should also consider parents' perspectives on the quality of their relationships with their emerging adult children.

In addition, our measure of financial dependence on parents was only assessed at Time 2, so it is unknown whether the amount of financial assistance emerging adults received during their final year of college matched their parents' contributions earlier in their college years. Our results overwhelmingly indicated negative implications of having close relationships with parents for emotional adjustment when emerging adults were highly financially dependent on their parents at Time 2. However, it is unclear whether emerging adults who received high levels of financial assistance throughout their college years showed the same pattern of associations to emerging adults who received more financial support later, or earlier, in college. We were also unable to examine the conditions under which parents provided (or did not provide) financial assistance to their emerging adult children. Emerging adults who were financially independent from their parents because they had earned a scholarship may have different patterns of family relationship development across emerging adulthood and may be uniquely influenced by them compared to emerging adults whose parents were financially unable to support their children.

Finally, in the present set of studies, we conducted our analyses without employing any type of alpha-correction, such as a Bonferroni correction or some other type of family-wise error correction. Employing such a correction is typically useful to help protect against Type 1 error and the reporting of significant effects that were found only by chance. Specifically, with an alpha of .05, one would expect approximately 5% of significant results to occur by chance in a given model. In the case of the present set of studies, accounting for all examined interactions in our multilevel models, we would also expect a small number of significant effects in each model by chance alone. For example,

for a model examining associations between parent-child relationship quality and depression, including interactions up to 4-way interactions, this would result in a total of 33 estimated parameters; if 5% of these would be expected to be significant by chance alone, then 1.65 of these should be significant for this reason. As such, the models in the present study revealed an average of 20.30% effects that were significant at the $p < .05$ level (range: 0% to 36.7%), but nevertheless may be a cause of concern. Part of this somewhat small number of significant effects was due to the fact that in our multilevel models, we examined a large number of interactions given the various structural and contextual variables of interest. In many cases, it would be appropriate to trim non-significant interactions to create a more parsimonious model. However, given that this document serves as a starting point for several new areas of research, our intent was to present a transparent account of the initial results, and we therefore did not trim any models. Future iterations of this research will require model trimming, particularly in terms of eliminating non-significant higher-order interactions, as well as the removal of some structural variables if they produced limited significance (e.g., ordinal position in parent-child relationships), as well as a corrected alpha level to ensure confidence about the analytical findings.

Implications and Future Directions

Despite several limitations, the present study revealed important information about emerging adults' family relationships and the role that they may have for emotional, academic, and vocational development. First, we found that there were relatively few changes in parent-child and sibling relationship qualities during the first three years of emerging adulthood. Other research has illustrated more drastic changes in

these relationships during the initial transition to emerging adulthood (see Laursen & Collins, 2012; Lindell & Campione-Barr, 2017, for reviews). It will therefore be important for researchers to continue to investigate how families can achieve the best possible transition out of adolescence, since the relationship patterns established early in emerging adulthood appear to persist over the first several years of this developmental period. For example, it will be important to understand how parents can effectively maintain warm and supportive relationships with their emerging adult children, without encroaching on their children's need for autonomy.

Next, although siblings are often considered a more peripheral relationship during emerging adulthood, and have received considerably less research attention compared to peer and parent-child relationships (Padilla-Walker et al., 2017), the present study indicates that these relationships are actually quite dynamic during emerging adulthood. Specifically, this appears to be a period in development when these relationships become significantly more egalitarian/mature and more communicative and self-disclosive in many cases, perhaps suggesting a resurgence in the importance of sibling relationships during emerging adulthood compared to earlier years. The present findings suggest that older and same-gender siblings may be an important resource for emotional adjustment and vocational identity achievement. Unfortunately, siblings are often neglected as a potential resource in clinical settings unless a wide range of environmental factors is targeted in a treatment plan (e.g., multisystemic therapy; Henggeler & Borduin, 1990). There have been some programs targeting younger children and adolescents that have shown siblings to be beneficial for outcomes (Feinberg, Sakuma, Hostetler, & McHale, 2013; Updegraff, Umaña-Taylor, Rodríguez De Jesús, McHale, Feinberg, & Kuo, 2016),

and it may be prudent to consider siblings in emerging adults' treatment or prevention programs as well, particularly given the importance of maintaining high-quality relationships with siblings for the future of these relationships during adulthood.

Finally, the role of emerging adults' level of financial dependence on their parents was a salient theme throughout the present study, with greater financial dependence generally being indicative of poorer developmental outcomes for emerging adults, despite greater involvement in these relationships (in both positive and negative ways). In light of this, parents should carefully consider the interplay between their relationships with their children and the financial assistance they provide to them. Even though they may enjoy closer relationships with their children when they provide them with financial assistance, they may inadvertently be inhibiting them from developing a healthy level of autonomy. More research is needed to further understand the context within which financial assistance is (or is not) provided in these families, how these various contexts intersect with family relationship qualities and familial influence on various domains of emerging adult development.

Overall, the present study provided important insight on emerging adults' relationships with their families of origin. Given the growing necessity for post-secondary education in U. S. society and the consequent delay of adult roles, it will be increasingly important to understand how to best support emerging adults' autonomy development, mental health, and vocational development in a context that is often only semi-autonomous. The present study illustrated that parents and siblings are an enduring presence in the lives of college students, but may have either positive or negative

implications for development. Future research should continue to focus on the ways that the family may contribute to healthy emerging adult development.

Table 1.

Means (Standard Deviations) for Study 1 Parent-Child Variables.

	Communication		Positivity		Negativity		Self-Disclosure	
	T1	T2	T1	T2	T1	T2	T1	T2
Mother	2.44 (.66)	2.48 (.50)	3.80 (.66)	3.74 (.46)	1.97 (.85)	1.96 (.67)	2.89 (.84)	2.95 (.62)
Male	2.35 (.71)	2.43 (.48)	3.64 (.54)	3.64 (.36)	1.91 (.80)	1.94 (.56)	2.62 (.76)	2.83 (.58)
Female	2.50 (.62)	2.51 (.52)	3.90 (.71)	3.81 (.51)	2.01 (.89)	1.97 (.73)	3.06 (.84)	3.02 (.63)
Father	2.17 (.65)	2.20 (.50)	3.45 (.76)	3.41 (.56)	1.86 (.77)	1.74 (.58)	2.61 (.81)	2.65 (.63)
Male	2.14 (.67)	2.23 (.49)	3.45 (.72)	3.39 (.49)	1.84 (.79)	1.72 (.51)	2.50 (.79)	2.61 (.59)
Female	2.19 (.63)	2.19 (.51)	3.45 (.79)	3.43 (.60)	1.88 (.76)	1.75 (.62)	2.68 (.82)	2.68 (.65)

Table 2.

Correlations between Study 1 Parent-Child Relationship Variables and Adjustment.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1. Gender	--																			
2. Birth Order	-.02	--																		
3. Comm. (T1)	.11	-.03	--																	
4. Positivity (T1)	.19**	-.07	.34**	--																
5. Negativity (T1)	.06	-.03	-.03	-.30**	--															
6. Disclosure (T1)	.26**	-.12*	.43**	.60**	-.18**	--														
7. Depression (T1)	-.02	.08	.00	-.06	.23**	-.11	.72**	--												
8. Anxiety (T1)	.12	.06	.00	-.15*	.25**	-.11	.17**	-.16*	-.67**	--										
9. Self-Esteem (T1)	.01	-.05	-.01	.16*	-.20**	.21**	-.69**	-.67**	.12*	.12*	-.01	.07	-.05	.05	-.27**	-.30**	.41**	.01	-.23**	-.17**
10. Academic (T1)	.23**	.01	.21**	.13*	-.11	.17**	-.16*	-.13*	-.13*	-.04	-.14*	-.17**	-.09	.06	-.03	.03	-.02	.17**	-.14*	-.07
11. Comm. (T2)	.08	-.04	.31**	.16*	-.03	.26**	.01	-.04	.02	-.01	--	.46**	-.10	.52**	.06	-.05	.00	.03	.07	.16**
12. Positivity (T2)	.19**	.05	.22**	.44**	-.17**	.28**	-.06	-.09	.06	.04	.32**	--	-.32**	.60**	-.17**	-.25**	.13*	.06	-.10	.23**
13. Negativity (T2)	.02	-.06	-.08	-.15*	.45**	-.08	.17**	.22**	-.12	-.17**	.01	-.26**	--	-.17**	.27**	.38**	-.20**	-.05	.09	-.01
14. Disclosure (T2)	.15*	-.08	.26**	.29**	-.06	.49**	-.02	-.08	.03	.13*	.47**	.47**	-.13*	--	-.13*	-.16**	.11	.11	-.02	.24**
15. Depression (T2)	.00	.00	.02	-.10	.11	-.06	.28**	.32**	-.27**	-.03	.07	-.08	.26**	-.10	--	.71**	-.67**	-.06	.46**	.02
16. Anxiety (T2)	.12	.09	.06	-.08	.16*	.00	.23**	.41**	-.30**	.03	.02	-.03	.26**	-.07	.71**	--	-.60**	-.06	.33**	.08
17. Self-Esteem (T2)	-.01	-.05	.02	.06	-.12	.10	-.29**	-.28**	.41**	-.02	.03	.09	-.19**	.11	-.67**	-.60**	--	.07	-.49**	-.09
18. Academic (T2)	.09	.05	.01	.08	-.09	.07	.03	.07	.01	.17**	.00	.05	-.07	-.04	-.06	-.06	.07	--	-.21**	.01
19. Vocational (T2)	-.10	.09	-.04	-.07	.09	-.11	.26**	.19**	-.23**	-.14*	.01	-.13*	.08	-.12	.46**	.33**	-.49**	-.21**	--	.15*
20. Financial (T2)	.13*	.06	.01	.03	.17**	.11	.07	.14*	-.17**	-.07	.07	.15*	.13*	.16*	.02	.08	-.09	.01	.15*	--

Note. Values on the bottom left diagonal reflect mother-child relationships; values on the upper right diagonal reflect father-child relationships. T1 = Time 1, T2 = Time 2. Comm. = Communication. Academic = Academic Achievement. Vocational = Vocational Identity. Financial = Financial Dependence. * $p < .05$. ** $p < .01$.

Table 3.

Means (Standard Deviations) for Study 1 Sibling Relationship Variables.

	Communication		Positivity		Negativity		Relative Power		Self-Disclosure	
	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2
1 st -borns	2.06 (.66)	2.16 (.52)	3.32 (.73)	3.32 (.52)	2.28 (.94)	1.95 (.61)	1.81 (.70)	1.86 (.62)	2.52 (.90)	2.70 (.70)
Male	1.94 (.72)	2.08 (.46)	3.15 (.73)	3.26 (.52)	2.28 (1.03)	1.92 (.53)	1.79 (.66)	1.89 (.50)	2.18 (.82)	2.62 (.65)
w/Brother	2.22 (.83)	2.20 (.53)	3.39 (.67)	3.33 (.53)	2.29 (.98)	1.92 (.59)	1.89 (.73)	1.92 (.52)	2.52 (.88)	2.80 (.71)
w/Sister	1.66 (.47)	1.97 (.35)	2.93 (.73)	3.18 (.51)	2.27 (1.10)	1.93 (.48)	1.69 (.59)	1.86 (.49)	1.86 (.62)	2.44 (.54)
Female	2.13 (.61)	2.21 (.56)	3.42 (.72)	3.36 (.52)	2.29 (.89)	1.97 (.66)	1.83 (.73)	1.84 (.69)	2.72 (.89)	2.74 (.73)
w/Brother	1.92 (.60)	2.09 (.56)	3.19 (.63)	3.20 (.51)	2.32 (.81)	1.93 (.69)	1.72 (.69)	1.75 (.65)	2.36 (.83)	2.57 (.63)
w/Sister	2.35 (.55)	2.34 (.54)	3.69 (.73)	3.53 (.49)	2.25 (.98)	2.01 (.63)	1.95 (.76)	1.94 (.73)	3.12 (.80)	2.93 (.80)
2 nd -borns	2.05 (.68)	2.03 (.51)	3.31 (.76)	3.27 (.60)	2.11 (.88)	1.89 (.57)	2.21 (.84)	1.97 (.59)	2.56 (.91)	2.62 (.70)
Male	1.97 (.60)	2.07 (.43)	3.34 (.68)	3.31 (.51)	2.02 (.77)	1.88 (.44)	2.16 (.77)	1.96 (.44)	2.39 (.79)	2.66 (.54)
w/Brother	2.09 (.50)	2.23 (.43)	3.42 (.64)	3.39 (.40)	1.91 (.72)	1.85 (.40)	2.12 (.52)	1.97 (.44)	2.53 (.79)	2.73 (.53)
w/Sister	1.87 (.66)	1.94 (.38)	3.28 (.72)	3.25 (.59)	2.10 (.81)	1.91 (.47)	2.19 (.94)	1.96 (.45)	2.27 (.79)	2.61 (.55)
Female	2.10 (.73)	2.00 (.56)	3.29 (.81)	3.24 (.66)	2.17 (.95)	1.89 (.64)	2.25 (.89)	1.97 (.67)	2.67 (.97)	2.59 (.79)
w/Brother	1.96 (.62)	1.84 (.50)	3.15 (.75)	3.05 (.61)	2.09 (.84)	1.84 (.73)	2.19 (.91)	1.84 (.67)	2.49 (.89)	2.31 (.63)
w/Sister	2.24 (.80)	2.15 (.58)	3.43 (.85)	3.42 (.66)	2.26 (1.04)	1.94 (.54)	2.30 (.89)	2.10 (.65)	2.84 (1.03)	2.87 (.84)

Table 4.

Correlations between Study 1 Sibling Relationship Variables and Adjustment.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
1. Gender	--																				
2. Birth Order	-.02	--																			
3. Comm. (T1)	.12	.00	--																		
4. Positivity (T1)	.08	-.01	.51**	--																	
5. Negativity (T1)	.04	-.09	-.03	-.25**	--																
6. Power (T1)	.04	.25**	.23**	.15*	.39**	--															
7. Disclosure (T1)	.23**	.02	.56**	.64**	-.09	.21**	--														
8. Depression (T1)	-.02	.08	.04	-.06	.23**	.14*	-.05	--													
9. Anxiety (T1)	.12	.06	.01	-.14*	.33**	.19**	.16**	.72**	--												
10. Self-Esteem (T1)	.01	-.05	-.01	.15*	-.12	.13*	-.03	-.69**	-.67**	--											
11. Academic (T1)	.23**	.01	.12	.07	-.12	-.03	.09	-.16*	-.13*	.12*	--										
12. Comm. (T2)	.03	-.13*	.35**	.31**	.01	.06	.36**	.00	-.06	.05	-.04	--									
13. Positivity (T2)	.02	-.04	.28**	.47**	-.14*	.03	.35**	-.04	-.12	.06	-.13*	.50**	--								
14. Negativity (T2)	.02	-.05	.04	-.10	.49**	.23**	.04	.09	.19**	.00	-.05	.05	-.19**	--							
15. Power (T2)	-.02	.09	.16*	.14*	.12*	.40**	.17**	.10	.12	-.04	-.02	.17**	.05	.48**	--						
16. Disclosure (T2)	.02	-.05	.34**	.39**	-.12*	.01	.46**	-.02	-.07	.02	-.03	.56**	.68**	-.10	.11	--					
17. Depression (T2)	.00	.00	-.02	-.13*	.18**	.09	-.08	.28**	.32**	-.27**	-.03	.00	-.16**	.28**	.19**	-.15*	--				
18. Anxiety (T2)	.12	.09	.03	-.09	.16*	.13*	.03	.23**	.41**	-.30**	.03	.00	-.05	.28**	.27**	-.04	.70**	--			
19. Self-Esteem (T2)	-.01	-.05	.03	.09	-.11	-.11	.06	-.29**	-.28**	.40**	-.02	-.04	.07	-.12	-.17**	.03	-.67**	-.60**	--		
20. Academic (T2)	.09	.05	-.04	.06	.06	.08	.05	.03	.07	.01	.17**	-.02	-.01	-.04	.01	.03	-.06	-.06	.07	--	
21. Vocational (T2)	-.10	.09	-.04	-.03	.05	.03	-.06	.26*	.19**	-.23**	-.14*	-.04	-.03	.02	.00	-.04	.46**	.33**	-.49**	-.21**	--
22. Financial (T2)	.13*	.06	.03	.03	.10	.10	.12	.07	.14*	-.17**	-.07	.07	.10	.11	.17**	.12	.02	.08	-.09	.01	.15*

Note. T1 = Time 1. T2 = Time 2. Comm. = Communication. Academic = Academic Achievement. Vocational = Vocational Identity. Financial = Financial Dependence. * $p < .05$. ** $p < .01$.

Table 5.

Standardized Parameter Estimates (Standard Errors) for the Associations between Time 1

Parent-Child Relationship Qualities and Time 2 Depression (Study 1).

	Communication	Positivity	Negativity	Self-Disclosure
Intercept	.00 (.04)	.02 (.04)	.02 (.04)	.01 (.04)
Age (T1)	.02 (.05)	.04 (.04)	.05 (.04)	.04 (.04)
Distance from Parents (T1)	-.03 (.05)	-.03 (.04)	-.02 (.04)	-.02 (.04)
Depression (T1)	.26 (.04)**	.24 (.04)**	.24 (.04)**	.23 (.04)**
Birth Order	.05 (.04)	.07 (.04)	.04 (.04)	.08 (.04)
Emerging Adult Gender	.03 (.04)	.03 (.04)	.02 (.04)	.03 (.04)
Parent Gender	.00 (.04)	-.03 (.04)	.01 (.04)	.00 (.04)
Financial Dependence (T2)	.05 (.06)	.02 (.05)	.04 (.05)	.05 (.05)
Relationship Quality (T1)	.00 (.05)	-.09 (.05)*	.09 (.05)	-.03 (.05)
BO X EA Gend.	.08 (.04)	.07 (.04)	.08 (.04)	.08 (.04)
BO X P Gend.	.03 (.04)	-.02 (.04)	.01 (.04)	.01 (.04)
BO X Finance	.02 (.05)	.03 (.05)	.01 (.04)	.05 (.05)
EA Gend. X P Gend.	.00 (.04)	.03 (.04)	-.01 (.04)	.01 (.04)
EA Gend. X Finance	.10 (.05)*	.11 (.05)*	.12 (.05)*	.12 (.05)*
P Gend. X Finance	-.01 (.05)	.05 (.05)	.02 (.04)	.01 (.05)
BO X RQ	.05 (.04)	-.02 (.05)	-.01 (.04)	.04 (.05)
EA Gend. X RQ	.00 (.04)	.06 (.05)	-.10 (.04)*	.04 (.05)
P Gend. X RQ	-.01 (.04)	-.01 (.05)	.03 (.04)	-.01 (.04)
Finance X RQ	.04 (.04)	.10 (.05)*	-.02 (.05)	.13 (.05)**
BO X EA Gend. X P Gend.	.00 (.04)	.02 (.04)	-.01 (.04)	.01 (.04)
BO X EA Gend. X Finance	.10 (.05)*	.12 (.05)*	.13 (.05)*	.12 (.05)*
EA Gend. X P Gend. X Finance	.01 (.05)	-.03 (.05)	-.01 (.05)	-.01 (.05)
BO X EA Gend. X RQ	.06 (.04)	.09 (.05)	-.01 (.04)	.10 (.05)*
BO X P Gend. X RQ	-.05 (.04)	.00 (.05)	-.01 (.05)	-.03 (.04)
BO X Finance X RQ	-.07 (.04)	.03 (.05)	.10 (.04)*	-.03 (.05)
EA Gend. X P Gend. X RQ	.01 (.04)	.03 (.05)	-.02 (.05)	.02 (.05)
EA Gend. X Finance X RQ	.05 (.04)	-.06 (.05)	.01 (.05)	-.01 (.05)
P Gend. X Finance X RQ	.04 (.04)	-.02 (.05)	.05 (.04)	.00 (.05)
BO X EA Gend. X P Gend. X Finance	.03 (.05)	.01 (.05)	--	.02 (.05)
BO X EA Gend. X P Gend. X RQ	.04 (.04)	.01 (.05)	--	.04 (.05)
BO X EA Gend. X Finance X RQ	.12 (.04)**	.11 (.05)*	--	.17 (.05)**
BO X P Gend. X Finance X RQ	-.04 (.04)	.01 (.04)	--	.02 (.04)
EA Gend. X P Gend. X Finance X RQ	-.03 (.04)	.04 (.05)	--	-.01 (.05)

Note. ** $p < .01$. * $p < .05$. + $p < .10$. T1 = Time 1. T2 = Time 2. EA Gend. = Emerging Adult Gender. P Gend. = Parent Gender. BO = Birth Order. Finance = Financial Dependence (T2). RQ = Relationship Quality (T1).

Table 6.

Standardized Parameter Estimates (Standard Errors) for the Associations between Time 1

Parent-Child Relationship Qualities and Time 2 Anxiety (Study 1).

	Communication	Positivity	Negativity	Self-Disclosure
Intercept	-.01 (.04)	.01 (.04)	.00 (.04)	-.01 (.04)
Age (T1)	-.05 (.04)	-.04 (.04)	-.02 (.04)	-.05 (.04)
Distance from Parents (T1)	.01 (.04)	.00 (.04)	.02 (.04)	.01 (.04)
Depression (T1)	.38 (.04)**	.35 (.04)**	.35 (.04)**	.38 (.04)**
Birth Order	-.04 (.04)	-.02 (.04)	-.05 (.04)	-.05 (.04)
Emerging Adult Gender	-.04 (.04)	-.05 (.04)	-.07 (.04)	-.04 (.04)
Parent Gender	.00 (.04)	-.03 (.04)	-.02 (.04)	.00 (.04)
Financial Dependence (T2)	.03 (.04)	.03 (.04)	.02 (.04)	.04 (.04)
Relationship Quality (T1)	.03 (.04)	-.02 (.04)	.07 (.04)	.02 (.04)
BO X EA Gend.	.09 (.04)*	.08 (.04)*	.08 (.04)*	.08 (.04)*
BO X P Gend.	.02 (.04)	.00 (.04)	.01 (.04)	.01 (.04)
BO X Finance	.02 (.04)	.01 (.04)	.02 (.04)	-.01 (.04)
EA Gend. X P Gend.	.01 (.04)	.03 (.04)	.00 (.04)	.01 (.04)
EA Gend. X Finance	.02 (.05)	.05 (.05)	.01 (.05)	.06 (.05)
P Gend. X Finance	.01 (.04)	.06 (.04)	.01 (.04)	.04 (.04)
BO X RQ	.06 (.04)	.02 (.04)	.07 (.04)	.02 (.04)
EA Gend. X RQ	.03 (.04)	.14 (.04)**	-.06 (.04)	.06 (.04)
P Gend. X RQ	-.02 (.04)	-.03 (.04)	.00 (.04)	-.02 (.04)
Finance X RQ	.10 (.04)*	.16 (.05)**	-.10 (.04)*	.18 (.04)**
BO X EA Gend. X P Gend.	.01 (.04)	.02 (.04)	-.01 (.04)	--
BO X EA Gend. X Finance	.06 (.04)	.07 (.05)	.07 (.05)	--
EA Gend. X P Gend. X Finance	.00 (.04)	-.03 (.05)	-.01 (.05)	--
BO X EA Gend. X RQ	.10 (.04)*	.08 (.05)	.04 (.04)	--
BO X P Gend. X RQ	-.02 (.04)	.04 (.04)	-.01 (.04)	--
BO X Finance X RQ	-.04 (.04)	.01 (.04)	.12 (.04)**	--
EA Gend. X P Gend. X RQ	.01 (.04)	.01 (.05)	.02 (.04)	--
EA Gend. X Finance X RQ	.04 (.04)	.01 (.05)	.04 (.05)	--
P Gend. X Finance X RQ	.02 (.04)	-.05 (.04)	.06 (.04)	--
BO X EA Gend. X P Gend. X Finance	.02 (.04)	.01 (.05)	--	--
BO X EA Gend. X P Gend. X RQ	.04 (.04)	.02 (.05)	--	--
BO X EA Gend. X Finance X RQ	.08 (.04)*	.11 (.05)*	--	--
BO X P Gend. X Finance X RQ	-.04 (.04)	-.02 (.04)	--	--
EA Gend. X P Gend. X Finance X RQ	-.02 (.04)	.03 (.05)	--	--

Note. ** $p < .01$. * $p < .05$. + $p < .10$. T1 = Time 1. T2 = Time 2. EA Gend. = Emerging Adult Gender. P Gend. = Parent Gender. BO = Birth Order. Finance = Financial Dependence (T2). RQ = Relationship Quality (T1).

Table 7.

Standardized Parameter Estimates (Standard Errors) for the Associations between Time 1

Parent-Child Relationship Qualities and Time 2 Self-Esteem (Study 1).

	Communication	Positivity	Negativity	Self-Disclosure
Intercept	-.01 (.04)	.00 (.04)	.00 (.04)	-.01 (.04)
Age (T1)	-.02 (.04)	-.02 (.04)	-.03 (.04)	-.04 (.04)
Distance from Parents (T1)	.06 (.04)	.04 (.04)	.05 (.04)	.04 (.04)
Depression (T1)	.39 (.04)**	.40 (.04)**	.40 (.04)**	.38 (.04)**
Birth Order	.01 (.04)	.03 (.04)	.03 (.04)	-.01 (.04)
Emerging Adult Gender	.00 (.04)	.01 (.04)	.01 (.04)	-.01 (.04)
Parent Gender	.01 (.04)	.00 (.04)	.00 (.04)	.00 (.04)
Financial Dependence (T2)	-.04 (.04)	-.02 (.04)	-.02 (.04)	-.05 (.05)
Relationship Quality (T1)	.02 (.04)	.00 (.04)	-.04 (.04)	.00 (.05)
BO X EA Gend.	-.05 (.04)	--	--	-.05 (.04)
BO X P Gend.	-.01 (.04)	--	--	.00 (.04)
BO X Finance	-.01 (.04)	--	--	-.04 (.05)
EA Gend. X P Gend.	-.01 (.04)	--	--	-.01 (.04)
EA Gend. X Finance	-.04 (.05)	--	--	-.06 (.05)
P Gend. X Finance	-.01 (.04)	--	--	.00 (.05)
BO X RQ	-.07 (.04)	--	--	-.01 (.04)
EA Gend. X RQ	-.05 (.04)	--	--	-.04 (.04)
P Gend. X RQ	-.01 (.04)	--	--	-.01 (.04)
Finance X RQ	-.02 (.04)	--	--	-.06 (.05)
BO X EA Gend. X P Gend.	.00 (.04)	--	--	-.01 (.04)
BO X EA Gend. X Finance	-.10 (.05)*	--	--	-.10 (.05)*
EA Gend. X P Gend. X Finance	.00 (.05)	--	--	.00 (.05)
BO X EA Gend. X RQ	-.03 (.04)	--	--	-.07 (.04)
BO X P Gend. X RQ	.00 (.04)	--	--	-.01 (.04)
BO X Finance X RQ	.00 (.04)	--	--	.03 (.05)
EA Gend. X P Gend. X RQ	.00 (.04)	--	--	-.01 (.04)
EA Gend. X Finance X RQ	-.03 (.04)	--	--	-.01 (.05)
P Gend. X Finance X RQ	.01 (.04)	--	--	.01 (.05)
BO X EA Gend. X P Gend. X Finance	--	--	--	-.02 (.05)
BO X EA Gend. X P Gend. X RQ	--	--	--	-.01 (.04)
BO X EA Gend. X Finance X RQ	--	--	--	-.10 (.05)*
BO X P Gend. X Finance X RQ	--	--	--	-.01 (.04)
EA Gend. X P Gend. X Finance X RQ	--	--	--	.01 (.05)

Note. ** $p < .01$. * $p < .05$. + $p < .10$. T1 = Time 1. T2 = Time 2. EA Gend. = Emerging Adult Gender. P Gend. = Parent Gender. BO = Birth Order. Finance = Financial Dependence (T2). RQ = Relationship Quality (T1).

Table 8.

Regressions for Associations between Time 1 Sibling Relationship Qualities and Time 2 Depression (Study 1).

	Communication			Positivity			Negativity			Relative Power			Self-Disclosure		
	ΔF	ΔR^2	β	ΔF	ΔR^2	β	ΔF	ΔR^2	β	ΔF	ΔR^2	β	ΔF	ΔR^2	β
<i>Step 1</i>	7.82**	.09		7.82**	.09		7.82**	.09		7.82**	.09		7.82**	.09	
Age (T1)			.03			.04			.05			.07			.04
Distance from Sibling			-.12 ⁺			-.08			-.08			-.04			-.08
Depression (T1)			.28**			.28**			.25**			.24**			.28**
<i>Step 2</i>	.67	.01		.67	.01		.67	.01		.67	.01		.67	.01	
Birth Order			-.05			--			-.02			-.06			--
Gender			-.07			--			-.02			-.01			--
Sibling Gender			-.08			--			-.09			-.08			--
Financial Dependence (T2)			.00			--			-.01			-.01			--
<i>Step 3</i>	.33	.00		3.55 ⁺	.01		4.02*	.01		.91	.00		1.20	.00	
Relationship Quality (T1)			.07			--			.13*			-.25			--
<i>Step 4</i>	3.28*	.05		.84	.01		.94	.01		2.32 ⁺	.03		1.59	.02	
RQ X BO			-.54**			--			--			.33			--
RQ X Gender			-.11			--			--			1.02			--
RQ X Sibling Gender			.54*			--			--			-.54			--
RQ X Financial Dependence			.07			--			--			-.32			--
<i>Step 5</i>	-.64	.02		.91	.02		.17	.00		2.90**	.06		.45	.01	
RQ X BO X Gender			--			--			--			-.104			--
RQ X Gender X Sib. Gender			--			--			--			.06			--
RQ X Gender X Finance			--			--			--			.60*			--
RQ X BO X Sib. Gender			--			--			--			.42			--
RQ X BO X Finance			--			--			--			.41*			--
RQ X Sib. Gender X Finance			--			--			--			-.54**			--

Note. T1 = Time 1. T2 = Time 2. RQ = Relationship Quality. BO = Birth Order (1 = 1st-born, 0 = 2nd-born). Gender (1 = male, 0 = female). Sib. Gender = Sibling Gender (1 = male, 0 = female). Standardized beta values reflect those from the final model. Final models: Communication ($F(12, 245) = 3.36, p < .001, R^2 = .14$); Positivity ($F(3, 254) = 7.82, p < .001, R^2 = .09$); Negativity ($F(8, 249) = 3.79, p < .001, R^2 = .11$); Relative Power ($F(18, 239) = 3.10, p < .001, R^2 = .19$); Self-Disclosure ($F(3, 254) = 7.82, p < .001, R^2 = .09$). ** $p < .01$. * $p < .05$. ⁺ $p < .10$.

Table 9.

Regressions for Associations between Time 1 Sibling Relationship Qualities and Time 2 Anxiety (Study 1).

	Communication			Positivity			Negativity			Relative Power			Self-Disclosure		
	ΔF	R^2	β	ΔF	R^2	β	ΔF	R^2	β	ΔF	R^2	β	ΔF	R^2	β
<i>Step 1</i>	16.83**	.17		16.83**	.17		16.83**	.09		16.83**	.17		16.83**	.17	
Age (T1)			-.04			-.03			-.03			.00			-.03
Distance from Sibling			-.03			-.01			-.01			.02			-.01
Anxiety (T1)			.38**			.40**			.40**			.33**			.40**
<i>Step 2</i>	.71	.01		.71	.01		.71	.01		.71	.01		.71	.01	
Birth Order			.06			--			--			.04			--
Gender			.00			--			--			.07			--
Sibling Gender			-.02			--			--			-.04			--
Financial Dependence (T2)			.02			--			--			.00			--
<i>Step 3</i>	.03	.00		.58	.00		.33	.01		.45	.00		.18	.00	
Relationship Quality (T1)			.17			--			--			1.04			--
<i>Step 4</i>	4.01**	.05		1.48	.02		1.88	.01		3.17*	.04		2.05	.03	
RQ X BO			-.49**			--			--			-.75			--
RQ X Gender			-.21			--			--			.41			--
RQ X Sibling Gender			.53*			--			--			-1.45			--
RQ X Financial Dependence			.12*			--			--			-.63 ⁺			--
<i>Step 5</i>	.98	.02		1.18	.02		.72	.00		2.59**	.05		.31	.01	
RQ X BO X Gender			--			--			--			-.64			--
RQ X Gender X Sib. Gender			--			--			--			.41			--
RQ X Gender X Finance			--			--			--			.59*			--
RQ X BO X Sib. Gender			--			--			--			.98			--
RQ X BO X Finance			--			--			--			.49*			--
RQ X Sib. Gender X Finance			--			--			--			-.31			--

Note. T1 = Time 1. T2 = Time 2. RQ = Relationship Quality. BO = Birth Order (1 = 1st-born, 0 = 2nd-born). Gender (1 = male, 0 = female). Sib. Gender = Sibling Gender (1 = male, 0 = female). Standardized beta values reflect those from the final model. Final models: Communication ($F(12, 245) = 5.96, p < .001, R^2 = .23$); Positivity ($F(3, 254) = 16.83, p < .001, R^2 = .17$); Negativity ($F(3, 254) = 16.83, p < .001, R^2 = .17$); Relative Power ($F(18, 239) = 4.79, p < .001, R^2 = .27$); Self-Disclosure ($F(3, 254) = 16.83, p < .001, R^2 = .17$). ** $p < .01$. * $p < .05$. ⁺ $p < .10$.

Table 10.

Regressions for Associations between Time 1 Sibling Relationship Qualities and Time 2 Self-Esteem (Study 1).

	Communication			Positivity			Negativity			Relative Power			Self-Disclosure		
	ΔF	ΔR^2	β	ΔF	ΔR^2	β	ΔF	ΔR^2	β	ΔF	ΔR^2	β	ΔF	ΔR^2	β
<i>Step 1</i>	17.59**	.17		17.59**	.17		17.59**	.17		17.59**	.17		17.59**	.17	
Age (T1)			-.03			-.03			-.03			-.03			-.03
Distance from Sibling			.04			.01			.01			.01			.01
Self-Esteem (T1)			.41**			.41**			.41**			.41**			.41**
<i>Step 2</i>	.10	.00		.10	.01		.10	.00		.10	.00		.10	.00	
Birth Order			-.02			--			--			--			--
Gender			.04			--			--			--			--
Sibling Gender			-.03			--			--			--			--
Financial Dependence (T2)			-.02			--			--			--			--
<i>Step 3</i>	.61	.00		.33	.00		.95	.00		.85	.00		.00	.00	
Relationship Quality (T1)			-.16			--			--			--			--
<i>Step 4</i>	2.69*	.04		.61	.02		.59	.01		1.50	.02		1.40	.02	
RQ X BO			.39**			--			--			--			--
RQ X Gender			.29			--			--			--			--
RQ X Sibling Gender			-.46*			--			--			--			--
RQ X Financial Dependence			.03			--			--			--			--

Note. T1 = Time 1. T2 = Time 2. RQ = Relationship Quality. BO = Birth Order (1 = 1st-born, 0 = 2nd-born). Gender (1 = male, 0 = female). Sib. Gender = Sibling Gender (1 = male, 0 = female). Standardized beta values reflect those from the final model. Final models: Communication ($F(12, 245) = 5.43, p < .001, R^2 = .21$); Positivity ($F(3, 254) = 17.59, p < .001, R^2 = .17$); Negativity ($F(3, 254) = 17.59, p < .001, R^2 = .17$); Relative Power ($F(18, 239) = 17.59, p < .001, R^2 = .17$); Self-Disclosure ($F(3, 254) = 17.59, p < .001, R^2 = .17$). ** $p < .01$. * $p < .05$. + $p < .10$.

Table 11.

Standardized Parameter Estimates (Standard Errors) for the Associations between Time 1 Parent-Child Relationship Qualities and Time 2 Academic Achievement (Study 1).

	Communication	Positivity	Negativity	Self-Disclosure
Intercept	-.02 (.05)	.00 (.04)	.00 (.05)	-.03 (.05)
Age (T1)	.01 (.05)	.01 (.04)	.01 (.05)	-.01 (.05)
Distance from Parents (T1)	.04 (.05)	.00 (.04)	.00 (.05)	.01 (.05)
Academic Achievement (T1)	.15 (.05)**	.16 (.05)**	.15 (.05)**	.15 (.05)**
Birth Order	-.07 (.05)	-.05 (.04)	-.05 (.04)	-.07 (.05)
Emerging Adult Gender	-.05 (.05)	-.05 (.05)	-.07 (.05)	-.06 (.05)
Parent Gender	.00 (.05)	.01 (.04)	.00 (.04)	.00 (.05)
Financial Dependence (T2)	.00 (.05)	.00 (.04)	.02 (.05)	-.01 (.05)
Relationship Quality (T1)	.00 (.05)	.03 (.05)	-.02 (.05)	.02 (.05)
BO X EA Gend.	-.03 (.05)	--	-.02 (.05)	-.03 (.05)
BO X P Gend.	.00 (.05)	--	-.01 (.04)	.00 (.05)
BO X Finance	-.01 (.05)	--	-.01 (.05)	-.01 (.05)
EA Gend. X P Gend.	.00 (.05)	--	.00 (.05)	-.01 (.05)
EA Gend. X Finance	-.09 (.05)	--	-.05 (.05)	-.06 (.05)
P Gend. X Finance	.01 (.05)	--	.01 (.05)	.01 (.05)
BO X RQ	-.01 (.05)	--	.00 (.05)	-.03 (.05)
EA Gend. X RQ	-.01 (.05)	--	-.08 (.05)	-.05 (.05)
P Gend. X RQ	.01 (.05)	--	.04 (.05)	-.01 (.05)
Finance X RQ	.07 (.05)	--	.04 (.05)	.06 (.05)
BO X EA Gend. X P Gend.	-.03 (.05)	--	.01 (.04)	-.01 (.05)
BO X EA Gend. X Finance	.01 (.05)	--	-.02 (.05)	.00 (.05)
EA Gend. X P Gend. X Finance	-.01 (.05)	--	.03 (.05)	-.01 (.05)
BO X EA Gend. X RQ	-.16 (.05)**	--	.02 (.05)	-.10 (.05)*
BO X P Gend. X RQ	-.04 (.05)	--	-.02 (.05)	.02 (.05)
BO X Finance X RQ	.00 (.04)	--	-.05 (.05)	.00 (.05)
EA Gend. X P Gend. X RQ	.01 (.05)	--	.05 (.05)	.00 (.05)
EA Gend. X Finance X RQ	-.02 (.05)	--	.07 (.05)	.03 (.05)
P Gend. X Finance X RQ	-.01 (.04)	--	.09 (.05)*	-.01 (.05)

Note. ** $p < .01$. * $p < .05$. + $p < .10$. T1 = Time 1. T2 = Time 2. EA Gend. = Emerging Adult Gender. P Gend. = Parent Gender. BO = Birth Order. Finance = Financial Dependence (T2). RQ = Relationship Quality (T1).

Table 12.

Standardized Parameter Estimates (Standard Errors) for the Associations between Time 1 Parent-Child Relationship Qualities and Time Vocational Identity (Study 1).

	Communication	Positivity	Negativity	Self-Disclosure
Intercept	.00 (.04)	.00 (.05)	.00 (.04)	-.01 (.05)
Age (T1)	-.04 (.05)	-.04 (.05)	.00 (.04)	-.05 (.05)
Distance from Parents (T1)	-.07 (.05)	-.06 (.05)	-.03 (.04)	-.07 (.04)
Birth Order	-.08 (.04)	-.05 (.05)	-.08 (.04)	-.05 (.05)
Emerging Adult Gender	.10 (.04)*	.10 (.05)*	.12 (.04)**	.09 (.05)*
Parent Gender	-.01 (.04)	-.02 (.05)	.01 (.04)	-.01 (.05)
Financial Dependence (T2)	.19 (.05)**	.23 (.05)**	.18 (.05)**	.23 (.05)**
Relationship Quality (T1)	-.06 (.05)	-.03 (.05)	.10 (.04)*	-.06 (.05)
BO X EA Gend.	.03 (.04)	.03 (.04)	.01 (.04)	.02 (.05)
BO X P Gend.	.02 (.04)	.01 (.05)	.00 (.04)	-.01 (.04)
BO X Finance	-.11 (.05)*	-.15 (.05)**	-.11 (.04)*	-.13 (.05)**
EA Gend. X P Gend.	.00 (.04)	.01 (.05)	.00 (.04)	.00 (.05)
EA Gend. X Finance	.03 (.05)	.09 (.05)	.05 (.05)	.10 (.05)
P Gend. X Finance	-.02 (.05)	.02 (.05)	.01 (.04)	.00 (.05)
BO X RQ	.05 (.05)	.04 (.05)	-.02 (.04)	-.02 (.05)
EA Gend. X RQ	.03 (.04)	.01 (.05)	.03 (.04)	-.05 (.05)
P Gend. X RQ	.00 (.05)	.02 (.05)	.02 (.05)	.02 (.05)
Finance X RQ	-.05 (.04)	.12 (.05)*	.04 (.04)	.12 (.05)*
BO X EA Gend. X P Gend.	.00 (.04)	.01 (.04)	--	.02 (.04)
BO X EA Gend. X Finance	-.04 (.05)	-.09 (.05)	--	-.09 (.05)
EA Gend. X P Gend. X Finance	.03 (.05)	.03 (.05)	--	.02 (.05)
BO X EA Gend. X RQ	.02 (.05)	.03 (.05)	--	.05 (.05)
BO X P Gend. X RQ	.03 (.04)	.04 (.05)	--	.02 (.05)
BO X Finance X RQ	-.04 (.04)	.02 (.04)	--	-.06 (.04)
EA Gend. X P Gend. X RQ	-.03 (.04)	-.04 (.05)	--	-.01 (.05)
EA Gend. X Finance X RQ	.16 (.04)**	.17 (.05)**	--	.14 (.05)**
P Gend. X Finance X RQ	.02 (.04)	.03 (.04)	--	.01 (.05)

Note. ** $p < .01$. * $p < .05$. + $p < .10$. T1 = Time 1. T2 = Time 2. EA Gend. = Emerging Adult Gender. P Gend. = Parent Gender. BO = Birth Order. Finance = Financial Dependence (T2). RQ = Relationship Quality (T1).

Table 13.

Regressions for Associations between Time 1 Sibling Relationship Qualities and Time 2 Academic Achievement (Study 1).

	Communication			Positivity			Negativity			Relative Power			Self-Disclosure		
	ΔF	ΔR^2	β	ΔF	ΔR^2	β	ΔF	ΔR^2	β	ΔF	ΔR^2	β	ΔF	ΔR^2	β
<i>Step 1</i>	2.43 ⁺	.03		2.43 ⁺	.03		2.43 ⁺	.03		2.43 ⁺	.03		2.43 ⁺	.03	
Age (T1)			.00			.00			.00			.00			.00
Distance from Sibling			.01			.01			.01			.01			.01
Academic Achievement (T1)			.17**			.17**			.17**			.17**			.17**
<i>Step 2</i>	1.64	.03		1.64	.03		1.64	.03		1.64	.03		1.64	.03	
Birth Order			--			--			--			--			--
Gender			--			--			--			--			--
Sibling Gender			--			--			--			--			--
Financial Dependence (T2)			--			--			--			--			--
<i>Step 3</i>	1.26	.01		.49	.00		1.51	.01		1.36	.01		.08	.00	
Relationship Quality (T1)			--			--			--			--			--

Note. T1 = Time 1. T2 = Time 2. RQ = Relationship Quality. BO=Birth Order (1=1st-born, 0=2nd-born). Gender (1 = male, 0 = female). Sib. Gender = Sibling Gender (1 = male, 0 = female). Standardized beta values reflect those from the final model. Final models: Communication ($F(3, 254) = 2.43, p = .066, R^2 = .03$); Positivity ($F(3, 254) = 2.43, p = .066, R^2 = .03$); Negativity ($F(3, 254) = 2.43, p = .066, R^2 = .03$); Relative Power ($F(3, 254) = 2.43, p = .066, R^2 = .03$); Self-Disclosure ($F(3, 254) = 2.43, p = .066, R^2 = .03$). ** $p < .01$. * $p < .05$. ⁺ $p < .10$.

Table 14.

Regressions for Associations between Time 1 Sibling Relationship Qualities and Time 2 Vocational Identity (Study 1).

	Communication			Positivity			Negativity			Relative Power			Self-Disclosure		
	ΔF	ΔR^2	β	ΔF	ΔR^2	β	ΔF	ΔR^2	β	ΔF	ΔR^2	β	ΔF	ΔR^2	β
<i>Step 1</i>	.50	.00		.50	.00		.50	.00		.50	.00		.50	.00	
Age (T1)			.00			.01			.01			.01			-.01
Distance from Sibling			-.05			-.06			-.06			-.06			-.06
<i>Step 2</i>	3.28*	.05		3.28*	.05		3.28*	.05		3.28*	.05		3.28*	.05	
Birth Order			.05			.07			.07			.07			.04
Gender			-.20**			-.13*			-.13*			-.13*			-.12*
Sibling Gender			.00			-.06			-.06			-.06			.00
Financial Dependence (T2)			.10			.17**			.17**			.17**			.21**
<i>Step 3</i>	.66	.00		.26	.00		.87	.00		.03	.00		1.13	.00	
Relationship Quality (T1)			-1.84			--			--			--			-2.17
<i>Step 4</i>	1.50	.02		.91	.01		.34	.01		.39	.01		.50	.01	
RQ X BO			1.02			--			--			--			2.13
RQ X Gender			.44			--			--			--			1.72
RQ X Sibling Gender			3.45			--			--			--			2.80
RQ X Financial Dependence			-2.78			--			--			--			-3.78
<i>Step 5</i>	1.59	.04		.86	.02		1.62	.04		1.60	.04		.68	.02	
RQ X BO X Gender			.11			--			--			--			-1.61
RQ X Gender X Sib. Gender			-2.03			--			--			--			-2.51
RQ X Gender X Finance			3.27			--			--			--			4.56*
RQ X BO X Sib. Gender			-2.23			--			--			--			-2.52
RQ X BO X Finance			5.22*			--			--			--			5.47*
RQ X Sib. Gender X Finance			3.23			--			--			--			5.40*
<i>Step 6</i>	1.36	.02		1.23	.02		1.45	.02		.37	.01		.38	.01	
RQ X BO X Gender X Sib. Gender			1.03			--			--			--			2.11
RQ X BO X Gender X Finance			-5.90*			--			--			--			-6.03*
RQ X BO X Sib. Gender X Finance			-5.59*			--			--			--			-7.32*
RQ X Gender X Sib. Gender X Finance			-4.01*			--			--			--			-6.16*
<i>Step 7</i>	6.94**	.03		1.99	.01		.26	.00		.03	.00		5.81*	.02	
RQ X BO X Gender X Sib. Gender X Finance			6.58**			--			--			--			8.00*

Note. T1 = Time 1. T2 = Time 2. RQ = Relationship Quality. BO=Birth Order (1=1st-born, 0=2nd-born). Gender (1 = male, 0 = female). Sib. Gender = Sibling Gender (1 = male, 0 = female). Standardized beta values reflect those from the final model. Final models: Communication ($F(22, 235) = 2.01, p = .006, R^2 = .16$); Positivity ($F(6, 251) = 2.36, p = .031, R^2 = .05$); Negativity ($F(6, 251) = 2.36, p = .031, R^2 = .05$); Relative Power ($F(6, 251) = 2.36, p = .031, R^2 = .05$); Self-Disclosure ($F(22, 235) = 1.31, p = .17, R^2 = .11$). ** $p < .01$. * $p < .05$. + $p < .10$.

Table 15.

Means (Standard Deviations) for Study 2 Sibling Relationship Variables.

	Communication		Positivity		Negativity		Relative Power		Self-Disclosure	
	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2
1 st -borns	2.01 (.64)	2.18 (.54)	3.35 (.78)	3.34 (.60)	2.30 (1.03)	2.09 (.79)	1.89 (.62)	2.01 (.75)	2.46 (.81)	2.69 (.69)
Male	1.80 (.63)	2.01 (.48)	3.14 (.76)	3.24 (.59)	2.07 (1.09)	1.89 (.67)	1.80 (.49)	1.93 (.58)	2.15 (.63)	2.62 (.68)
w/Brother	2.02 (.74)	2.04 (.62)	3.40 (.83)	3.29 (.66)	2.05 (1.11)	1.89 (.79)	1.88 (.53)	1.95 (.57)	2.40 (.70)	2.73 (.84)
w/Sister	1.52 (.33)	1.97 (.25)	2.83 (.56)	3.19 (.53)	2.09 (1.14)	1.89 (.54)	1.70 (.44)	1.90 (.63)	1.85 (.40)	2.48 (.43)
Female	2.12 (.62)	2.27 (.56)	3.47 (.77)	3.40 (.61)	2.42 (.99)	2.19 (.84)	1.94 (.68)	2.05 (.83)	2.62 (.85)	2.72 (.70)
w/Brother	1.84 (.57)	2.08 (.57)	3.20 (.75)	3.16 (.57)	2.51 (1.01)	2.11 (.89)	1.97 (.82)	1.92 (.79)	2.14 (.61)	2.44 (.51)
w/Sister	2.40 (.56)	2.46 (.48)	3.73 (.72)	3.64 (.56)	2.33 (.99)	2.27 (.79)	1.90 (.54)	2.18 (.87)	3.10 (.79)	3.00 (.77)
2 nd -borns	1.68 (.63)	2.00 (.62)	3.46 (.69)	3.44 (.54)	2.21 (.85)	2.07 (.58)	2.51 (.81)	2.16 (1.08)	2.60 (.87)	2.73 (.94)
Male	1.54 (.56)	1.83 (.53)	3.29 (.73)	3.33 (.56)	2.27 (.85)	2.01 (.58)	2.54 (.88)	2.09 (1.07)	2.45 (.82)	2.53 (.75)
w/Brother	1.49 (.68)	1.69 (.50)	3.27 (.75)	3.28 (.50)	2.04 (.81)	1.91 (.58)	2.21 (.98)	1.57 (1.08)	2.26 (.81)	2.39 (.71)
w/Sister	1.57 (.50)	1.91 (.54)	3.30 (.73)	3.37 (.60)	2.41 (.86)	2.06 (.59)	2.73 (.78)	2.39 (.97)	2.56 (.83)	2.61 (.79)
Female	1.84 (.67)	2.18 (.67)	3.64 (.62)	3.56 (.50)	2.15 (.87)	2.13 (.59)	2.48 (.74)	.23 (1.10)	2.76 (.91)	2.94 (1.07)
w/Brother	1.52 (.49)	1.83 (.44)	3.15 (.64)	3.23 (.31)	1.97 (.97)	1.92 (.46)	2.06 (.35)	1.89 (.85)	2.14 (.83)	2.32 (.93)
w/Sister	1.99 (.71)	2.35 (.70)	3.87 (.47)	3.72 (.51)	2.24 (.83)	2.23 (.62)	2.69 (.80)	2.39 (1.19)	3.05 (.81)	3.24 (1.03)

Table 17.

*Standardized Parameter Estimates (Standard Errors) for the Associations between Time 1 Sibling Relationship**Qualities and Time 2 Depression (Study 2).*

	Communication	Positivity	Negativity	Relative Power	Self-Disclosure
Intercept	-.08 (.15)	-.09 (.13)	-.04 (.09)	-.12 (.10)	.00 (.08)
Age_A (T1)	-.15 (.20)	-.25 (.19)	-.11 (.18)	-.13 (.18)	-.23 (.17)
Distance from Sibling_A (T1)	-.26 (.11)*	-.17 (.10)	-.17 (.09)*	-.17 (.09) ⁺	-.18 (.08)*
Depression_A (T1)	.28 (.09)**	.30 (.09)**	.45 (.10)**	.26 (.09)**	.37 (.08)**
Birth Order_A	.38 (.22)	.30 (.18)	.24 (.17)	.30 (.18)	.33 (.17)*
Gender_A	-.02 (.15)	.00 (.12)	.11 (.08)	.08 (.09)	.13 (.08)
Gender_P	-.17 (.14)	.22 (.12) ⁺	.14 (.09)	.20 (.10)*	.11 (.08)
Finance_A	.47 (.24)*	.14 (.13)	.17 (.10) ⁺	.09 (.10)	.16 (.09) ⁺
RQ_A (T1)	-.25 (.20)	-.22 (.15)	.02 (.10)	.16 (.11)	-.04 (.09)
RQ_P (T1)	.09 (.18)	.05 (.15)	-.07 (.09)	-.10 (.10)	.06 (.08)
BO X Gender_A	.04 (.15)	-.06 (.14)	-.04 (.09)	-.13 (.11)	--
BO X Gender_P	.12 (.15)	.04 (.13)	-.05 (.09)	-.06 (.11)	--
BO X Finance	-.27 (.25)	-.22 (.14)	-.30 (.10)**	-.29 (.11)**	--
Gender_A X Gender_P	.03 (.15)	.17 (.12)	-.02 (.09)	-.01 (.09)	--
Gender_A X Finance	.37 (.27)	.03 (.16)	-.13 (.11)	-.06 (.11)	--
Gender_P X Finance	.29 (.24)	.05 (.12)	.06 (.11)	.07 (.10)	--
BO X RQ_A	.53 (.20)**	.00 (.15)	.05 (.10)	-.22 (.11)*	--
Gender_A X RQ_A	.05 (.19)	.04 (.16)	.20 (.09)*	-.08 (.11)	--
Gender_P X RQ_A	-.32 (.20)	.38 (.17)*	-.06 (.10)	.15 (.10)	--
Finance X RQ_A	-.36 (.25)	.15 (.17)	.06 (.09)	.04 (.09)	--
BO X RQ_P	-.20 (.19)	.07 (.14)	.12 (.10)	.14 (.12)	--
Gender_A X RQ_P	.29 (.20)	-.13 (.14)	-.05 (.10)	.16 (.09) ⁺	--
Gender_P X RQ_P	.38 (.20) ⁺	-.15 (.17)	-.01 (.10)	.00 (.10)	--
Finance X RQ_P	.19 (.32)	.11 (.18)	.06 (.11)	.11 (.14)	--
BO X Gender_A X Gender_P	-.12 (.14)	-.07 (.13)	--	--	--
BO X Gender_A X Finance	-.03 (.27)	.05 (.14)	--	--	--
BO X Gender_P X Finance	-.06 (.27)	-.01 (.12)	--	--	--
Gender_A X Gender_P X Finance	.42 (.30)	-.03 (.16)	--	--	--
BO X Gender_A X RQ_A	.09 (.20)	-.27 (.15) ⁺	--	--	--
BO X Gender_P X RQ_A	.55 (.22)*	-.13 (.16)	--	--	--
BO X Finance X RQ_A	-.57 (.22)*	-.45 (.17)*	--	--	--
Gender_A X Gender_P X RQ_A	.17 (.22)	.01 (.15)	--	--	--
Gender_A X Finance X RQ_A	.00 (.23)	-.15 (.20)	--	--	--
Gender_P X Finance X RQ_A	.28 (.18)	-.06 (.17)	--	--	--
BO X Gender_A X RQ_P	-.20 (.20)	.32 (.15)*	--	--	--
BO X Gender_P X RQ_P	-.46 (.22)*	.07 (.16)	--	--	--
BO X Finance X RQ_P	.33 (.31)	.33 (.16)*	--	--	--
Gender_A X Gender_P X RQ_P	.11 (.21)	.22 (.16)	--	--	--
Gender_A X Finance X RQ_P	.23 (.34)	.32 (.20)	--	--	--
Gender_P X Finance X RQ_P	-.16 (.20)	-.11 (.16)	--	--	--
BO X Gender_A X Gender_P X Finance	-.15 (.25)	--	--	--	--
BO X Gender_A X Gender_P X RQ_A	-.06 (.22)	--	--	--	--
BO X Gender_A X Finance X RQ_A	-.58 (.28)*	--	--	--	--
BO X Gender_P X Finance X RQ_A	.24 (.21)	--	--	--	--
Gender_A X Gender_P X Finance X RQ_A	.55 (.24)*	--	--	--	--
BO X Gender_A X Gender_P X RQ_P	-.27 (.23)	--	--	--	--
BO X Gender_A X Finance X RQ_P	.14 (.35)	--	--	--	--
BO X Gender_P X Finance X RQ_P	-.02 (.27)	--	--	--	--
Gender_A X Gender_P X Finance X RQ_P	.16 (.29)	--	--	--	--

Note. ** $p < .01$. * $p < .05$. ⁺ $p < .10$. T1 = Time 1. T2 = Time 2. EA Gend. = Emerging Adult Gender. P Gend. = Parent Gender. BO = Birth Order. Finance = Financial Dependence (T2). RQ = Relationship Quality (T1).

Table 18.

Standardized Parameter Estimates (Standard Errors) for the Associations between Time 1 Sibling Relationship

Qualities and Time 2 Anxiety (Study 2).

	Communication	Positivity	Negativity	Relative Power	Self-Disclosure
Intercept	-.03 (.08)	-.05 (.11)	.00 (.10)	-.24 (.10)*	.00 (.07)
Age_A (T1)	.01 (.14)	.01 (.14)	-.05 (.17)	.04 (.15)	-.23 (.14)
Distance from Sibling_A (T1)	-.15 (.07)*	-.15 (.09)	-.10 (.08)	-.07 (.09)	-.18 (.07)
Anxiety_A (T1)	.74 (.07)**	.70 (.08)**	.68 (.11)**	.51 (.08)**	.37 (.07)**
Birth Order_A	.19 (.14)	.12 (.14)	.26 (.17)	.20 (.16)	.33 (.14)*
Gender_A	.09 (.08)	-.12 (.10)	.06 (.10)	-.14 (.10)	.13 (.08)
Gender_P	-.04 (.08)	.01 (.10)	.11 (.11)	.13 (.10)	.11 (.08)
Finance_A	.11 (.08)	.04 (.12)	.13 (.22)	.06 (.13)	.16 (.08)**
RQ_A (T1)	.00 (.08)	-.04 (.13)	.02 (.13)	-.01 (.12)	-.04 (.08)
RQ_P (T1)	-.05 (.08)	-.13 (.13)	-.07 (.11)	-.09 (.12)	.06 (.08)
BO X Gender_A	.06 (.09)	-.03 (.12)	-.09 (.09)	-.14 (.10)	--
BO X Gender_P	.02 (.09)	-.09 (.10)	-.18 (.10) ⁺	.09 (.11)	--
BO X Finance	-.19 (.09)*	-.25 (.13)*	-.17 (.21)	-.20 (.11) ⁺	--
Gender_A X Gender_P	-.07 (.08)	.08 (.10)	.01 (.11)	-.02 (.09)	--
Gender_A X Finance	-.10 (.08)	-.16 (.14)	-.13 (.23)	-.20 (.12) ⁺	--
Gender_P X Finance	.09 (.08)	.02 (.10)	.01 (.18)	.06 (.10)	--
BO X RQ_A	.31 (.10)**	.04 (.12)	-.12 (.12)	-.26 (.11)*	--
Gender_A X RQ_A	.17 (.10)	.16 (.13)	.10 (.13)	-.07 (.11)	--
Gender_P X RQ_A	-.23 (.10)*	.22 (.13) ⁺	.19 (.13)	.11 (.11)	--
Finance X RQ_A	.08 (.07)	.31 (.15)*	.22 (.18)	.04 (.10)	--
BO X RQ_P	-.06 (.11)	.08 (.12)	.06 (.12)	.13 (.11)	--
Gender_A X RQ_P	.00 (.10)	-.14 (.13)	-.10 (.13)	.02 (.10)	--
Gender_P X RQ_P	.14 (.11)	-.02 (.14)	-.11 (.11)	-.17 (.12)	--
Finance X RQ_P	.10 (.08)	-.02 (.15)	-.36 (.21)	.15 (.14)	--
BO X Gender_A X Gender_P	--	-.03 (.10)	-.01 (.11)	.20 (.10)*	--
BO X Gender_A X Finance	--	-.16 (.13)	-.14 (.26)	.05 (.12)	--
BO X Gender_P X Finance	--	-.03 (.11)	.11 (.20)	.07 (.13)	--
Gender_A X Gender_P X Finance	--	-.14 (.12)	.06 (.22)	-.12 (.12)	--
BO X Gender_A X RQ_A	--	-.09 (.13)	-.04 (.11)	-.24 (.12)*	--
BO X Gender_P X RQ_A	--	-.03 (.12)	-.06 (.12)	.28 (.12)*	--
BO X Finance X RQ_A	--	-.08 (.15)	-.19 (.17)	.04 (.12)	--
Gender_A X Gender_P X RQ_A	--	.33 (.14)*	.24 (.13) ⁺	.36 (.11)**	--
Gender_A X Finance X RQ_A	--	.00 (.16)	.20 (.20)	.09 (.13)	--
Gender_P X Finance X RQ_A	--	.11 (.16)	.07 (.15)	.07 (.11)	--
BO X Gender_A X RQ_P	--	.08 (.13)	-.24 (.12)*	.10 (.13)	--
BO X Gender_P X RQ_P	--	-.01 (.13)	.04 (.11)	-.01 (.13)	--
BO X Finance X RQ_P	--	.02 (.15)	-.13 (.16)	-.06 (.15)	--
Gender_A X Gender_P X RQ_P	--	-.21 (.14)	.16 (.11)	-.06 (.13)	--
Gender_A X Finance X RQ_P	--	.11 (.16)	-.32 (.21)	-.01 (.16)	--
Gender_P X Finance X RQ_P	--	-.10 (.17)	.18 (.17)	-.10 (.15)	--
BO X Gender_A X Gender_P X Finance	--	--	-.10 (.19)	--	--
BO X Gender_A X Gender_P X RQ_A	--	--	-.14 (.13)	--	--
BO X Gender_A X Finance X RQ_A	--	--	-.04 (.20)	--	--
BO X Gender_P X Finance X RQ_A	--	--	-.04 (.13)	--	--
Gender_A X Gender_P X Finance X RQ_A	--	--	.02 (.16)	--	--
BO X Gender_A X Gender_P X RQ_P	--	--	.16 (.11)	--	--
BO X Gender_A X Finance X RQ_P	--	--	-.22 (.23)	--	--
BO X Gender_P X Finance X RQ_P	--	--	.41 (.21)*	--	--
Gender_A X Gender_P X Finance X RQ_P	--	--	.24 (.20)	--	--

Note. ** $p < .01$. * $p < .05$. ⁺ $p < .10$. T1 = Time 1. T2 = Time 2. EA Gen. = Emerging Adult Gender. P Gen. = Parent Gender. BO = Birth Order. Finance = Financial Dependence (T2). RQ = Relationship Quality (T1).

Table 19.

*Standardized Parameter Estimates (Standard Errors) for the Associations between Time 1 Sibling Relationship**Qualities and Time 2 Self-Esteem (Study 2).*

	Communication	Positivity	Negativity	Relative Power	Self-Disclosure
Intercept	-.09 (.14)	.04 (.13)	.04 (.10)	.11 (.13)	-.09 (.20)
Age_A (T1)	.20 (.18)	.19 (.17)	.18 (.18)	.05 (.18)	-.15 (.19)
Distance from Sibling_A (T1)	-.08 (.10)	-.10 (.10)	-.08 (.07)	-.08 (.09)	.02 (.09)
Self-Esteem_A (T1)	.53 (.09)**	.44 (.09)**	.45 (.09)**	.35 (.08)**	.53 (.09)**
Birth Order_A	-.34 (.21)	-.15 (.18)	-.30 (.18)	-.13 (.19)	.24 (.24)
Gender_A	-.11 (.14)	-.01 (.13)	-.13 (.11)	.10 (.13)	.04 (.15)
Gender_P	-.02 (.13)	-.21 (.12) ⁺	-.06 (.11)	-.12 (.13)	-.28 (.17)
Finance_A	-.32 (.22)	-.05 (.18)	-.09 (.19)	.03 (.20)	-.64 (.23)**
RQ_A (T1)	.20 (.18)	-.05 (.17)	.18 (.13)	.00 (.15)	.04 (.13)
RQ_P (T1)	.03 (.16)	.29 (.17)	.09 (.11)	.03 (.17)	-.32 (.26)
BO X Gender_A	-.07 (.14)	.14 (.13)	.09 (.09)	.03 (.12)	-.02 (.18)
BO X Gender_P	-.03 (.14)	-.01 (.13)	.15 (.10)	.02 (.13)	.12 (.20)
BO X Finance	-.28 (.23)	.01 (.17)	-.06 (.18)	-.19 (.20)	-.22 (.19)
Gender_A X Gender_P	.02 (.14)	-.10 (.13)	.13 (.10)	.37 (.13)	.29 (.19)
Gender_A X Finance	-.54 (.25)*	-.19 (.18)	-.17 (.18)	-.08 (.20)	-.23 (.23)
Gender_P X Finance	.18 (.22)	.04 (.16)	.22 (.16)	.16 (.18)	.11 (.20)
BO X RQ_A	-.40 (.18)*	.14 (.16)	-.04 (.13)	.35 (.16)**	.09 (.15)
Gender_A X RQ_A	-.21 (.18)	-.10 (.18)	-.10 (.14)	.25 (.16)	.29 (.15) ⁺
Gender_P X RQ_A	.33 (.18) ⁺	-.50 (.18)**	.02 (.14)	-.21 (.17)	-.23 (.15)
Finance X RQ_A	-.02 (.23)	-.65 (.38) ⁺	-.18 (.17)	.64 (.30)*	-.08 (.30)
BO X RQ_P	.08 (.18)	-.25 (.16)	.06 (.11)	-.12 (.17)	.11 (.25)
Gender_A X RQ_P	.14 (.18)	.27 (.17)	.07 (.12)	.08 (.17)	.01 (.19)
Gender_P X RQ_P	-.36 (.19) ⁺	.31 (.19)	.08 (.10)	.09 (.17)	-.09 (.24)
Finance X RQ_P	.20 (.30)	.52 (.39)	.34 (.20) ⁺	-.11 (.23)	-.51 (.22)*
BO X Gender_A X Gender_P	.03 (.13)	.00 (.13)	-.02 (.11)	-.44 (.13)**	-.29 (.17) ⁺
BO X Gender_A X Finance	-.25 (.26)	.12 (.22)	-.16 (.22)	-.21 (.20)	-.74 (.27)**
BO X Gender_P X Finance	.28 (.25)	.15 (.19)	.19 (.18)	-.06 (.20)	.77 (.23)**
Gender_A X Gender_P X Finance	.16 (.28)	.01 (.19)	.15 (.20)	.15 (.19)	.71 (.26)**
BO X Gender_A X RQ_A	-.04 (.19)	.40 (.16)*	.07 (.12)	.14 (.15)	.06 (.13)
BO X Gender_P X RQ_A	-.07 (.20)	.38 (.16)*	.08 (.14)	-.03 (.16)	-.32 (.13)*
BO X Finance X RQ_A	.27 (.20)	.57 (.22)**	.20 (.16)	.01 (.17)	-.04 (.16)
Gender_A X Gender_P X RQ_A	-.17 (.20)	-.45 (.19)*	-.23 (.14)	-.23 (.14)	-.32 (.13)*
Gender_A X Finance X RQ_A	-.05 (.21)	-.45 (.43)	.04 (.18)	.07 (.20)	.00 (.19)
Gender_P X Finance X RQ_A	-.09 (.17)	-.72 (.40) ⁺	-.01 (.15)	-.09 (.14)	-.12 (.14)
BO X Gender_A X RQ_P	.08 (.19)	-.43 (.16)**	.35 (.11)**	-.28 (.19)	-.13 (.22)
BO X Gender_P X RQ_P	-.06 (.20)	-.26 (.17)	-.23 (.10)*	-.03 (.17)	.36 (.27)
BO X Finance X RQ_P	-.21 (.29)	-.70 (.23)**	.14 (.14)	-.14 (.20)	.27 (.16) ⁺
Gender_A X Gender_P X RQ_P	-.04 (.19)	.28 (.20)	.07 (.10)	.35 (.18) ⁺	.38 (.26)
Gender_A X Finance X RQ_P	-.05 (.32)	.15 (.37)	.38 (.18)*	-.08 (.21)	.21 (.21)
Gender_P X Finance X RQ_P	.10 (.18)	.96 (.46)*	-.24 (.16)	.08 (.21)	-.35 (.20) ⁺
BO X Gender_A X Gender_P X Finance	.57 (.23)*	.37 (.21) ⁺	.38 (.16)*	.21 (.19)	.36 (.21) ⁺
BO X Gender_A X Gender_P X RQ_A	.49 (.20)*	.25 (.18)	.35 (.15)*	.01 (.17)	-.34 (.15)*
BO X Gender_A X Finance X RQ_A	.29 (.26)	.10 (.24)	.28 (.18)	.71 (.31)*	-.31 (.31)
BO X Gender_P X Finance X RQ_A	-.02 (.18)	.44 (.18)*	-.14 (.12)	-.72 (.30)*	.01 (.29)
Gender_A X Gender_P X Finance X RQ_A	-.17 (.21)	-.44 (.46)	.13 (.18)	-.61 (.31)*	.03 (.29)
BO X Gender_A X Gender_P X RQ_P	-.40 (.21) ⁺	-.35 (.17)*	-.29 (.11)*	-.29 (.17) ⁺	.01 (.24)
BO X Gender_A X Finance X RQ_P	-.07 (.33)	-.37 (.26)	.07 (.22)	-.26 (.26)	-.66 (.23)**
BO X Gender_P X Finance X RQ_P	-.27 (.24)	-.39 (.24)	-.19 (.21)	.01 (.23)	.67 (.23)**
Gender_A X Gender_P X Finance X RQ_P	-.22 (.27)	.60 (.51)	-.30 (.20)	.20 (.26)	.54 (.23)*

Note. ** $p < .01$. * $p < .05$. ⁺ $p < .10$. T1 = Time 1. T2 = Time 2. EA Gend. = Emerging Adult Gender. P Gend. = Parent Gender. BO = Birth Order. Finance = Financial Dependence (T2). RQ = Relationship Quality (T1).

Table 20.

Standardized Parameter Estimates (Standard Errors) for the Associations between Time 1 Sibling Relationship

Qualities and Time 2 Academic Achievement (Study 2).

	Communication	Positivity	Negativity	Relative Power	Self-Disclosure
Intercept	-.18 (.16)	.00 (.08)	.01 (.11)	.15 (.13)	.09 (.12)
Age_A (T1)	-.07 (.21)	.06 (.16)	.03 (.20)	.15 (.19)	.00 (.18)
Distance from Sibling_A (T1)	-.09 (.12)	-.10 (.09)	.01 (.09)	.02 (.11)	-.09 (.10)
Academic Achievement_A (T1)	.44 (.10)**	.45 (.09)**	.52 (.11)**	.29 (.10)**	.45 (.09)**
Birth Order_A	-.13 (.24)	-.01 (.16)	.06 (.20)	.01 (.20)	.02 (.17)
Gender_A	-.23 (.16)	-.02 (.09)	-.02 (.12)	-.05 (.13)	-.03 (.11)
Gender_P	.22 (.16)	.11 (.09)	-.04 (.12)	.09 (.13)	.08 (.11)
Finance_A	.39 (.28)	.10 (.09)	-.54 (.27)*	.17 (.17)	.13 (.11)
RQ_A (T1)	-.21 (.21)	.15 (.11)	.19 (.14)	.24 (.15)	-.04 (.10)
RQ_P (T1)	.21 (.19)	-.07 (.11)	.02 (.13)	-.04 (.16)	-.02 (.10)
BO X Gender_A	-.44 (.16)**	--	-.04 (.10)	.23 (.13) ⁺	.10 (.10)
BO X Gender_P	-.02 (.16)	--	-.21 (.12) ⁺	-.09 (.14)	-.03 (.11)
BO X Finance	.21 (.29)	--	-.51 (.25)*	-.04 (.15)	.10 (.11)
Gender_A X Gender_P	.26 (.16)	--	-.12 (.12)	.03 (.12)	.07 (.11)
Gender_A X Finance	.18 (.32)	--	-.62 (.27)*	.31 (.15)*	.15 (.11)
Gender_P X Finance	.85 (.27)**	--	.26 (.21)	.08 (.13)	.07 (.11)
BO X RQ_A	-.36 (.22) ⁺	--	.11 (.14)	.06 (.14)	.13 (.11)
Gender_A X RQ_A	-.08 (.21)	--	.31 (.15)*	.26 (.14) ⁺	.02 (.11)
Gender_P X RQ_A	.52 (.22)*	--	-.09 (.15)	-.03 (.13)	-.19 (.11) ⁺
Finance X RQ_A	-.59 (.28)*	--	-.57 (.20)**	-.15 (.13)	.09 (.11)
BO X RQ_P	.17 (.21)	--	.15 (.13)	-.37 (.14)*	.01 (.11)
Gender_A X RQ_P	.09 (.21)	--	-.12 (.14)	-.22 (.13) ⁺	.07 (.11)
Gender_P X RQ_P	-.45 (.21)*	--	-.28 (.12)*	-.02 (.15)	.27 (.12)*
Finance X RQ_P	1.02 (.38)**	--	.03 (.25)	.15 (.18)	.01 (.11)
BO X Gender_A X Gender_P	.06 (.16)	--	-.11 (.13)	-.08 (.12)	--
BO X Gender_A X Finance	.02 (.32)	--	-.67 (.31)*	.15 (.16)	--
BO X Gender_P X Finance	.79 (.30)*	--	.39 (.23)	.15 (.16)	--
Gender_A X Gender_P X Finance	.79 (.34)*	--	.17 (.26)	-.29 (.14)*	--
BO X Gender_A X RQ_A	-.62 (.22)**	--	.16 (.13)	.21 (.15)	--
BO X Gender_P X RQ_A	.69 (.23)**	--	-.01 (.15)	.00 (.16)	--
BO X Finance X RQ_A	-.50 (.24)*	--	-.46 (.20)*	-.20 (.15)	--
Gender_A X Gender_P X RQ_A	.63 (.23)**	--	-.20 (.15)	-.22 (.15)	--
Gender_A X Finance X RQ_A	-.31 (.26)	--	-.64 (.23)**	-.19 (.16)	--
Gender_P X Finance X RQ_A	.11 (.20)	--	.54 (.17)**	.30 (.14)*	--
BO X Gender_A X RQ_P	.23 (.21)	--	-.10 (.14)	-.15 (.16)	--
BO X Gender_P X RQ_P	-.31 (.23)	--	-.37 (.13)**	.11 (.15)	--
BO X Finance X RQ_P	.89 (.37)*	--	-.05 (.18)	.12 (.19)	--
Gender_A X Gender_P X RQ_P	-.46 (.21)*	--	-.13 (.12)	.03 (.16)	--
Gender_A X Finance X RQ_P	.86 (.41)*	--	.04 (.23)	-.15 (.19)	--
Gender_P X Finance X RQ_P	.01 (.21)	--	-.30 (.19)	-.03 (.20)	--
BO X Gender_A X Gender_P X Finance	.89 (.29)**	--	.42 (.23) ⁺	--	--
BO X Gender_A X Gender_P X RQ_A	.38 (.23)	--	-.12 (.16)	--	--
BO X Gender_A X Finance X RQ_A	-.49 (.31)	--	-.49 (.23)*	--	--
BO X Gender_P X Finance X RQ_A	.05 (.21)	--	.20 (.15)	--	--
Gender_A X Gender_P X Finance X RQ_A	.23 (.24)	--	.43 (.20)*	--	--
BO X Gender_A X Gender_P X RQ_P	-.17 (.25)	--	-.24 (.13) ⁺	--	--
BO X Gender_A X Finance X RQ_P	1.05 (.41)*	--	.07 (.26)	--	--
BO X Gender_P X Finance X RQ_P	-.20 (.28)	--	.14 (.24)	--	--
Gender_A X Gender_P X Finance X RQ_P	-.19 (.31)	--	-.32 (.23)	--	--

Note. ** $p < .01$. * $p < .05$. ⁺ $p < .10$. T1 = Time 1. T2 = Time 2. EA Gend. = Emerging Adult Gender. P Gend. = Parent Gender. BO = Birth Order. Finance = Financial Dependence (T2). RQ = Relationship Quality (T1).

Table 21.

Standardized Parameter Estimates (Standard Errors) for the Associations between Time 1 Sibling Relationship

Qualities and Time 2 Vocational Identity (Study 2).

	Communication	Positivity	Negativity	Relative Power	Self-Disclosure
Intercept	.00 (.09)	-.06 (.15)	-.02 (.10)	.09 (.12)	.00 (.09)
Age_A (T1)	.01 (.18)	.07 (.21)	.09 (.20)	.02 (.20)	.02 (.18)
Distance from Sibling_A (T1)	.08 (.09)	-.02 (.12)	.04 (.10)	.06 (.10)	.08 (.09)
Birth Order_A	-.36 (.19) ⁺	-.46 (.21)*	-.40 (.20)*	-.37 (.21) ⁺	-.33 (.18) ⁺
Gender_A	.11 (.09)	.05 (.14)	.12 (.10)	.08 (.10)	.12 (.09)
Gender_P	.07 (.09)	.29 (.14)*	.06 (.10)	.06 (.11)	.09 (.09)
Finance_A	-.08 (.10)	-.28 (.16) ⁺	-.13 (.11)	-.12 (.11)	-.08 (.10)
RQ_A (T1)	.02 (.11)	-.14 (.17)	.06 (.11)	-.07 (.12)	.08 (.10)
RQ_P (T1)	-.08 (.11)	.22 (.17)	.10 (.11)	-.05 (.12)	-.05 (.10)
BO X Gender_A	--	-.09 (.16)	.02 (.10)	-.14 (.12)	--
BO X Gender_P	--	-.04 (.15)	.04 (.10)	.09 (.12)	--
BO X Finance	--	-.30 (.16) ⁺	-.08 (.11)	-.17 (.12)	--
Gender_A X Gender_P	--	-.04 (.14)	-.01 (.10)	.04 (.10)	--
Gender_A X Finance	--	-.16 (.18)	.08 (.12)	.15 (.12)	--
Gender_P X Finance	--	.08 (.14)	.01 (.12)	.04 (.12)	--
BO X RQ_A	--	-.20 (.17)	.10 (.11)	.05 (.13)	--
Gender_A X RQ_A	--	-.04 (.18)	-.29 (.10)**	-.10 (.12)	--
Gender_P X RQ_A	--	.20 (.19)	.06 (.11)	.16 (.11)	--
Finance X RQ_A	--	-.03 (.20)	-.09 (.11)	-.01 (.10)	--
BO X RQ_P	--	.07 (.17)	-.16 (.11)	-.08 (.13)	--
Gender_A X RQ_P	--	-.09 (.17)	.11 (.10)	.21 (.11)*	--
Gender_P X RQ_P	--	-.05 (.20)	-.08 (.11)	.10 (.12)	--
Finance X RQ_P	--	.06 (.21)	.00 (.12)	.27 (.16) ⁺	--
BO X Gender_A X Gender_P	--	.16 (.15)	--	--	--
BO X Gender_A X Finance	--	-.21 (.16)	--	--	--
BO X Gender_P X Finance	--	.13 (.14)	--	--	--
Gender_A X Gender_P X Finance	--	.27 (.18)	--	--	--
BO X Gender_A X RQ_A	--	-.05 (.18)	--	--	--
BO X Gender_P X RQ_A	--	.06 (.19)	--	--	--
BO X Finance X RQ_A	--	.21 (.20)	--	--	--
Gender_A X Gender_P X RQ_A	--	-.07 (.18)	--	--	--
Gender_A X Finance X RQ_A	--	.06 (.24)	--	--	--
Gender_P X Finance X RQ_A	--	-.40 (.20)*	--	--	--
BO X Gender_A X RQ_P	--	.21 (.18)	--	--	--
BO X Gender_P X RQ_P	--	-.19 (.18)	--	--	--
BO X Finance X RQ_P	--	-.03 (.19)	--	--	--
Gender_A X Gender_P X RQ_P	--	.22 (.19)	--	--	--
Gender_A X Finance X RQ_P	--	.25 (.24)	--	--	--
Gender_P X Finance X RQ_P	--	.24 (.20)	--	--	--

Note. ** $p < .01$. * $p < .05$. ⁺ $p < .10$. T1 = Time 1. T2 = Time 2. EA Gend. = Emerging Adult Gender. P Gend. = Parent Gender. BO = Birth Order. Finance = Financial Dependence (T2). RQ = Relationship Quality (T1).

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VITA

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