Unpacking the Links between Interpersonal Relationship Features and Depression in Adolescence and Young Adulthood

by

Rebecca Joy Goodman

A dissertation submitted to the Graduate Faculty of
Auburn University
in partial fulfillment of the
requirements for the Degree of
Doctor of Philosophy

Auburn, Alabama
August 5, 2017

Keywords: depression, interpersonal relationships, parent support, peer support, romantic partner support, sibling support

Copyright 2017 by Rebecca Joy Goodman

Approved by

Diana Samek, Chair, Assistant Professor of Human Development and Family Studies
Stephen Erath, Associate Professor of Human Development and Family Studies
Scott Ketring, Associate Professor of Human Development and Family Studies
Amy Rauer, Associate Professor of Child and Family Studies, University of Tennessee

Abstract

Depression is a rapidly growing problem with enormous economic and social burden (World Health Organization, 2017b), with rates increasing by about 1.5 to 2 million adults per decade recently (Greenberg et al., 2015; Marcus & Olfson, 2010). Considering the rise of depression in context, interpersonal theories of depression suggest that that close relationships both *impact* and are *impacted by* the development of depressive symptoms (Joiner, Brown, & Kistner, 2006; Joiner & Coyne, 1999; Rudolph, Flynn, & Abaied, 2008). This dissertation builds on this program of research by evaluating the links between depressive symptoms and key interpersonal relationship contexts during the critical period of adolescence and young adulthood, as well as whether gender moderated these associations. Study 1 aimed to tease apart antecedent versus consequence in the links between symptoms of Major Depressive Disorder (MDD) and problematic parent, peer, and romantic relationships from ages 11 to 29 using a large community sample ($N = 1,517$). Results showed evidence of both socialization and selection effects across all developmental transitions, with some evidence that antisocial peer affiliation may be more relevant to the development of MDD for males, whereas relationship problems with parents and romantic partners may be more relevant for females. Study 2 takes a more nuanced approach by examining the links between parent, sibling, peer, and romantic partner relationship support as they relate to depressive symptoms during the first year of college, which has been identified as a particularly at-risk time for the development of depression (Beiter et al., 2015; Buchanan, 2012). Results suggest that greater support from parents and peers but not

necessarily siblings are most relevant to depressive symptoms at this time. Also, the nature of

this effect of parent support on depressive symptoms was about two-fold for females compared

to males. Moreover, romantic partner support was associated with an increased likelihood of

meeting a clinical threshold for depression, but only for females and not males. Overall, these

studies demonstrate that interpersonal relationships and depressive symptoms work together in

complex ways and support interpersonal theories of depression (Joiner & Coyne, 1999; Rudolph,

Flynn, & Abaied, 2008). Results highlight the need to consider strengthening social networks as

a means to offset risk for and treat depressive symptoms during the critical development period

of adolescence and the transition into young adulthood.

Acknowledgments

In a moment of frustration, my mom reminded me a few months ago that it is such a privilege to be able to work towards a degree, let alone an advanced degree. It was a very timely reminder. I am grateful for the opportunity that I have been afforded. As you'll see in this, positive interpersonal relationships appear to buffer depression. At times, writing a dissertation can really bring a person down, so I am exceedingly thankful that I have amazing support on all sides.

First, I am grateful for my dissertation chair, Dr. Di Samek, for all of her support and guidance of not just this dissertation but also my professional development in general. I am delighted to be her first doctoral student, and I appreciate her example, extensive training, as well as kindness and understanding. I sincerely look forward to continuing to work with Dr. Samek on future collaborations. It has been tremendous to have the support of my committee, Dr. Stephen Erath, Dr. Amy Rauer, and Dr. Scott Ketring, for both my thesis and dissertation and for each of these professors for being so supportive of me both in and out of the classroom. I am thankful that Dr. Erath has been willing to answer all of our questions through the process and that he has helped me to integrate my understanding of research and clinical practice. I appreciate Dr. Rauer's unfailing support of my academic work and am glad to have learned from her not just in content courses, but also about teaching. I thank Dr. Rauer for her genuine kindness and graciously taking time to talk through career goals/my life plan with me. I appreciate Dr. Ketring's guidance in class, research projects, and as my supervisor for my license

as a marriage and family therapist. I am grateful that he has constantly supported and pushed me in terms of professional development and has helped me consider what is best for me as a whole. I would like to thank Dr. Melanie Iarussi for agreeing to serve as my outside reader. I am also grateful to Dr. Ketring and to Dr. Tommy Smith for helping me post-masters and license to work towards becoming an approved supervisor. I am delighted to leave graduate school even more well-rounded as both a researcher and clinician.

I am thankful to my family who has constantly encouraged me during this process and kept me from becoming too depressed throughout my graduate school and health journeys. Parents are important (keep reading!), and my parents, Brooks and Teresa, are my strongest supporters for anything I've needed during this process. My siblings, Sara and Sam (sorry, it doesn't pan out for siblings, but I really do need y'all), always keep me laughing when I need it most. I am fortunate to have the support of an amazing group of friends both near and far who let me ask endless questions about how they made it through this process, give me pep talks whether they really know what I'm talking about or not, and just take good care of me in general in so many ways. They are so supportive, and I am so very thankful that I have felt tremendously cared for during this process (and thankful that I have so many excellent friends that to list them all would take several pages, so just know you are appreciated and loved). Finally, I believe that my faith carries me each day and that it is by humble reliance upon God that I persevere in anything, so in close, Soli Deo Gloria.

Table of Contents

List of Tables

List of Figures

I.   General Introduction

Major depressive disorder (MDD) is one of the most commonly diagnosed disorders in the United States, with last 12-month prevalence estimates ranging from 4-13% for adolescents (Avenevoli, Swendsen, He, Burstein, & Merikangas, 2015; Kessler et al., 2012) and 6-8% for adults (Centers for Disease Control, 2015; Garber, 2000; Kessler et al., 2003; National Institute of Mental Health, 2014b). On a broad scale, depression imposes an enormous economic burden in terms of treatment costs, lost earnings, and indirect workplace costs (Greenberg, Fournier, Sisitsky, Pike, & Kessler, 2015; Kessler, 2003; Kessler et al., 2005). Individually, the negative impacts of depressive symptoms are numerous and often quite debilitating, including physical illness, decreased social role functioning, and high comorbidity with other mental health disorders (American Psychological Association (APA), 2013; Kessler et al., 2003). Depression is associated with high rates of mortality from suicide as well as physical health problems such as cardiovascular disease (APA, 2013; Wulsin, Vaillant, & Wells, 1999). Although the onset of depressive symptoms may occur at any age, the likelihood of exhibiting symptoms increases dramatically around the onset of puberty and then peaks in the 20s (APA, 2013). Thus, it remains imperative to better understand what attenuates the development of depressive symptoms during adolescence and young adulthood.

Coinciding with this increasing likelihood of onset of symptoms of depression in adolescence and young adulthood are several important changes in interpersonal relationships (Aquilino, 2006; Collins & van Dulmen, 2006; Schulenberg & Zarrett, 2006). Interpersonal theories of depression (Joiner et al., 2006; Joiner & Coyne, 1999; Rudolph et al., 2008) suggest

that depressive symptoms form within the context of close relationships, such that repeatedly negative social interactions elicit social withdrawal or other depressive symptoms. These interpersonal relationships do not operate independently of one another, but rather often influence subsequent relationship development. Drawing on attachment theory, early parent-child relationships are thought to influence the development subsequent peer and romantic partner relationships (Sroufe, Egeland, & Carlson, 1999b). Moreover, these relationships are systemic and transactional (Sroufe, Carlson, Levy, & Egeland, 1999a), so it is expected that the development of individual depressive symptoms would likewise be complex and transactional. Correspondingly, interpersonal theories would suggest that both the etiology and maintenance of depressive symptoms are related to interpersonal relationships (Parker, Rubin, Erath, Wojslawowicz, & Buskirk, 2006). Thus, negative interactions with parents may elicit depressive symptoms, and depressive symptoms may then elicit further negative interactions with parents, peers, and/or romantic partners. On the other hand, supportive and warm interactions with parents may buffer against the risk of depression and increase the likelihood of engaging in warm and supportive interpersonal interactions with others.

Several features of interpersonal relationships have been shown to correlate with depressive symptoms (Cicchetti & Rogosch, 2002; Rueger, Malecki, Pyun, Aycock, & Coyle, 2016). For example, much of the prior research has suggested that greater interpersonal relationship quality, including parent-child relationship quality (Branje, Hale, Frijns, & Meeus, 2010; Heaven, Newbury, & Mak, 2004; McLeod, Weisz, & Wood, 2007; Shah & Waller, 2000), sibling relationship quality (Conger, Bryant, & Brennom, 2004; Conger & Little, 2010; Waldinger, Vaillant, & Orav, 2007), peer relationship quality (Eberhart & Hammen, 2006; La Greca & Harrison, 2005; Schwartz-Mette & Rose, 2012), and romantic partner relationship

quality and support (Blais & Renshaw, 2014; Garber & Rao, 2014; La Greca & Harrison, 2005; Linder, Crick, & Collins, 2002) are related to a lower likelihood of depressive symptoms.

Though this research clearly demonstrates links between interpersonal relationship quality and depression, critical gaps in our understanding of depressive symptoms in the context of interpersonal relationships remain. First, less research has evaluated the developmental unfolding of how each of interpersonal relationships and depressive symptoms influence one another over time. This is important to address as these interpersonal relationships do not develop in isolation of one another. Longitudinal research studies, including those grounded in attachment theory, have documented that earlier relationships with parents and peers are very important to the development of later relationships, including romantic relationships in adolescence and young adulthood (Rauer, Pettit, Lansford, Bates, & Dodge, 2013; Rauer et al., 2016; Simpson, Collins, Tran, & Haydon, 2007; Sroufe et al., 1999a). Yet, more attention is needed as to how depression may influence or be influenced by this continuity of interpersonal relationship quality throughout a time period when depression levels peak (APA, 2013) and interpersonal relationships change (Aquilino, 2006; Collins & van Dulmen, 2006; Schulenberg & Zarrett, 2006).

Thus, the first study of this dissertation sought to explore the transactional associations between key interpersonal relationships features (parent-child relationship problems, antisocial peer affiliation, and romantic partner relationship quality) as they relate to MDD from late childhood (age 11) through adolescence (ages 14, 17) and young adulthood (ages 20, 24, and 29). Guided by developmental theory (Scarr & McCartney, 1983) and other prior research (Samek, Goodman, Erath, McGue, & Iacono, 2016a), I evaluated the relative impact of both selection and socialization in the links between these features of interpersonal relationship

context and MDD symptoms. *Selection* effects refer to how an individual may select into or be exposed to more versus less problematic relationships based on their own level of depression. *Socialization* refers to how more problematic or supportive interpersonal relationships may impact the subsequent development of an individual's depressive symptoms. Scarr and McCartney's (1983) developmental theory proposes that selection processes should become more prominent as children and adolescents get older, as they have more freedom in selecting into environmental niches that align with their unique traits and interests. Based on this, it was expected that poorer quality relationships would *socialize* greater levels of depression in earlier development (i.e., late childhood and adolescence) and that individuals who are depressed would be more likely to *select* into poorer quality relationships in later development (i.e., young adulthood).

A second gap addressed in this dissertation addresses interpersonal risk for depression for first-year college students, who are at particularly high risk (Buchanan, 2012). In fact, it is estimated that typically 16-17% of college students are clinically depressed (Eisenberg, Hunt, Speer, & Zivin, 2011; Hunt & Eisenberg, 2010; Zivin, Eisenberg, Gollust, & Golberstein, 2009), and 50% have experienced depressive symptoms since beginning college (Furr, Westefeld, McConnell, & Jenkins, 2001). At the same time, changes in familial relationships may be occurring, such as when students move out of familial homes to attend college (Conger & Little, 2010; Lefkowitz, 2005). Changes in other interpersonal relationships (peer and romantic partner) also occur during this time, through both termination of old and formation of new relationships due to moving away to attend college (Aquilino, 2006; Collins & van Dulmen, 2006) and a general increase in time spent in peer and romantic partner relationships (Connolly & McIsaac, 2011; Flynn, Felmlee, & Conger, 2014). Yet little research has evaluated the simultaneous

influences of a parent, sibling, peer, and romantic relationship features as they relate to depression in the first year of college. Study 2 will address this gap directly.

Finally, prior research has demonstrated that females have 1.5- to 3-times higher prevalence rates of depression than males (APA, 2013; Cicchetti & Toth, 1998; Hankin et al., 1998; Kessler, 2003; Kessler et al., 2003; Piccinelli & Wilkinson, 2000). Some have posited that women are particularly responsive to the social environment. Thus the impact of social support and close relationship ties may have a greater impact on depression for women than for men (Arigo & Cavanaugh, 2016; Eagly, 2013). Therefore, both Study 1 and 2 evaluated for gender differences in prevalence and risk profiles with the expectation that socialization processes and interpersonal relationship factors, in general, may be more relevant to the development of depression for females as compared to males.

Strengths of this dissertation include the analysis of a large, community-based sample for Study 1 ($N = 1,517$), with longitudinal data collection from ages 11 to 29. This large sample provided adequate power to test a full developmental cascade model (Figure 1) and to test for gender differences thoroughly. Strengths of Study 2 include taking a more nuanced perspective on a particularly at risk population for depression, namely first-year college students ($N = 209$). A unique feature of this study was the assessment of not only parent and peer support, but also less frequently studied aspects of support, namely that of siblings and romantic partners.

If results follow expectations, several practical implications can be noted. It has been demonstrated that the prognosis and the remission rate for those experiencing depressive symptoms are better for those who quickly receive treatment for depression after the onset of symptoms (Bukh, Bock, Vinberg, & Kessing, 2013; Ghio, Gotelli, Marcenaro, Amore, & Natta, 2014). Moreover, healthy relationships are a key context for both identifying problematic

symptoms and encouraging treatment-seeking (Bukh et al., 2013; Ketchen Lipson, Gaddis, Heinze, Beck, & Eisenberg, 2015; Perry & Pescosolido, 2015). In Study 1, expected results would indicate that efforts should take into account both socialization (especially for adolescent treatment) and selection (especially for young adult treatment), such that clinicians aid clients in altering negative thoughts and behaviors to improve their interpersonal relationships. Expected results would also support working with others together in the therapy room to address relationship-level problems that could, in turn, decrease individual symptoms. Expected results for Study 2 will help identify which relationships may be most salient and the most practical for colleges to consider targeting in order to effectively reduce the risk of depression. Together, if results follow expectations, effective prevention and intervention efforts should not focus solely on treating symptoms of depression, but should also focus on the aspects of interpersonal relationships that may be either attenuating or amplifying symptoms.

II.   Study 1: Interpersonal Relationships and Major Depressive Disorder Symptoms:

Exploring Selection vs. Socialization Using a Developmental Cascade Approach

Abstract

Previous research has linked several interpersonal relationships features, particularly parent, peer, and romantic partner relationship problems, to symptoms of Major Depressive Disorder (MDD). Less research has evaluated the developmental unfolding of how these relationships both *impact* and are *impacted by* MDD symptoms in the critical developmental transition from adolescence through young adulthood and whether these pathways differ for males and females. These gaps were evaluated using a large community sample ($N = 1,127$; 50% male, 96% white) via a developmental cascade model that also accounted for the interdependent nature of these relationships. Following expectations, results indicate a higher prevalence of MDD symptoms for females than males from late adolescence into young adulthood. However, no significant gender differences were demonstrated in the prospective links between interpersonal relationship problems and MDD symptoms across time. Results suggest that both socialization and selection effects are salient across all developmental transitions, with some evidence that antisocial peer affiliation may be more relevant to the development of MDD for males, whereas relationship problems with parents and romantic partners may be more relevant for females. Findings support the importance of efforts to strengthen social support networks to offset risk as well as potentially treating depression.

Keywords: Major Depressive Disorder, depressive symptoms, selection and socialization, interpersonal relationships, developmental cascade model

Interpersonal Relationships and Major Depressive Disorder Symptoms:

Exploring Selection vs. Socialization Using a Developmental Cascade Approach

Major Depressive Disorder (MDD) is a commonly diagnosed disorder across the United States (Kessler et al., 2003), with an economic burden in the billions (Greenberg et al., 2003). For example, the World Health Organization [WHO] (2017a) reports that MDD is responsible for the heaviest burden of disability among mental and behavioral disorders. Though past 12-month prevalence estimates for MDD are considered to be lower during childhood (1-3%; Centers for Disease Control, 2015; Costello, Erkanli, & Angold, 2006; National Institute of Mental Health, 2014a), by middle adolescence estimates are more similar and perhaps even a little higher than those in adulthood (4-13% in adolescence, 6-8% in adulthood; CDC, 2015; Garber, 2000; Kessler et al., 2003; NIMH, 2014a; 2014b). Furthermore, rates of depression are on the rise, as reported rates of clinical depression in the past few decades have increased by about 1.5 to 2 million adults per decade (Greenberg et al., 2015; Marcus & Olfson, 2010). Clearly, continued research is needed to understand how MDD develops to augment effective treatment and mitigate this burden (Greenberg et al., 2003; Kessler et al., 2003).

One particularly important area to address is how features of key interpersonal relationships, including parent-child, peer, and romantic partner relationships, both *impact* and are *impacted by* the development of depressive symptoms from late childhood through young adulthood. Prior literature has shown that greater levels of depression have been consistently associated with greater problems in relationships with parents in childhood and adolescence, such as lower general relationship quality and increased conflict (Branje et al., 2010; Cohen et al., 2015; Raudino, Fergusson, & Horwood, 2013; Samek, Wilson, McGue, & Iacono, 2016b; Umberson, Crosnoe, & Reczek, 2010). Moreover, greater levels of depression have been

consistently linked with problematic aspects of peer relationships from childhood into young adulthood, including a greater affiliation with antisocial peers (Ferguson, San Miguel, & Hartley, 2009; Fergusson, Wanner, Vitaro, Horwood, & Swain-Campbell, 2003). By later adolescence and early adulthood, romantic partners also become increasingly relevant to overall well-being (Cohen, 2004; Umberson, Chen, House, Hopkins, & Slaten, 1996; Umberson et al., 2010; Vanderhorst & McLaren, 2005). Thus, it is not surprising that a greater degree of depression has been linked to problematic aspects of romantic relationships in early adulthood, including lower overall relationship quality and relationship dysfunction or dysphoria (Blais & Renshaw, 2014; Daley & Hammen, 2002; Garber, 2000).

Although this body of research has demonstrated the importance of interpersonal relationships in the development of MDD, less is known about the developmental unfolding of the associations between parent-child, peer, romantic partner relationships, and MDD across time. This is important to address as these interpersonal relationships do not develop in isolation of one another. Attachment and other longitudinal research studies have documented that earlier relationships with parents and peers are very important to the development of later relationships, including romantic relationships in adolescence and young adulthood (Rauer et al., 2013; Rauer et al., 2016; Simpson et al., 2007; Sroufe et al., 1999a). Yet, more attention is needed as to how depression may influence or be influenced by this continuity of interpersonal relationship quality throughout a time period when depression levels peak (APA, 2013) and interpersonal relationships change (Aquilino, 2006; Collins & van Dulmen, 2006; Schulenberg & Zarrett, 2006). Thus, this study sought to explore the transactional associations between these key interpersonal relationships (parent-child, peer, romantic partner) as they relate to MDD from late

9

childhood (age 11) through adolescence (ages 14, 17) and young adulthood (ages 20, 24, and 29).

A Developmental Cascade Approach

Interpersonal theories of depression (Joiner & Coyne, 1999; Rudolph et al., 2008) posit that a significant aspect of the development of depression is the context of interpersonal relationships and interactional style. Based on this approach, one would expect that depressed individuals may be more likely to elicit negative affect in their interactions with others as a result of their own levels of negative affect. Moreover, one would expect that poor quality of close relationships would increase the likelihood of feeling depressed (Rudolph et al., 2008). Thus, depression can be either predecessor or consequence of a weaker social support network and fewer close relationships at multiple stages across the lifespan (Eberhart & Hammen, 2006; Lin, Dean, & Ensel, 1986; Vanderhorst & McLaren, 2005). Some argue that interpersonal relationship quality and associated interpersonal skills may be particularly important to the development of depression in adolescence and young adulthood (Eberhart & Hammen, 2006; Rudolph et al., 2008), as these time periods are associated with heightened vulnerability for depression and other health outcomes (Garber & Rao, 2014).

To better understand the impact of interpersonal relationships on depression, it is important to tease apart the possible effects of both selection and socialization (Giletta et al., 2011; Kandel, 1978; Samek et al., 2016a). *Selection* effects, in this case, refer to how an individual may select into or be exposed to more problematic interpersonal relationships based on their own levels of depression. For example, individuals with depression may be more likely to respond negatively or aggressively to family members and friends, which can lead to increased conflict or disengagement in relationships (Rudolph et al., 2008). *Socialization* refers

10

to how more problematic relationships with parents, peers, or romantic partners influence the development of an individual's subsequent depressive symptoms. For example, family and friends may be more likely to respond negatively to individuals with depression, or to avoid and reject them altogether, further eliciting symptoms (Rudolph et al., 2008).

The present study aimed to evaluate the extent of both selection and socialization using a developmental cascade model (Masten & Cicchetti, 2010; Masten et al., 2005). Specifically, I tested the relative impact of parent-child relationship problems in late childhood and adolescence (at ages 11, 14, and 17), antisocial peer affiliation from late childhood through young adulthood (at ages 11, 14, 17, 20, 24, and 29), and young adult romantic partner relationship problems (at ages 24 and 29) on subsequent MDD symptoms, as well as the impact of prior MDD symptoms on subsequent parent-child relationship problems, antisocial peer affiliation, and romantic partner relationship problems. This type of model also tests the extent to which earlier parent-child and peer relationships impact later peer and romantic partner relationships. It is worth noting that although developmental cascade models involving interpersonal relationship influences have been applied to understanding the development of several problematic outcomes, such as adolescent substance use (Dodge et al., 2009), and internalizing and externalizing problems (Masten et al., 2005), there has been no study to date that has applied a developmental cascade model to understand the effects of multiple interpersonal relationship characteristics as they relate to depression from late childhood through young adulthood.

Scarr and McCartney's (1983) developmental theory of gene-environment correlation proposes that selection processes should become more prominent as children and adolescents get older, as they have more freedom in selecting into environmental niches that align with their unique and genetically influenced traits and interests. Based on this, I hypothesized that the

11

socialization effects of parent-child relationship problems and antisocial peer affiliation on subsequent MDD symptoms would be stronger in magnitude than the corresponding selection effects (i.e., the effects of MDD symptoms on subsequent parent-child relationship problems and antisocial peer affiliation) in early adolescence (i.e., from ages 11 to 17) than later young adulthood (i.e., from ages 20 to 29). Moreover, I expected that the selection effects of MDD symptoms on subsequent antisocial peer affiliation and romantic partner relationship quality would be stronger in magnitude than the corresponding socialization effects in later young adulthood (i.e., from ages 20 to 29) than earlier adolescence (i.e., from ages 11 to 17).

A Review of the Literature on Interpersonal Relationship Factors and Development of Depression

Aspects of parenting quality, such as lower levels of parental warmth or higher levels parental rejection, have been consistently associated with child and adolescent depression (Branje et al., 2010; Heaven et al., 2004; McLeod et al., 2007; Shah & Waller, 2000). A large body of research has focused on how parent-child relationship problems in particular appears to be an important correlate with depressive symptoms (Graber & Sontag, 2004; Marmorstein & Iacono, 2004; McLeod et al., 2007; Rueter, Scaramella, Wallace, & Conger, 1999; Samek et al., 2016b). Although there is less longitudinal work on this topic, a recent longitudinal study (Samek et al., 2016b) teased apart antecedent versus consequence in the association between parent-child relationship problems and MDD symptoms from mid- to late-adolescence. Samek and colleagues provided support for parent-child conflict as an antecedent of later MDD symptoms, but MDD symptoms were not an antecedent of later parent-child conflict. Yet, this study only examined the developmental transition from age 15 to 18, so it is unclear how this may unfold in relation to other important interpersonal relationships or over a larger span of

time. For example, it may be that depressed parents exhibit more negative affect in general lending to greater discord in earlier parent-child interactions, which in turn lends to the development of depressive symptoms by early adolescence (Eberhart & Hammen, 2006; Garber & Rao, 2014; Rudolph et al., 2008). Conversely, depressed children could be socializing parents such that the child's negative affect may elicit strain in the parent-child relationship in early adolescence (Garber & Rao, 2014; Graber & Sontag, 2004).

Poor parent-child relationship quality, including relationship problems and punitive discipline, has been linked a greater degree of antisocial peer affiliation (Kretschmer et al., 2015; Pike & Eley, 2009). In fact, antisocial peer affiliation is one of the strongest correlates of adolescent psychopathology, including drug and alcohol use, as well as internalizing and externalizing disorders, and depression, specifically (La Greca & Harrison, 2005; Monahan, Oesterle, Rhew, & Hawkins, 2014; Monahan, Steinberg, & Cauffman, 2009; Samek, Keyes, Iacono, & McGue, 2013; Schwartz-Mette & Rose, 2012). Although prior research has shown evidence of both socialization and selection involving the impact of antisocial peer affiliation on externalizing disorders (Samek et al., 2016a) with support for Scarr and McCartney's (1983) developmental theory, it is unclear how these results translate to major depressive disorder symptoms. Selection effects are important to consider as some findings suggest that problems such as social withdrawal (often linked to MDD) have also been shown to be related to further peer problems (Coplan et al., 2013).

Finally, research has consistently shown that romantic relationship problems and overall relationship quality are associated with depression (Blais & Renshaw, 2014; Garber & Rao, 2014; La Greca & Harrison, 2005). In line with a socialization hypothesis, high-quality relationships may provide a buffer against depressive symptoms, whereas low quality or

13

problematic relationships may amplify depressive symptoms. Conversely, depression has been shown to negatively impact subsequent intimate romantic relationships (Rao, Hammen, & Daley, 1999), thus supporting the notion of selection. Nonetheless, much of the prior research on depression and romantic relationship characteristics has been cross-sectional in nature (Garber & Rao, 2014), making it unclear whether selection or socialization processes are more salient and how this varies by developmental stage.

These domains (parent, peer, romantic partner) not only affect the development of depression, but also impact one another. In line with a developmental cascade framework, parent-child relationships have been shown to influence further relationship development with both peers and romantic partners (Garber & Rao, 2014; Rauer et al., 2013; Sentse & Laird, 2010), such that negative parent-child relationship quality has been linked to difficulty developing beneficial friendships with peers (Rubin, Bukowski, & Laursen, 2011). Furthermore, Sentse and Laird (2010) suggest that in relation to parent-child and peer relationships, conflict in one relationship could temper the effects of the other relationship context.

Both parent-child and peer factors have also been found to impact romantic relationship development (Garber & Rao, 2014; Rauer et al., 2013; Rauer et al., 2016). For example, low-quality parent-child relationships in childhood and parent-child relationship problems in adolescence have been shown to be related to low-quality partner relationships in adulthood (Overbeek, Stattin, Vermulst, Ha, & Engels, 2007). Poorer peer relationship quality and antisocial peer affiliation have been linked to poorer romantic relationship quality (Parker et al., 2006). Given the association between depression and other important interpersonal relationships, and in light of interpersonal theories demonstrating the importance of both socialization and selection (Joiner & Coyne, 1999; Rudolph et al., 2008), it is imperative to further explore and

better understand the antecedents versus consequences in the links between interpersonal

relationship qualities and MDD as well as the links between interpersonal relationship qualities

(parent, peer, romantic partner) over time.

Gender Differences

A final gap this study addresses is exploring whether there are gender differences in

selection and socialization processes within the proposed developmental cascade framework.

Research has consistently shown that prevalence estimates of depression tend to be higher for

females than for males (Cicchetti & Toth, 1998; Hankin et al., 1998; Kessler, 2003; Piccinelli &

Wilkinson, 2000). For example, the National Institute of Mental Health (2014) indicates that

5.8% of adolescent males versus 19.5% of adolescent females experienced a major depressive

episode in the past year. Similar rates have been reported for adults (4.8% of adult males versus

8.2% of adult females).

Furthermore, there is some evidence that interpersonal relationships may have a larger

impact on females' as compared to males' depressive symptoms and other mental health

outcomes. That is, research has shown that compared to males, females tend to be more

interpersonally dependent and are more likely to respond to stress within interpersonal

relationships in a way that further exacerbates depressive symptoms (Rhule-Louie & McMahon,

2007; Rose & Rudolph, 2006; Rudolph et al., 2008). Hankin and colleagues (2015) also indicate

that the relationship between experiencing higher peer stress and developing depression was

considerably stronger for females than for males. To build on this striking but limited body of

research, I also aimed to examine gender as a potential moderator of the development of

depressive symptoms within the context of interpersonal relationships. Based on this prior

research, I tentatively hypothesized that socialization effects (i.e., the impact of parent-child

relationship problems, antisocial peer affiliation, and romantic relationship problems on subsequent MDD) may be more relevant for females than for males across time.

Study Overview

In summary, the purpose of this study was threefold. Using a developmental cascade model, I first hypothesized that greater parent-child relationship problems would predict a greater degree of subsequent antisocial peer affiliation, which would then predict a greater degree of subsequent romantic partner relationship problems. Second, I evaluated the prospective and potentially transactional associations between these interpersonal relationship variables as they relate to MDD symptoms over time (see **Figure 1**). In general, I expected that greater depression would also be associated with poorer interpersonal relationships, thus supporting selection effects, and that poorer interpersonal relationships would be associated with greater depression, thus supporting socialization effects. In particular, I hypothesized that socialization processes would be more important earlier in development and selection in later development (Scarr & McCartney, 1983). Third, I evaluated for gender differences in the overall developmental cascade model. Based on limited prior research (Rose & Rudolph, 2006; Rudolph et al., 2008), I tentatively expected socialization would be more relevant to the development of subsequent MDD for females, in comparison to males, across each developmental transition.

<div align="center">

Methods

</div>

Participants

Data from the Minnesota Twin Family Study (MTFS) were used (Iacono, Carlson, Taylor, Elkins, & McGue, 1999). The MTFS is a longitudinal, cohort-sequential twin sample that was designed to evaluate the genetic and environmental influences on substance use disorders and related psychopathology. Two cohorts of twins, a younger cohort (assessed first at age 11)

<div align="center">

16

</div>

and an older cohort (assessed first at age 17) were sampled, with overlapping assessments at ages 17, 20, 24, and 29. The younger cohort provides data from assessments at the target ages of 11, 14, 17, 20, 24, and 29. The younger cohort was evaluated for this study in connection to study goals, including to get a better understanding of how earlier parent-child and peer factors (i.e., at ages 11, 14, and 17) impact later adolescent and young adult romantic relationship quality and MDD in young adulthood (i.e., at ages 20, 24, and 29).

The younger cohort included 1,517 male and female participants (from 756 sets of twins, including 3 triplets) born between 1977 and 1984 and identified via public birth records. They and their families were recruited when the twins were 11 years old. About 90% of families were successfully located, and 83% of those eligible and located families agreed to participate. To be eligible, families had to live within a day's drive of the lab. Twins were excluded if they had a mental or physical handicap that prevented them from being able to complete the assessments. Half of the sample was female (50.2%), and the majority was Caucasian (96%), consistent with the demographics of the state from the twins' birth years (U.S. Census, 2010). Although there was less diversity in race/ethnicity, there was ample diversity in socioeconomic status in the MTFS. For example, the highest education for most parents was a high school diploma or equivalent (62-63% of the mothers and fathers), with 20-22% of mothers and fathers obtaining a bachelor's degree. The median income was $50k to $60k with about a quarter of families earning less than $35k and another quarter earning over 60k. Notably, the MTFS had high retention rates, 92.9% completed the first follow-up assessment (at age 14), 87.3% completed the second follow-up assessment (at age 17), 88.3% completed the third follow-up assessment (at age 20), 87.8% completed the fourth follow-up assessment (at age 24), and 87.5% completed the fifth follow-up assessment (at age 29).

It is important to point out that in addition to the twin design component of the MTFS, it is also by design a community sample and therefore can also be used to evaluate basic epidemiology and the development of MDD symptoms in the context of close relationships. Major strengths of the MTFS for the present study's research questions include the large sample size, the use of clinical, diagnostic interviews to identify symptoms of MDD, multiple reporters (parent, child, teacher), and in-depth measurement of several different types of interpersonal relationship factors assessed prospectively from preadolescence (age 11) through later young adulthood (age 29).

Procedures

Procedures were approved by the University of Minnesota Institutional Review Board. Written informed consent was provided by participants and parents for those age 18 and older (children under age 18 also provided written assent). A variety of measures were used at each assessment, including self-, parent-, and teacher-report questionnaires and structured clinical diagnostic interviews. Typically, participants were scheduled for in-person follow-up visits, with phone interviews scheduled if an in-person interview could not be conducted (for 8%-21% of the sample across follow-up assessments).

Measures

MDD Symptoms. MDD symptoms were examined from all assessments (ages 11, 14, 17, 20, 24, and 29). For the baseline and first follow-up assessment (ages 11 and 14), the Diagnostic Interview for Children and Adolescents (DICA-R; Reich, 2000; Welner, Reich, Herjanic, Jung, & Amado, 1987) was used to assess MDD symptoms. Separate interviews were conducted with children and parents. Consistent with MTFS protocols, a "best-estimate" of both child and parent report was used (when available) so that each symptom was assigned if either

the parent or child endorsed the symptom (see Iacono et al., 1999 for further detail on best-estimate procedures). For subsequent assessments (ages 17, 20, 24, and 29), the Structured Clinical Interview for DSM-III-R and IV (SCID; Spitzer, Williams, Gibbon, & First, 1992) was used to assess MDD symptoms for the target participants. Post-interview(s), each symptom was assigned based on consensus from two individuals with advanced clinical training (who were supervised by a doctoral-level clinical psychologist). Kappa coefficients indexing diagnostic reliability were > .74 for all clinical disorder diagnoses.

Parent-Child Relationship Problems. The 50-item Parental Environment Questionnaire (PEQ; Elkins, McGue, & Iacono, 1997) was used to examine parent-child relationship quality at ages 11, 14, and 17 (the PEQ was not assessed after age 17 in the MTFS). Each item was rated on a 4-point scale (4 = *definitely false,* 3 = *probably false,* 2 = *probably true,* and 1 = *definitely true*). Four scales from the PEQ were used including conflict with parent, involvement with parent, child's regard for parent, and parent's regard for child. Both parent and child report were assessed at ages 11, 14, and 17. Examples of parent and child items for the conflict scale include, "My child and I often get into arguments" and "My parent often criticizes me." Example items for the involvement scale include "My child shares their concerns and my experiences with me," and "My parent comforts me when I am discouraged or have had a disappointment." Example items for the Regard for Parent Scale include "I am really proud of my parent" and "My child respects me." Example items for the Regard for Child scale include "I know my parent loves me" and "I love my child no matter what they do." Alphas for child report ranged from .86 to .90 across all scales and all assessment periods; alphas for parent report ranged from .85 to .89 across all scales and assessment periods. At each time point, the total scale scores from both the parent and child were standardized and then averaged to create a total score for parent-child

relationships problems. The last three scales were reverse scored so that the total aggregate score represents parent-child relationship problems (the higher the score, the more problems).

Antisocial Peer Affiliation. The 19-item Friends Inventory was used to assess antisocial peer affiliation at all assessments (ages 11, 14, 17, 20, 24, and 29). This survey asks participants to answer a series of questions about their friends on a scale of 1 = "*all of my friends are like that*" to 4 = "*none of my friends are like that.*" The antisocial peer affiliation scale was created using a summed score across all items in the scale (e.g. "break the rules" or "get into trouble with police"), after reverse scoring so that a higher score indicated a greater degree of antisocial peer affiliation. A total of 7 to 9 items were used to assess antisocial peer affiliation across assessments; items were dropped, added, or adapted based on developmental relevance (Samek et al., 2016a). Alphas for self-reported antisocial peer affiliation ranged from .80 to .88 across assessment periods.

Additionally, teacher reports of peer group affiliations from the Teacher Rating Form, adapted from the Conners Teacher Rating Scale (Conners, 1969) and the Rutter Child Scale (Rutter, 1967) were available at ages 11, 14, and 17. Adolescents nominated up to three teachers, and those teachers rated student affiliation with antisocial peers (5 items, e.g., "my friends get into fights;" alphas ranged from .74 to .92 across assessment periods). Intraclass correlations of teacher ratings of antisocial peers ranged from .70 to .86 across assessments. Scales were computed for each teacher and the average of the scales across teachers were used as the final teacher assessments of antisocial peer affiliation at each wave.

Romantic Partner Relationship Problems. The MTFS assessed romantic relationship problems for the first time at age 24 and then again at age 29 using the shortened 12-item version (see South, Krueger, Elkins, Iacono, & McGue, 2016) of the Dyadic Adjustment Scale (Spanier,

1976). Five items examined agreement vs. disagreement (e.g. "philosophy of life" and "demonstrations of affection" with answers ranging from 1 = *always disagree* to 6 = *always agree*), three items examined frequency of discord (e.g. "how often do you discuss or have you considered divorce, separation, or terminating your relationship?" ranging from 1 = *never* to 6 = *all of the time*; these items were reverse coded), three items examined dyadic cohesion (e.g. have stimulating exchange of ideas" ranging from 1 = *more often* to 11 = *never*), and the last item rated overall happiness, ranging from 1 = *perfect* to 7 = *extremely unhappy*. This scale was only completed by participants who reported on a romantic relationship (N = 1,127, 74% of the original sample by age 29; n = 519 for males and n = 608 for females). All 12 items were standardized and summed compiled to create an overall romantic relationship problems score after reverse coding all but dyadic discord items (i.e., higher scores indicated higher romantic relationship problems). Alphas were .77 at age 24 and .83 at age 29.

Analytic Plan

All analyses described were conducted using Mplus 7.2 (Muthén & Muthén, 1998-2016) and Full Information Maximum Likelihood (FIML) to account for missing data. Additionally, the robust standard errors (MLR) estimator was used and the CLUSTER specification was used to account for nonindependence (i.e., "twinness") of cases. MDD symptom counts were log-transformed to better approximate normality prior to analysis.

To examine the prospective associations between parent-child relationship quality, antisocial peer affiliation, romantic relationship quality, and MDD symptoms, I tested a series of developmental cascade models (see Masten & Cicchetti, 2010). Analyses for these models were restricted to those who had reported on their relationship with their romantic partner by age 29 (N = 1,127, 74% of the original sample; n = 519 for males and n = 608 for females). As shown

in **Figure 1**, the impact of earlier parent-child relationships problems on later antisocial peer affiliation and romantic relationship problems, as well as selection and socialization effects of interpersonal relationships and depressive symptom were examined through cross-paths. *Selection* refers to the effects of MDD symptoms on subsequent relationships quality, whereas *socialization* refers to the effects of relationship quality on subsequent MDD symptoms. The developmental cascade model tests for socialization and selection after accounting for the stability of constructs over time and residual correlations at each time point. It was expected that higher problems in parent-child, peer, and romantic partner relationships would predict higher subsequent depressive symptoms, especially in adolescence (in line with a socialization hypothesis). It was additionally expected that higher depressive symptoms would predict higher parent-child relationship problems, antisocial peer affiliation, and romantic partner relationship problems, especially in young adulthood (in line with a selection hypothesis). I also expected that socialization effects would generally be stronger for females as compared to males across time.

To test for gender differences, I first tested the full developmental cascade model separately for males and females. I evaluated the overall model as well as more parsimonious models that dropped non-significant paths to get a picture of how these prospective associations generally unfold for each gender. Model fit statistics examined include change in chi-square (χ^2) root mean square error of approximation (RMSEA), comparative fit index (CFI), Tucker-Lewis index (TLI), and standardized root means square residual (SRMR) to determine best fit. Adequate model fit is indicated by RMSEA < .05, CFI > .90, TLI > .90, and SRMR < .08 indicate good fit (Kenny, 2015; Kline, 2005). Finally, I tested for significant differences in each path by gender by constraining each path in the full model to be equivalent across gender and

using the Satorra Bentler chi-square difference test (SB χ^2) to determine if constraining that path resulted in a significant decrement of model fit.

Results

Preliminary Analyses

Table 1 shows descriptive statistics for average MDD symptom counts by gender. As expected in a community sample, MDD symptom counts were typically low, with average symptom counts ranging from <1 to 1.31 symptoms (see Table 1). Consistent with prior estimates (NIMH, 2014b), females had significantly greater average MDD symptoms at ages 17, 20, 24, and 29 (Cohen's d ranged from .18 to .34), though not at ages 11 and 14. However, meeting criteria for a MDD diagnosis (as shown by the percentage of participants at each age) was also quite rare at 11 and 14 and become more common by age 17 (see Table 1 for details). In all subsequent analyses, MDD symptom counts were log-transformed to better approximate normality.

Table 2 shows correlations among study variables. Generally, problems in each of the relationship domains (parents, peers, and romantic partners) and MDD symptoms were significantly correlated. As a preliminary evaluation of my hypotheses about gender differences, I evaluated the magnitude of the within-assessment correlations between interpersonal relationship variables (i.e., parent-child relationship problems, antisocial peer affiliation, and romantic partner relationship quality) with MDD symptoms at each time point and whether they significantly differed by gender. As expected, the correlation between MDD symptoms and parent-child relationship problems at age 11 appeared to be stronger for females than males (r = .15 for females and -.01 for males), but this difference was not statistically significant (SB χ^2 (1) = 3.49, p = .06). All other within-time correlations (between interpersonal relationships and

MDD symptoms) were similar in magnitude for males and females, and accordingly, were not significantly different by gender at $p < .05$.

Developmental Cascade Model: Results for Males

Figure 2 illustrates the full developmental cascade model results for males and **Figure 3** illustrates results for the most parsimonious model for males that dropped non-significant paths; dropping these paths did not result in a significant decrement of model fit (SB χ^2 (25) = 21.33, p = .67). Focusing on the easier to read and more parsimonious model in **Figure 3**, results were consistent with expectations about the developmental cascade of interpersonal relationship context, such that parent-child relationship problems at ages 11 and 14 predicted a greater likelihood of antisocial peer affiliation at ages 14 and 17. Antisocial peer affiliation at ages 20 and 24 also predicted a greater degree of romantic relationship problems at ages 24 and 29. The magnitude of effect size for these paths were generally small but significant, with βs ranging from .10 to .16.

Results showed significant socialization effects. A greater degree of antisocial peer affiliation at age 14 predicted higher MDD symptoms at age 17. The only other socialization effects were in later young adulthood; a greater degree of antisocial peer affiliation at ages 20 and 24 predicted greater subsequent MDD symptoms at ages 24 and 29, respectively. The magnitude of effect size for these socialization paths was generally small but significant, with βs ranging from .09 to .15.

There was also evidence of one significant selection effect for males. A greater degree of MDD symptoms at age 24 predicted greater subsequent antisocial peer affiliation at age 29, though the magnitude of the effect size is again small (β = .09). Contrary to expectations, socialization processes were not more relevant earlier in time and selection more relevant later in

time, as I found significant socialization effects significant across adolescence and into young adulthood. For males, neither romantic relationship problems nor parent-child relationships problems significantly predicted subsequent MDD and vice versa. Rather, socialization and selection effects were only significant for pathways involving antisocial peer affiliation.

Developmental Cascade Model: Results for Females

Figure 4 illustrates the full developmental cascade model results for females and **Figure 5** illustrates results for the most parsimonious model for females, which dropped all non-significant paths and did not result in a significant decrement of model fit (SB χ^2 (23) = 20.83, p = .59). Focusing on the easier to read and more parsimonious model in **Figure 4,** results supported expectations about the developmental cascade of interpersonal relationship contexts as there was evidence for parent-child relationship problems at ages 11 and 14 significantly predicted subsequent antisocial peer affiliation at ages 14 and 17. Notably, antisocial peer affiliation at 11 also predicted higher subsequent parent-child relationship problems at 14, indicating some bidirectionality for females that was not found for males. There was no support for antisocial peer affiliation impacting later romantic relationship problems for females.

Results showed evidence of two socialization effects for females. First, parent-child relationship problems at age 11 significantly predicted subsequent MDD symptoms at age 14. Second, romantic relationship problem at age 24 significantly predicted subsequent MDD symptoms at age 29. There was also evidence of three selection effects for females, such that a greater degree of MDD symptoms at age 20 predicted greater antisocial peer affiliation and more romantic relationship problems at age 24. MDD symptoms at age 24 also predicted more romantic relationship problems again at 29. Results for females demonstrated that both selection

and socialization effects were relevant, but, conversely from expectations, both were more evidenced in young adulthood than in adolescence.

Gender Differences

Results discussed above suggest a potentially differential pattern of effects by gender, as a socialization effect involving romantic partner relationship problems was found for females and not males, and several socialization effects for antisocial peer affiliation were found for males and not females. Subsequent analyses were conducted that compared whether each path from the full the developmental cascade model differed significantly by gender are shown in **Table 3**. Contrary to these differential patterns of results by gender and expectations, results showed that there were no significant differences by gender in any of the cross-paths from the developmental cascade model at $p < .05$. The only significant differences corresponded to stability paths. Specifically, the stability path for MDD symptoms from ages 11 to 14 was significantly greater for males than females; however, the stability path for MDD symptoms from ages 17 to 20 was significantly greater for females than males (see **Table 3** for details). Stability paths for antisocial peer affiliation were also significantly greater for males than females from ages 14 to 17 and 20 to 24. The only other significant difference was that the stability path for parent-child relationship problems from ages 14 to 17 was greater for females than males (see **Table 2** for details).

As there were no significant differences in cross-paths, results did not support my tentative hypothesis that socialization effects would be stronger for females than males. As there was evidence of both socialization and selection throughout the developmental transitions, results did not support my hypothesis that socialization effects would be stronger earlier in time and selection effects later in time. Results did support expectations about the continuity of

interpersonal relationship problems, as parent-child relationship problems in early adolescence predicted subsequent antisocial peer affiliation, which predicted subsequent romantic relationship problems for both males and females.

Discussion

Prevalence estimates of MDD are on the rise both nationally and internationally (Greenberg et al., 2015; Greenberg et al., 2003; WHO, 2017b), and factors contributing to rise are imperative to understand. MDD is associated with a myriad of detrimental outcomes, including physical illness, decreases in social role functioning, high comorbidity with other mental health disorders, and high rates of mortality (APA, 2013; Kessler et al., 2003). It is especially important to understand the development of MDD from puberty into early young adulthood as the onset of symptoms peaks during this time (APA, 2013). Previous research has indicated that interpersonal relationship quality and associated interpersonal skills may be particularly important to the development of depression during this developmental period (Eberhart & Hammen, 2006; Rudolph et al., 2008), as adolescence and young adulthood are associated with heightened vulnerability for depression and other health outcomes (Garber & Rao, 2014).

From the framework of interpersonal theories of depression (Joiner et al., 2006; Joiner & Coyne, 1999; Rudolph et al., 2008) it is expected that depressive symptoms may be either an antecedent or consequence of problems in close relationships (Eberhart & Hammen, 2006; Lin et al., 1986; Rudolph et al., 2008; Vanderhorst & McLaren, 2005). Whether poor interpersonal relationships are an antecedent or consequence of depressive symptoms was expected to vary across time, following Scarr and McCartney's (1983) developmental theory of gene-environment correlation. I expected that that *selection* processes, meaning how earlier MDD symptoms

27

predict subsequent interpersonal relationship risk, should become more salient as children and

adolescents get older, but that *socialization* processes, referring to how earlier interpersonal

relationship risk predicts subsequent MDD symptoms, would be more relevant earlier in time. I

also tentatively hypothesized that socialization pathways may be more relevant to females than

males across development (Hankin et al., 2015; Rose & Rudolph, 2006; Rudolph et al., 2008).

Contrary to expectations, results indicated that there were important selection and

socialization effects from early adolescence through young adulthood, and that this was true for

both males and females. Altogether, results suggest depression is both an antecedent and a

consequence of more problematic relationships at multiple stages across the lifespan (Eberhart &

Hammen, 2006; Lin et al., 1986). Although there was preliminary support that antisocial peer

affiliation may be more relevant to males and parent-child and romantic partner problems

relevant to females depressive symptoms, results indicated no significant differences in either

selection or socialization pathways by gender. Overall effect sizes were small, and perhaps these

paths would reach statistical significance with larger sample sizes. Further research that

considers the role of romantic partners in adolescence as well and further explores potential

gender differences is needed to extend and replicate this pattern of results.

Gender Differences in Interpersonal Relationships and Depression

In line with previous findings (NIMH, 2014b), females had significantly more depressive

symptoms than did males from late adolescence into young adulthood. The nature of the effect

size seems largest in late adolescence, which is similar to previous estimates that suggest a larger

gender gap in adolescence than in young adulthood (Crane, Langenecker, & Mermelstein, 2015;

Hankin et al., 1998; NIMH; 2014a; 2014b). Others have found that females also had significantly

more depressive symptoms than males in earlier adolescence (Hankin et al., 2015; Piccinelli &

Wilkinson, 2000). Though this was not found at earlier ages in this study, it employs a community (rather than clinical) sample, MDD was quite rare in general at these ages in general, so it was not surprising that no gender differences emerged. Though rates of MDD symptoms were very low at ages 11 and 14 for both males and females, they increased over time in line with national statistics on depressive symptoms and gender differences (NIMH, 2014a).

Results examining males and females separately initially suggested different relationships were salient in the prospective associations between MDD symptoms and relationship problems. Previous findings have suggested that males tend to have more antisocial peer affiliation than females (Klostermann, Connell, & Stormshak, 2016; Toro, Urberg, & Heinze, 2004; Van Lier, Vitaro, Wanner, Vuijk, & Crijnen, 2005). Additionally, females tend to demonstrate a greater responsiveness to the problematic behavior of their partners within interpersonal relationships in general (Rhule-Louie & McMahon, 2007). Similarly, Fincham, Beach, Harold, and Obsorne (1997) found that for females, marital satisfaction predicted depression, in line with a socialization effect (whereas for males, depression predicted marital satisfaction, which is in line with a selection effect). Consistent with these findings, this study suggests that antisocial peer affiliation appeared to have more relevant socializing effects for males, whereas parent-child problems and romantic partner problems appeared to have more relevant socializing effects for females.

Even so, the prospective links between parent-child relationship problems, antisocial peer affiliation, romantic partner relationship problems, and MDD symptoms did not differ significantly by gender. It is important to note that this could be due to the relatively small effect sizes found for both selection and socialization effects, indicating that though relationships are important, they are often influenced by other factors, such as a genetic and heritability factors

29

(Hankin et al., 2015; Lewis, Collishaw, Thapar, & Harold, 2014; Samek et al., 2016b) and personality traits (Heaven et al., 2004; South et al., 2016). Future research should continue to examine how interpersonal relationship features work together with such individual difference factors to influence the development of MDD in adolescence and young adulthood (Garber & Rao, 2014; Shahar, Joiner, Zuroff, & Blatt, 2004).

Though the selection and socialization effects did not significantly differ across gender, this preliminary evidence suggests that antisocial peers may be more relevant to the development of depression for men and parents and romantic partners may be more relevant to the development of depression for women. This warrants further exploration, especially at critical developmental periods and in conjunction with more complex analyses of individual difference-social context interplay. Moreover, exploring these associations across gender in the transition to college may be particularly important, as college students are particularly at-risk for symptom development (Beiter et al., 2015).

Developmental Cascade of Relationships and Depression

Results supported expectations that parent, peer, and romantic partner relationships appear to impact one another across time, consistent with prior research (Garber & Rao, 2014; Rubin et al., 2011). Specifically, it was expected that more problematic parent-child relationships would be related to greater subsequent antisocial peer affiliation, which would then be positively related to subsequent increased romantic partner problems. Results supported this pattern for both males and females, in line with previous findings (Parker et al., 2006; Rhule-Louie & McMahon, 2007). Thus, relationship problems in one interpersonal domain does appear to influence the development of problems in other domains, in line with attachment theories

30

(Agerup, Lydersen, Wallander, & Sund, 2015; Simpson et al., 2007; Sroufe et al., 1999a) and interpersonal theories of depression (Joiner et al., 2006; Joiner & Coyne, 1999).

Future Directions

This study is not without limitations. Results should not be generalized to all racial and ethnic groups, as the sample is almost entirely white, being representative of the state from which it was sampled, and prior research has demonstrated prevalence estimates differ by race and ethnicity (e.g., Riolo, Nguyen, Greden, & King, 2005). Whereas multiple reporters were available at the earlier assessments (e.g. parent and teacher report in adolescence), multiple reporters were not available in at the later assessments (e.g. for romantic partners or peers in young adulthood), and it would be ideal to incorporate multiple reporters across the time span. Additionally, I was unable to evaluate for romantic partner effects earlier in adolescence. It will be important for future research to better address this, as we know that romantic partners have been shown to influence depressive symptoms in adolescence (Connolly & McIsaac, 2011; La Greca, Davila, & Siegel, 2008; La Greca & Harrison, 2005).

Further studying the potential gender differences or similarities within specific developmental contexts is also important using larger sample sizes and/or other populations at risk for depression, such as first-year college students (Beiter et al., 2015). Future research should also examine the interplay between interpersonal relationship features and individual development features (e.g., genetic and personality factors) in their influence on the development of MDD in adolescence and young adulthood. Despite limitations, there were numerous strengths for this study, including the longitudinal design, the large sample size, and high retention rates across assessments. The use of structured clinical interviews to assess MDD symptoms is also a strength. Multiple informants were available for several measures as well.

31

Together, study strengths allowed study aims to be addressed successfully and showed support for both socialization and selection involving interpersonal relationship features and MDD symptoms, for both males and females.

Conclusion

Interpersonal relationships have the potential to have very nuanced effects on human development and likely work together in complex ways to influence the onset of depression, including the continual interplay between intrapersonal and interpersonal factors. Results from this study support the importance of efforts to strengthen social support networks (e.g., focus on decreasing conflict in relationships) to offset risk for, as well as potentially treat depression during the developmental time when depressive symptoms are typically beginning to manifest and peak. Interventions such as those that target positive parent and peer support have been shown to be effective in reducing symptoms of depression (Pfeiffer, Heisler, Piette, Rogers, & Valenstein, 2011; Solantaus, Paavonen, Toikka, & Punamäki, 2010), but it is important to understand the potential pitfalls of negative relationship qualities to effectively strengthen existing and design new interpersonal support interventions. That is, because these social relationships co-develop, there is a potential for more negative consequences to develop over time. Thus, effective prevention and intervention efforts should not focus solely on the symptoms but also the social context of depression and earlier social relationship history. Interventions should also focus on both socialization and selection, such that clinicians are working to help clients to alter negative thoughts and behaviors to improve their close relationships with others, as well as work with others together in the therapy room to address relationship-level problems like communication or trust.

Table 1.

Descriptive statistics for MDD symptoms by gender.

	Males (N = 755)		Females (N = 762)		Cohen's d	t-statistic	df	% MDD Dx Males	Females
	M	*SD*	*M*	*SD*					
MDD Sxs 11	.28	1.10	.25	.89	.03	.52	1,124	3.6%	2.8%
MDD Sxs 14	.33	1.17	.41	1.35	.07	-1.02	1,068	3.6%	4.6%
MDD Sxs 17	.34	1.19	.91	2.07	.34	-5.14[***]	1,016	3.8%	11.5%
MDD Sxs 20	.61	1.67	.97	2.24	.18	-2.81[**]	1,026	9.0%	13.4%
MDD Sxs 24	.73	1.97	1.19	2.48	.21	-3.34[**]	1,065	10.3%	15.6%
MDD Sxs 29	.76	2.05	1.31	2.53	.24	-3.86[***]	1,080	10.7%	17.5%

Note. MDD Sxs = major depressive disorder symptom count (range 0 to 9); % MDD dx = the percentage of males and females that met a probable or definite MDD diagnosis.

Statistical significance is denoted by [***]$p < .001$, [**]$p < .01$

Table 2.

Correlations among study variables for males (N = 755) and females (N = 762).

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1. Parent-Child Rel. Prob. 11	--	.44***	.16***	.25***	.21***	.19***	.06	.11*	.10*	.10*	.11**	**.15***	.15***	.05	.03	.03	.07^t
2. Parent-Child Rel. Prob. 14	.54***	--	.37***	.21***	.43***	.34***	.16***	.23***	.25***	.17***	.18***	.03	**.17***	.11*	.11*	.11*	.12**
3. Parent-Child Rel. Prob. 17	.18***	.29***	--	.08^t	.16***	.21***	.17***	.16***	.16***	.14**	.07	-.03	.09*	**.11***	.11**	.06	.05
4. Antisocial Peer Aff. 11	.16**	.10^t	-.01	--	.32***	.27***	.11**	.13**	.19***	.11*	.01	**.15***	.09*	.07	.09*	.08^t	.06
5. Antisocial Peer Aff. 14	.20***	.26***	.10*	.43**	--	.47***	.28***	.27***	.36***	.10*	.10*	.03	**.19***	.12**	.17***	.08^t	.13**
6. Antisocial Peer Aff. 17	.25***	.27***	.24***	.39***	.60***	--	.53***	.43***	.41***	.03	.10*	.05	.08^t	**.09***	.09^t	.08^t	.09*
7. Antisocial Peer Aff. 20	.14**	.19***	.14**	.18**	.40***	.55***	--	.53***	.48***	.01	.03	-.04	.05	.05	**.06**	.07^t	.06
8. Antisocial Peer Aff. 24	.09*	.20***	.13**	.18**	.35***	.53***	.67***	--	.59***	.12**	.04	-.05	.07^t	.08^t	.13**	**.14***	.07
9. Antisocial Peer Aff. 29	.07	.18***	.16**	.20**	.32***	.46***	.54***	.61***	--	.11*	.13**	-.03	.08^t	.06	.13**	.13**	**.13***
10. Rom. Rel. Problems 24	.24***	.27***	.23***	.06	.08	.09	.18**	.27***	.20***	--	.28***	-.03	.03	-.02	.14**	**.09***	.15**
11. Rom. Rel. Problems 29	.13**	.23***	.16**	.16*	.06	.12*	.16**	.24***	.26***	.34***	--	.05	.03	.04	.15**	.12**	**.21***
12. MDD 11	**-.01**	.05	-.03	**.07**	.03	.01	.03	.06	-.03	-.05	.02	--	.05	.05	.110	.06	.05
13. MDD 14	.11*	**.10***	.09*	.03	**.19***	.07	.16**	.13**	.09*	.14**	.12*	.22***	--	.28***	.16***	.15***	.20***
14. MDD 17	.15**	.12*	**.07**	.06	.17***	**.16***	.03	.11*	.15**	.05	.01	.12*	.08^t	--	.25***	.19***	.17***
15. MDD 20	.110	.05	.06	.16*	.05	.04	**.12***	.14**	.02	.09	.03	-.02	.10*	.25***	--	.33***	.24***
16. MDD 24	.05	.06	.01	.00	.04	.06	.11*	**.14***	.18***	**.13***	.05	.14**	.06	.24***	.25***	--	.37***
17. MDD 29	.06	.07	.06	.11^t	.13**	.08	.12*	.18***	**.14***	.10^t	**.20***	.06	.06	.08†	.23***	.31***	--

Note. Parent-Child Rel. Prob = Parent-Child Relationship Problems, Antisocial Peer Aff. = Antisocial Peer Affiliation, Rom. Rel. Problems = Romantic Relationship Problems, MDD = log-transformed MDD symptom count. This table shows correlations by gender (correlations for males are below the diagonal and correlations for females above the diagonal). Bolded correlations refer to within-in time correlations between interpersonal relationship domains and MDD symptoms (at ages 11, 14, 17, 20, 24, and 29). None of the within-time correlations were significantly different by gender ($p < .05$), as tested with the Satorra Bentler chi-square difference test.

Statistical significance of each correlation is denoted by ***$p < .001$; **$p < .01$; *$p < .05$; $^t p < .10$

Table 3.

Results for males vs. females for the developmental cascade model evaluating MDD symptoms in the context of interpersonal relationships.

Path	Males ($n = 519$)	Females ($n = 608$)	SB χ^2 (1 df)
Stability Paths			
Parent-Child Rel. Prob. 11 → Parent-Child Rel. Prob. 14	.56*** (.05)	.52*** (.05)	.29
Antisocial Peer Aff.11 → Antisocial Peer Aff. 14	.33*** (.07)	.31*** (.05)	.07
MDD 11 → MDD 14	.24** (.07)	.03 (.06)	5.56*
Parent-Child Rel. Prob. 14 → Parent-Child Rel. Prob.17	.18*** (.05)	.38*** (.06)	6.91**
Antisocial Peer Aff. 14 → Antisocial Peer Aff. 17	.63*** (.05)	.38*** (.06)	14.09***
MDD 14 → MDD 17	.07 (.06)	.39*** (.09)	9.61**
Antisocial Peer Aff. 17 → Antisocial Peer Aff. 20	.58*** (.05)	.61*** (.05)	.13
MDD 17 → MDD 20	.38*** (.11)	.25*** (.05)	1.22
Antisocial Peer Aff. 20 → Antisocial Peer Aff. 24	.68*** (.04)	.53*** (.04)	8.10**
MDD 20 → MDD 24	.30*** (.08)	.36*** (.06)	.41
Antisocial Peer Aff. 24 → Antisocial Peer Aff. 29	.63*** (.04)	.55*** (.04)	1.55
RRPROB24 → RRPROB29	.30** (.11)	.27*** (.08)	.06
MDD 24 → MDD 29	.29*** (.07)	.37*** (.05)	.96
Cross-Paths			
MDD 11 → Parent-Child Rel. Prob. 14	.13 (.09)	-.10 (.10)	2.98[t]
Parent-Child Rel. Prob. 11 → MDD 14	.05 (.03)	.09** (.03)	.79
MDD11 → Antisocial Peer Aff. 14	.06 (.10)	-.09 (.11)	.95
Antisocial Peer Aff. 11 → MDD 14	.00 (.03)	.03 (.03)	.55

Antisocial Peer Aff. 11 → Parent-Child Rel. Prob. 14	-.01 (.05)	.11** (.04)	3.64^{t}
Parent-Child Rel. Prob. 11 → Antisocial Peer Aff. 14	.12* (.15)	.18* (.07)	.12
MDD 14 → Parent-Child Rel. Prob. 17	.14 (.09)	.08 (.10)	.19
Parent-Child Rel. Prob. 14 → MDD 17	.05^{t} (.03)	.03 (.04)	.14
MDD 14 → Antisocial Peer Aff. 17	-.11 (.09)	.01 (.07)	1.00
Antisocial Peer Aff. 14 → MDD 17	.06^{t} (.03)	.05 (.04)	.02
Antisocial Peer Aff. 14 → Parent-Child Rel. Prob. 17	.01 (.05)	.02 (.05)	.01
Parent-Child Rel. Prob. 14 → Antisocial Peer Aff. 17	.12* (.05)	.15** (.05)	.18
Parent-Child Rel. Prob. 17 → MDD 20	.03 (.04)	.05 (.04)	.18
MDD 17 → Antisocial Peer Aff. 20	-.04 (.09)	.01 (.06)	.20
Antisocial Peer Aff. 17 → MDD 20	.00 (.03)	.06 (.04)	1.15
Parent-Child Rel. Prob. 17 → Antisocial Peer Aff. 20	.02 (.05)	.05 (.04)	.33
MDD 20 → Antisocial Peer Aff. 24	.10 (.07)	.13** (.05)	.12
Antisocial Peer Aff. 20 → MDD 24	.05^{t} (.03)	.04 (.03)	-0.00
MDD 20 → Rom. Rel. Problems 24	1.02* (.41)	1.57* (.69)	.43
Antisocial Peer Aff. 20 → Rom. Rel. Problems 24	.95 (.67)	.10 (.46)	2.31
MDD 24 → Antisocial Peer Aff. 29	.14^{t} (.07)	.04 (.05)	1.38
Antisocial Peer Aff. 24 → MDD 29	.09** (.03)	-.01 (.04)	3.22^{t}
MDD 24 → Rom. Rel. Problems 29	-.33 (.69)	.82^{t} (.44)	1.77
Rom. Rel. Problems 24 → MDD 29	.00 (.01)	.01 (.01)	1.48
Antisocial Peer Aff. 24 → Rom. Rel. Problems 29	1.19** (.39)	.22 (.38)	3.39^{t}

37

| Rom. Rel. Problems 24 → Antisocial Peer Aff. 29 | .00 (.01) | .00 (.00) | .15 |

Note. Parent-Child Rel. Prob = Parent-Child Relationship Problems, Antisocial Peer Aff. = Antisocial Peer Affiliation, Rom. Rel. Problems = Romantic Relationship Problems, MDD = log-transformed MDD symptom count. The smaller sample sizes of males and females are due to the exclusion of those not involved in a romantic relationship by age 29. Showing unstandardized coefficients (standard errors) for associated stability and cross-paths (standardized coefficients are presented in **Figures 2-6**). Significant differences in unstandardized coefficients for corresponding paths by gender were tested by constraining each path to be equivalent and using the Satorra-Bentler Chi-Square Difference Test (SB $\Delta\chi^2$ on 1 *df*) to test for significant decrement in fit between the free and constrained models. Results showed no statistically significant differences in any of the cross-paths by gender at $p < .05$. The only significant differences found concerned stability paths.

Statistical significance is denoted by ***$p < .001$, **$p < .01$, *$p < .05$, $^\dagger p < .10$. Coefficients that are not significantly different zero are indicated in gray and [NS].
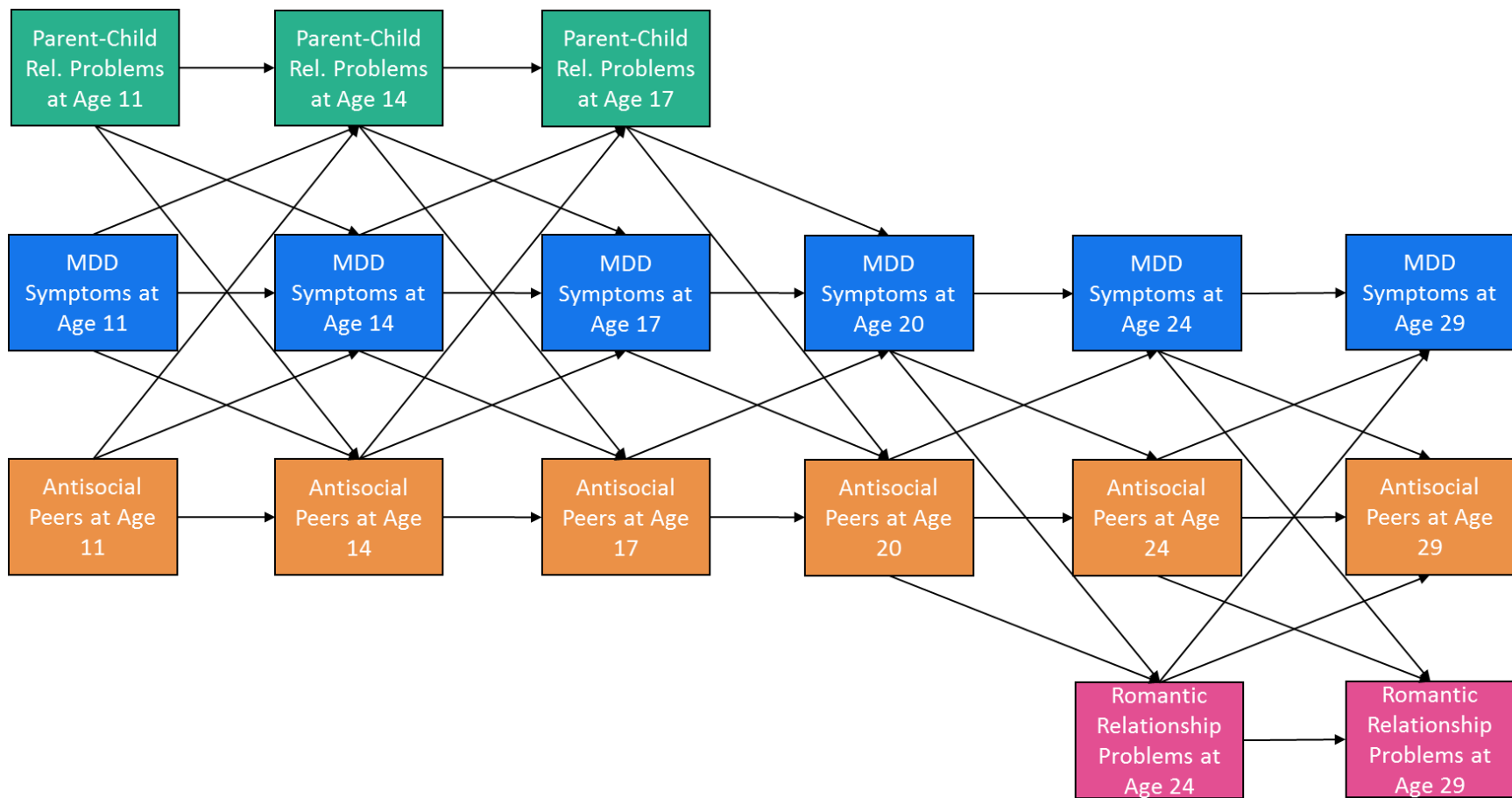
Figure 1. Conceptual model depicting the proposed developmental cascade of Major Depressive Disorder (MDD) symptoms in the context of interpersonal relationships from early adolescence through young adulthood. Selection and socialization effects were examined by evaluating cross-paths: *selection* refers to the effects of MDD symptoms on subsequent social relationships and *socialization* refers to the effects of social relationships on subsequent MDD symptoms.
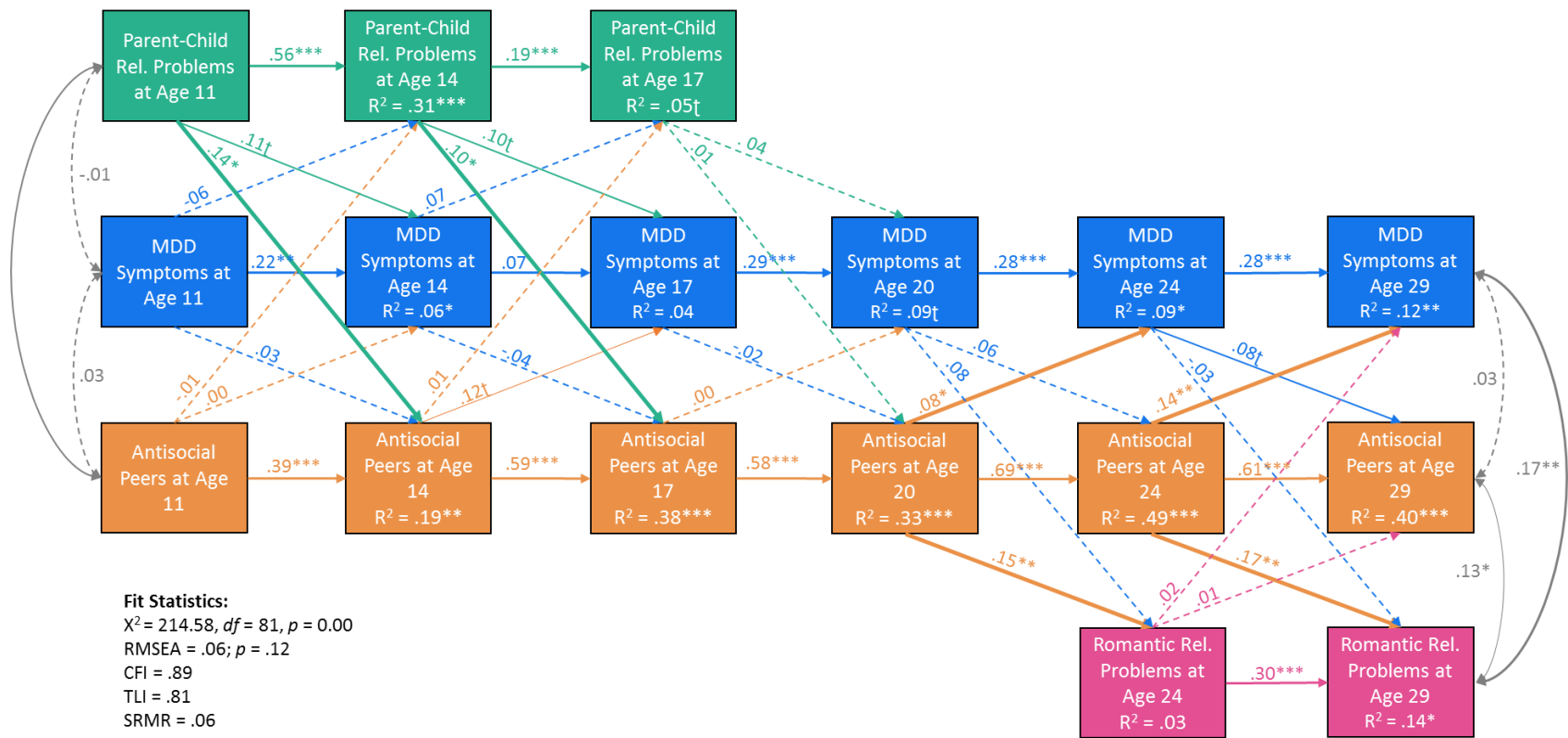
Figure 2. Results for males (*N* = 519): Developmental cascade model evaluating Major Depressive Disorder (MDD) symptoms in the context of interpersonal relationships from early adolescence through young adulthood. This figure shows standardized coefficients from the full developmental cascade model for males involved in a romantic relationship by age 29 (unstandardized coefficients are shown in **Table 2**). Selection and socialization effects in relation to depressive symptom development are examined through cross-paths; selection refers to the effects of MDD symptoms on subsequent social relationships and socialization refers to the effects of social relationships on subsequent MDD symptoms. Residual correlations are included at each time point but are not shown at ages 14, 17, 20, and 24 for clarity of presentation. Results showed support for significant socialization effects involving antisocial peer affiliation to subsequent MDD symptoms from ages 20 to 24 and 24 to 29. There were no significant selection effects at *p* < .05.

Statistical significance is denoted by *********p* < .001, ********p* < .01, *******p* < .05, ᵗ*p* < .10. For clarity, paths that are nonsignificnatly different from zero are dashed. Cross-paths that are significantly differenct from zero are bolded.
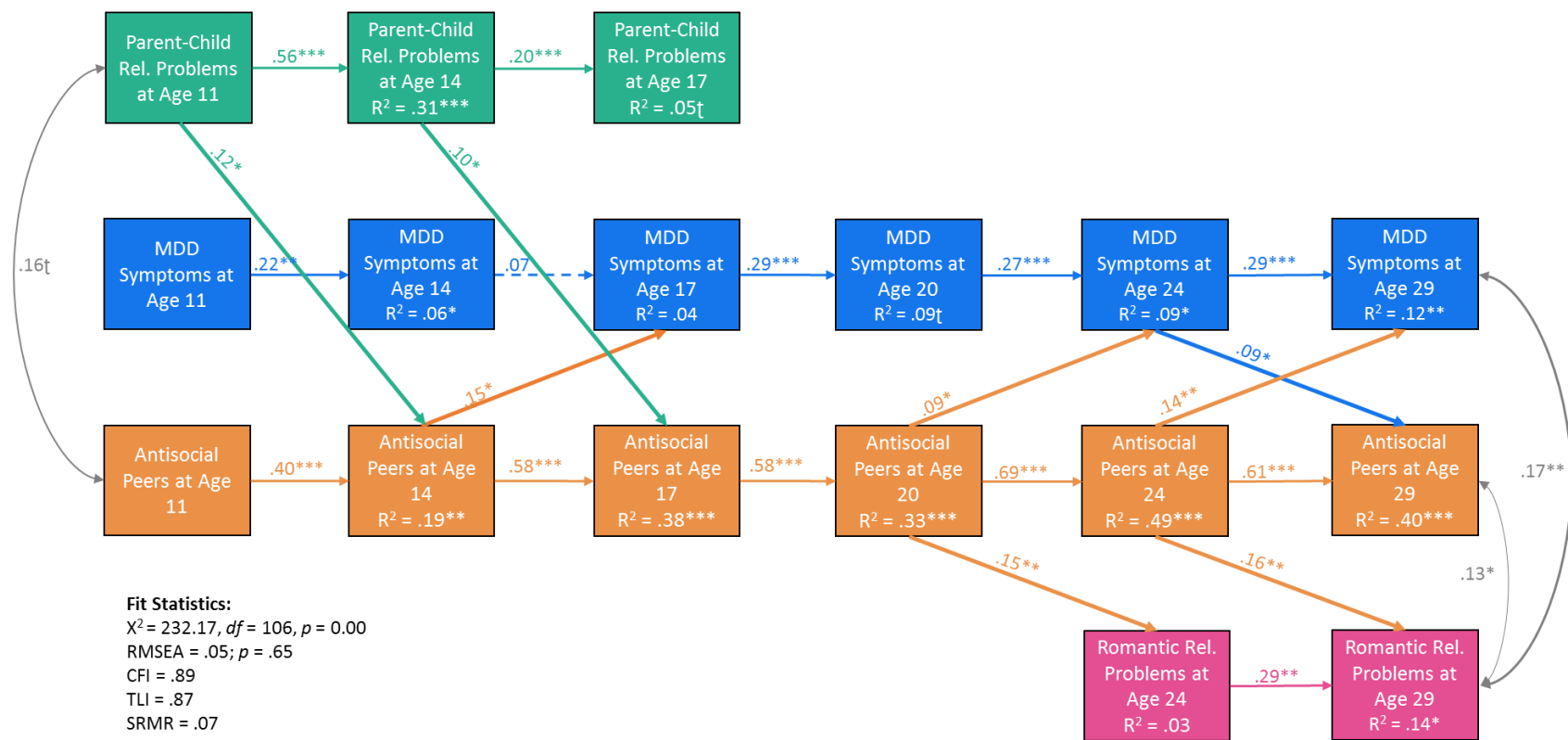
40

Figure 3. Results for males (*N* = 519): Parsimonious developmental cascade model evaluating Major Depressive Disorder (MDD) symptoms in the context of interpersonal relationships from early adolescence through young adulthood. This figure shows standardized coefficients for the more parsimonious model for males involved in a romantic relationship by age 29. This parsimonious model dropped all non-significant paths and this change did not result in a significant decrement of model fit; SB $\Delta\chi^2$ (25) = 21.33, *p* = .67. Selection and socialization effects in relation to depressive symptom development are examined through cross-paths; selection refers to the effects of MDD symptoms on subsequent social relationships and socialization refers to the effects of social relationships on subsequent MDD symptoms. Residual correlations are included at each time point but are not shown at ages 14, 17, 20, and 24 for clarity of presentation. Results show that after accounting for the stability of variables across time and within-time correlations, there were significant socialization effects from antisocial peer affiliation on subsequent MDD from ages 14 to 17, as well as from ages 20 and 29 and ages 24 and 29. Only one significant selection effect was found: greater MDD symptoms at age 24 were associated with greater antisocial peer affiliation at age 29. There was also support for the impact of earlier parent-child relationship

41

problems predicting a greater degree of subsequent antisocial peer affiliation from ages 11 to 14 and 14 to 17, as well as for the impact of antisocial peer affiliation predicting a greater degree of romantic relationship problems from ages 20 to 24 and ages 24 to 29.

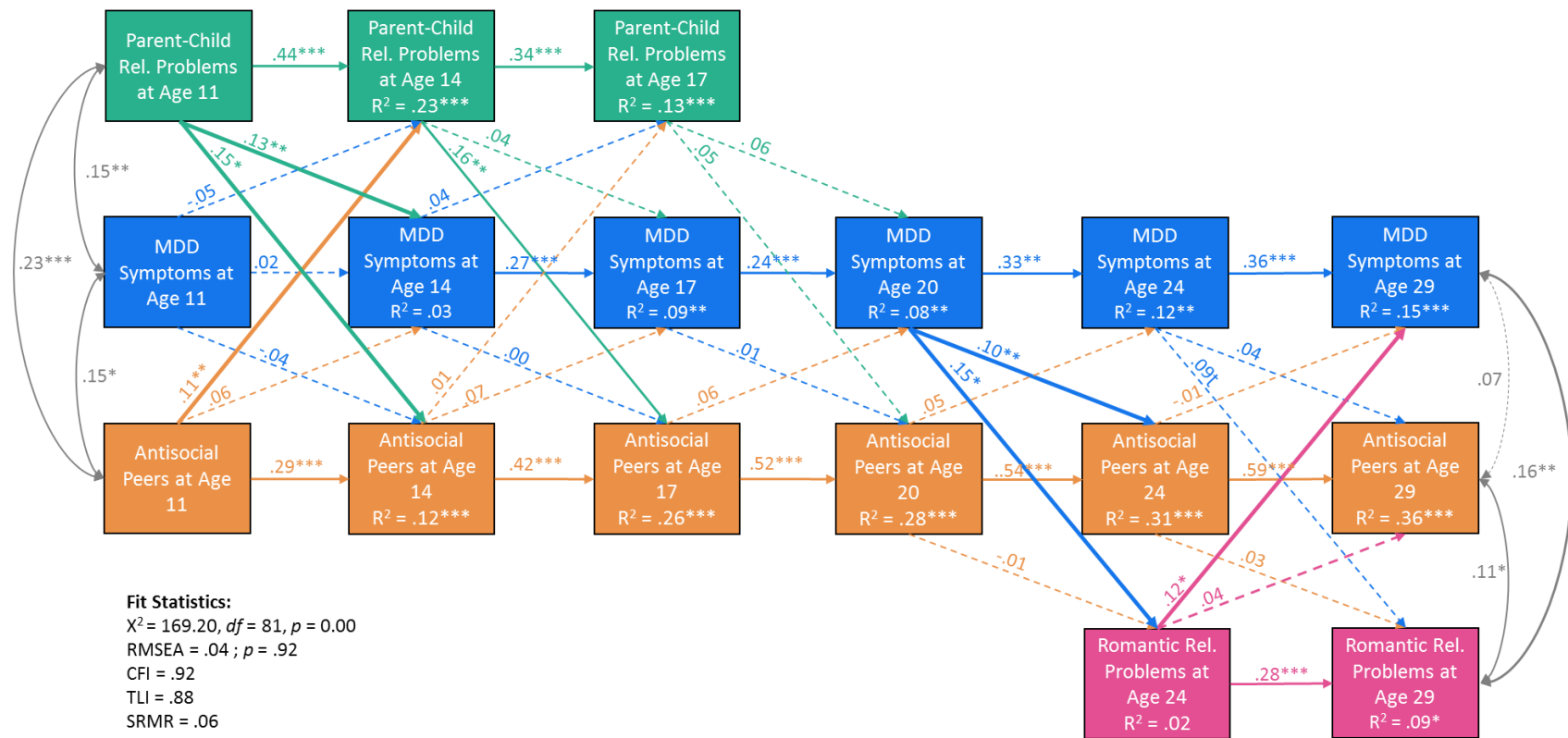Statistical significance is denoted by $^{***}p < .001$, $^{**}p < .01$, $^{*}p < .05$, $^{t}p < .10$.

Figure 4. Results for females (*N* = 608): Developmental cascade model evaluating Major Depressive Disorder (MDD) symptoms in the context of interpersonal relationships from early adolescence through young adulthood. This figure shows standardized coefficients from the full developmental cascade model for females involved in a romantic relationship by age 29 (unstandardized coefficients are provided in **Table 2**). Selection and socialization effects in relation to depressive symptom development are examined through cross-paths; selection refers to the effects of MDD symptoms on subsequent social relationships and socialization refers to the effects of social relationships on subsequent MDD symptoms. Residual correlations are included at each time point but are not shown at ages 14, 17, 20, and 24 for clarity of presentation. Results showed support for significant socialization effects involving parent-child relationship problems to MDD symptoms from ages 11 to 14 and romantic relationship problems to MDD symptoms from ages 24 to 29. There was also significant selection effects from MDD symptoms on both antisocial peer affiliation and romantic relationship problems from 20 to 24.

Statistical significance is denoted by ***$p < .001$, **$p < .01$, *$p < .05$, ᴵ$p < .10$. For clarity, paths that are nonsignificnatly different from zero are dashed. Cross-paths that are significantly differenct from zero are bolded.
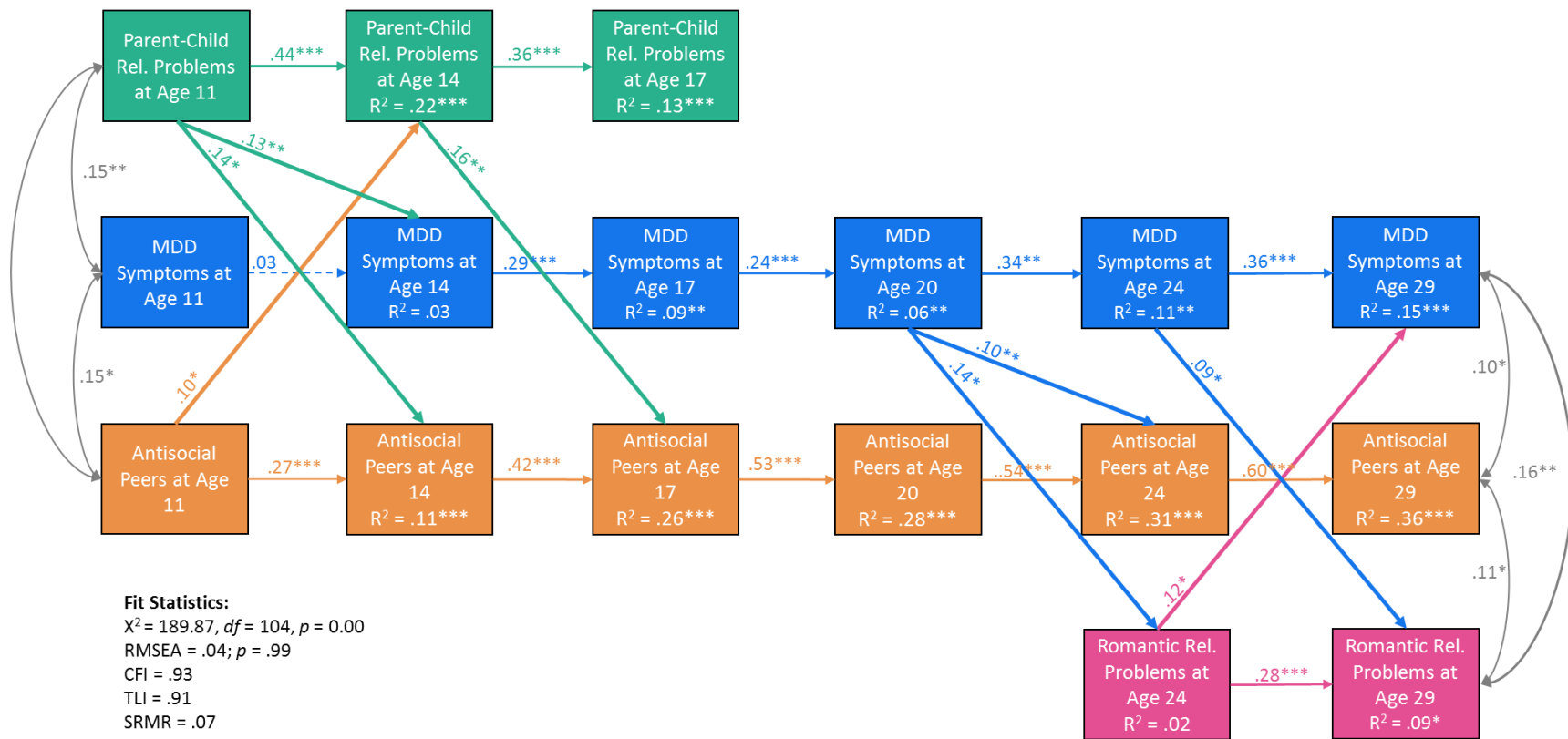
43

Figure 5. Results for females (N = 608): Parsimonious developmental cascade model evaluating Major Depressive Disorder (MDD) symptoms in the context of interpersonal relationships from early adolescence through young adulthood. This figure shows results from the more parsimonious model for females involved in a romantic relationship by age 29. This parsimonious model dropped all non-significant paths and this change did not result in a significant decrement of model fit; SB $\Delta\chi^2$ (23) = 20.83, p = .59. Significant residual correlations are included at each time point but are not shown at ages 14, 17, 20, and 24 for clarity of presentation. Selection and socialization effects in relation to depressive symptom development are examined through cross-paths; selection refers to the effects of MDD symptoms on subsequent social relationships and socialization refers to the effects of social relationships on subsequent MDD symptoms. Results show that after accounting for the stability of variables across time and within-time correlations, there were significant socialization effects from parent-child relationship problems to MDD symptoms from ages 11 to 14 and from romantic partner relationship problems to MDD from ages 24 to 29. There are also several significant

selection effects, as greater MDD symptoms predicted a greater degree of antisocial peer affiliation from ages 20 to 24. Further, greater MDD symptoms predicted greater romantic partner relationship problems from ages 20 to 24 and ages 24 to 29. There was also support for the impact of earlier parent-child relationship problems predicting subsequent antisocial peer affiliation from ages 11 to 14 and 14 to 17. There was also some evidence of bidirectionality involving antisocial peer affiliation and parent-child relationship problems from ages 11 to 14.

Statistical significance is denoted by $^{***}p < .001$, $^{**}p < .01$, $^{*}p < .05$, $^{\dagger}p < .10$.

III.   Study 2: Associations between Parent, Sibling, Peer, and Romantic Partner Support

and Symptoms of Depression in the First Year of College

Abstract

Depression is one of the most commonly diagnosed mental health problems among

college students. Interpersonal theories of depression suggest that positive social support may

serve as a buffer against depressive symptom development, yet little research has evaluated the

simultaneous impact of various aspects of support (including from parent, peer, sibling, and

romantic partners) as they relate to depressive symptoms in the first year of college. Data from

the College Experiences Study ($N = 209$) were used to evaluate the associations between parent,

peer, sibling, and romantic partner support in relation to depressive symptoms in the first year of

college. Results indicate that after accounting for the associations between parent, peer, sibling,

and romantic partner support, parent and peer support were most relevant to depressive

symptoms. Although parent support was significantly predictive of depressive symptoms for

both males and females, the nature of this effect was about two-fold for females. Low romantic

relationship support was associated with a greater likelihood of meeting a clinical threshold of

depression, but only for females and not males. Sibling support was not consistently associated

with depressive symptoms. Altogether, results suggest that increasing or maintaining positive

social support from parents and peers in particular may be critical to offset symptoms of

depression during the first year of college. Implications for parents, students, and college

administrators are discussed.

Associations between Parent, Sibling, Peer, and Romantic Partner Support and Symptoms

of Depression in the First Year of College

The World Health Organization (2017a) has estimated that depression is the most common mental illness and that rates are on the rise (Greenberg et al., 2015; Marcus & Olfson, 2010). Depressive symptoms may appear at any age, but the likelihood increases during puberty and incidence rates peak in the early 20s (American Psychological Association [APA], 2013). Depressive symptoms during this time period have been shown to be debilitating in many aspects of achievement, including the decision to attend and complete college (Fletcher, 2008; Kessler, Foster, Saunders, & Stang, 1995). Prevalence is high particularly among first-year college students (Buchanan, 2012; Eisenberg et al., 2011; Hunt & Eisenberg, 2010; Zivin et al., 2009), with research showing that typically 10-30% of college students express that they have experienced depression since starting college (Beiter et al., 2015; Eisenberg et al., 2011; Ketchen Lipson et al., 2015).

Despite the high rates of depression in college (Buchanan, 2012; Ibrahim, Kelly, Adams, & Glazebrook, 2013), young adults' mental health needs may not be addressed. Although most colleges offer free or reduced-cost psychotherapy services, they are still widely underutilized by the college population (Eisenberg, Golberstein, & Gollust, 2007). For example, approximately 65% to 75% of students reporting clinically significant distress or mental health disorders report not utilizing mental health services (Eisenberg et al., 2011; Rosenthal & Wilson, 2008). In conjunction with these services, a possible prevention or intervention point of entry may be through strengthening the social support network. It has previously been found that greater social support is negatively associated with concurrent and future depressive symptoms and positively associated with adherence to treatment (Auerbach, Bigda-Peyton, Eberhart, Webb, & Ho, 2011;

DiMatteo, Lepper, & Croghan, 2000; Grant et al., 2014; Rueger et al., 2016), suggesting social support may offset risk of depression and increase treatment adherence.

Although several studies have examined the links between various aspects of social support (e.g., parent and peer) as they relate to depression (e.g., Ibarra-Rovillard & Kuiper, 2011; La Greca & Harrison, 2005; Prinstein, 2007; Rueger et al., 2016), fewer studies have examined these other types of support, such as sibling or romantic partner support - particularly as to how these apply to depression in the first year of college. Given the typical shifts in social relationships during the transition to college, such as students moving out of the family home (Conger & Little, 2010), as well as increased time spent with friends and romantic partners (Collins & van Dulmen, 2006), it is critical to examine the impact of these domains of social support in relation to depression. As social supports across domains are not isolated in their effects but rather tend to co-occur, it is also important to examine the impact of these domains both independently and simultaneously to better understand their relatedness and unique effects. This paper seeks to address these gaps by examining several specific types of social support (including parent, sibling, peer, and romantic partner) in relation to depressive symptoms in the first year of college.

Interpersonal Theories of Depression and Social Support: College as a Critical Context

Interpersonal theories of depression (Joiner et al., 2006; Joiner & Coyne, 1999; Rudolph et al., 2008) suggest that depressive symptoms develop within a pattern of negative interactions in social relationships and that positive social support should mitigate depressive symptoms. Whereas perceived social support has been shown to be inversely correlated with depression (Ibarra-Rovillard & Kuiper, 2011; Peirce, Frone, Russell, Cooper, & Mudar, 2000), problems with social support may further negatively increase the development of depressive symptoms

49

(Parker et al., 2006). These processes occur simultaneously and are bidirectional, operating through feedback loops. For example, early parent-child relationship problems foster maladaptive interpersonal behaviors (e.g. negative self-evaluation, problems with self-regulation), which then increases the risk for development of depressive symptoms (Rudolph et al., 2008). Those who are depression-prone are also likely to elicit negative responses from others, including lower warmth as well as avoidance, further heightening both depressive symptoms and interpersonal problems (Joiner & Coyne, 1999; Rudolph et al., 2008).

It has been well-demonstrated that several of these stressors coincide with the transition to college, such as simultaneous changes in peer and family relationships as this is often the first significant move away from the family home (Conger & Little, 2010; Lefkowitz, 2005; Shaver, Furman, & Buhrmester, 1985). Social support networks have been shown to change during this transition as well. These changes have been described as "recentering" relationships, or taking on adult roles through times of exploration and establishing independence (Conger & Little, 2010; Tanner, 2006) – such as pursuing more serious romantic relationships. The transition to college and shifts in the social network may leave students at particular risk for negative mental health outcomes, such as increases in depressive symptoms and lowered coping skills (Arigo & Cavanaugh, 2016). Deficits in parent support have been shown to be related to increases in depressive symptoms for college students (Stice, Ragan, & Randall, 2004). Following this, parental support may also serve as a buffer against depressive symptoms, and family support has been shown to in fact be an effective area of intervention to alleviate depressive symptoms in adolescence (Solantaus et al., 2010).

Although parent-child relationships have received a plethora of attention in the literature in relation to depressive symptoms, other immediate familial support, such as sibling support,

50

has not received as much attention (Conger & Little, 2010). Such an omission is surprising, as sibling relationships are the longest social relationships that many will have (Cicirelli, 1994;2013), and it is estimated that about 82% of people under the age of 18 are living with a sibling (McHale, Updegraff, & Whiteman, 2012). Furthermore, sibling support can be beneficial in successfully navigating transitional periods (Conger et al., 2004; Conger & Little, 2010). For example, poor sibling relationship quality in childhood and adolescence predicts more depressive symptoms into adulthood (Waldinger et al., 2007). Furthermore, greater sibling support is associated with less loneliness and depression in adulthood, including in college (Cicirelli, 1989; Milevsky, 2005). Yet, it remains unclear how sibling social report relates to depressive symptoms for first-year college students, specifically. I hypothesized that sibling support is a unique and significant predictor depressive symptoms for this population, and that this association would hold after accounting for the impact of parent support on depressive symptoms. This rationale was based on the research showing that supportive relationships with siblings may help alleviate the symptoms of depression in general for young adults (Cicirelli, 1989; Conger et al., 2004; Conger & Little, 2010; Robinson & Garber, 1995).

Not only do familial relationships with parents and siblings change in the first year of college, but often other interpersonal relationships, such as peer relationships and romantic relationships, change during this transition (Collins & van Dulmen, 2006; Oswald & Clark, 2003). For example, best friendships from high school decline in terms of overall satisfaction and commitment in the first year of college (Oswald & Clark, 2003). At the same time, some evidence suggests that new friendships formed among college students may help students' adjustment (Buote et al., 2007). It is important to consider these relationships in the first year of college as it has also been demonstrated that poor peer relationship quality has been consistently

51

linked to depression (Eberhart & Hammen, 2006; La Greca & Harrison, 2005). Less is known

about the potential protective effects of positive social support from peers (Parker et al., 2006);

however, attachment research has consistently confirmed positive relationships with parents and

peers also impact social competence in romantic relationships (Simpson et al., 2007; Sroufe et

al., 1999a). Therefore, it is expected that positive social support from peers will provide a buffer

from depressive symptoms (Arigo & Cavanaugh, 2016; Buote et al., 2007; Parker et al., 2006)

above and beyond any effects of parent-child or sibling support.

Similarly to peer relationship characteristics, romantic relationship characteristics and

overall relationship quality with romantic partners have repeatedly been shown to correlate with

depression in both adolescence (Garber & Rao, 2014; La Greca & Harrison, 2005) and young

adulthood (Blais & Renshaw, 2014). Some research has indicated that about 30% of women

(Fielder, Carey, & Carey, 2013) and around 44% overall (Braithwaite, Delevi, & Fincham, 2010)

are in a romantic relationship in college, but less attention has been given to how this may impact

depressive symptoms in particular. It is less clear how many first-year college students are

involved in a committed romantic relationship or how important romantic relationship support is

for college students above and beyond support for parents, siblings, and peers.

Study Summary

This study seeks to examine the influence of peer, parent, sibling, and romantic partner

support on symptoms of depression during students' first year in college. It was hypothesized

that higher social support from all three interpersonal domains (parent, sibling, and peer) would

predict lower depressive symptoms irrespective of one another (see **Figure 1; Hypothesis 1**).

The second aim of the study was to evaluate the unique impact of romantic relationship support

on depression (above and beyond parent, sibling, and peer support) for the subsample of

participants (35% of the total sample) who identify as being in a romantic relationship. I expected that parent, sibling, peer, and romantic relationship support would be significantly and inversely related to depressive symptoms, irrespective of one another (see **Figure 2; Hypothesis 2**). As prevalence estimates of depression are higher for women than men (Cicchetti & Toth, 1998; Hankin et al., 1998; Kessler, 2003; Piccinelli & Wilkinson, 2000), I evaluated for potential gender differences in these associations to get a better understanding if there are differential risk profiles of social support for depression for men versus women in their first year of college. Prior research and theory suggest social relationships may be a more important risk factor for females than males (Arigo & Cavanaugh, 2016; Eagly, 2013), so I tentatively hypothesized associations between parent, sibling, peer, and romantic partner support with depressive symptoms would be greater for females than males.

Methods

Participants

The College Experiences Study (PI: Dr. Diana Samek) was used to test study hypotheses. This study was designed to understand the complex interplay between individual-level and social context risk factors as they relate to differential courses of substance use disorders and related psychopathology. Seven hundred students were randomly selected from a list of all incoming college freshmen (~N = 5,000) to invite to participate. Out of the eligible students, 73% (n = 511) were successfully located (i.e., confirmed contact over the phone or by email response). Out of the 511 located students, 41% (n = 210) agreed to participate in the online survey[1]. Slightly more females (61%) and white students (90%) participated than the general population of first-

---

[1] Out of those located participants that did not participate, a common reason provided for why they did not participate was the low cost provided to reward them for their time and effort ($20). Future efforts for this population will require greater monetary rewards, as we learned students at Auburn University come from fairly high socioeconomic backgrounds (e.g., Belanger, 2014).

year students at the southeastern university that they were sampled from (50% male, 80% white; Office of Institutional Research, 2016). The majority of students lived in a university dormitory (54%) or in an off-campus apartment (37%). Of the 74 participants who reported currently being in a monogamous relationship (35% of the sample), the majority reported being in that relationship for 1-2 years. Please see **Table 1** for detailed sample demographics and descriptive statistics on romantic partner involvement and relationship length.

Procedures

The Auburn University Institutional Review Board approved procedures. Written informed consent was provided by participants prior to being provided with access to the online survey. Participants were then provided the survey link and their deidentifable user ID, and were subsequently paid $20 for completing the online survey. A wide range of measures were collected using an in-depth online survey that took one to two hours on average to complete.

Measures

Depressive symptoms. Depressive symptoms were measured using the 20-item Center for Epidemiologic Studies Depression Scale (CES-D; Radloff, 1977). Items from this scale (e.g., "I was bothered by things that usually don't bother me," or "I felt depressed.") were rated on a four-point scale ranging from *0 = rarely or none of the time (less than one day)* to *3 = most or all of the time (5-7 days)*. Respondents answered the questions based on how often they experienced these depressive symptoms in a typical week. Items were coded so that higher values indicated higher levels of depression, then summed (α = .90). I also explored whether results were similar or different from the continuous depressive symptom measure to a clinical-level cutoff (*0 = total CES-D score < 16* and *1 = total CES-D ≥ 16*). A CES-D score of 16 or

more is highly concordant with a clinical risk for Major Depressive Disorder (Lewinsohn, Seeley, Roberts, & Allen, 1997).

Parent Support. Parent support items were adapted from the Inventory of Parent and Peer Attachment—Revised (IPPA-R; Gullone & Robinson, 2005). The parent support scale was comprised of 22 items and reflected the extent to which they can rely on parents for help and support (e.g., "I can depend on my parents to help me solve a problem."). All items were answered on a scale of 1 = *Definitely True* to 4 = *Definitely False.* Items were recoded so that a higher score reflected more parent support, then summed (α = .95).

Sibling Support. Participants that reported having a sibling (n = 180, 86% of the sample) also responded to questions on their sibling's socioemotional support (if more than 1 sibling, they reported on their "closest" sibling). This was assessed using an 8-item scale (e.g., "Do you feel like this sibling is there for you when you need someone to listen?"). Items were rated on a scale of *1 = never* to *4 = always*. Items were coded so that a higher score indicated greater sibling support, then summed to create a total score for sibling social support (α = .72). Of those who reported having a close sibling, 79 (44%) were close to an opposite-gender sibling, while 43 (43%) were brother pairs and 58 (57%) were sister pairs. Also, 93 (52%) reported that they were closes to an older sibling and 87 (48%) were closest to a younger sibling.

Peer Support. Peer support items were adapted from the Belonging and Appraisal scales from College version of the Interpersonal Support Evaluation List (ISEL; Cohen & Hoberman, 1983; Cohen, Mermelstein, Kamarck, & Hoberman, 1985) and the Inventory of Parent and Peer Attachment-Revised (IPPA-R; Gullone & Robinson, 2005). The peer support scale was comprised of 34 items and reflected the extent to which they can rely on friends for help and support (e.g., "I have friends who I can talk to about problems I might have getting along with

my parents). Items were answered on a scale of *1 = Definitely True* to *4 = Definitely False*,

though one item was rated on a 5-point scale ("How often do you talk or hang out with your

friends from high school or your home town?" ranging from *1 = almost never* to *5 = nearly

every day)*. Items were coded so that a higher score indicated greater peer support, then

standardized and averaged to create a peer support score ($\alpha = .97$).

Romantic Partner Support. Participants who self-reported being in a romantic

relationship (*n* = 74, 35% of the total sample) answered a single item about romantic partner

support from the Triangular Love Scale (Sternberg, 1997) used in the present study: "I received

considerable emotional support from my romantic partner" on a scale of *1 = Definitely True* to *4

= Definitely False*. This item was recoded such that a higher scored indicated greater romantic

partner support.

Analytic Plan

Preliminary analyses were conducted to examine correlations and descriptive statistics.

Analyses for hypothesis testing were conducted using Mplus 7.2 (Muthén & Muthén, 1998-

2016) and using Full Information Maximum Likelihood (FIML) procedures in order to account

for missing data. Depressive symptoms were checked for skew (1.06, *S.E.* = .17) and kurtosis

(1.28, *S.E.* = .34), which was sufficient (Kline, 2005;2015), so depressive symptoms were not

log-transformed prior to analysis.

First, zero-order associations for each of the independent variables (parent support,

sibling support, peer support, and romantic relationship quality) in relation to the dependent

variable (depressive symptoms) were examined first. If the independent variables were

significantly associated with depressive symptoms, they were included in the full model testing

described next. If they were not significantly associated at the zero-order association level, they were excluded from further analysis.

To test hypothesis 1, peer, parent, and sibling social support were regressed on depressive symptoms (see **Figure 1**). Covariates of race, gender, and age were included in a subsequent analysis to determine if these variables impacted results. To test hypothesis 2, parent, sibling, peer, and romantic partner support were examined simultaneously (see **Figure 2**) for the sub-sample of those involved in a romantic relationship ($n = 74$, 35% of the total sample). Covariates of race, gender, and age were included in a subsequent analysis to determine if these variables impacted results. As depression is more common in women than men (Cicchetti & Toth, 1998; Hankin et al., 1998; Kessler, 2003; Piccinelli & Wilkinson, 2000), I also tested for any gender differences in the associations between parent, sibling, peer, and romantic partner support with depressive symptoms by constraining the paths between each of the types of social support and depression to be equivalent across gender and using a chi-square difference test ($\Delta\chi2$) to determine if this resulted in a significant decrement of model fit. Finally, I explored whether results were impacted by evaluating the outcome variable as either reaching or not reaching a clinical-level depression symptom score (CES-D < 16; Lewinsohn et al., 1997) via multivariate logistic regression.

Results

Preliminary Analyses

Overall, 28.7% (60 participants) of the sample met criteria for clinical-level symptoms of depression (33.3% of all females, 21.8% of all males), similar to prevalence rates of depressive symptoms reported for college samples elsewhere (Beiter et al., 2015; Ketchen Lipson et al., 2015). Descriptive statistics and bivariate correlations between each of the key study variables

were estimated and are presented in **Table 2**. These correlations generally indicated modest to moderate negative associations between depressive symptoms and each measure of social support (rs ranging from -.10 to -.48, see **Table 2** for details). Parent, peer, sibling, and romantic partner support were also generally significantly and moderately correlated (see **Table 2** for details).

Zero-order associations were significant between depressive symptoms and parent support (β = -.48, B = -.33, S.E. = .04, p < .001), between peer support and depressive symptoms (β = -.48, B = -.26, S.E. = .03, p < .001), and between romantic partner support and depressive symptoms (β = -.26, B = -6.40, S.E. = 2.86, p < .05). However, the zero-order association between depressive symptoms and sibling support was not significant (β = -.10, B = -.34, S.E. = .25, p = .18). I further evaluated whether sibling social support is significantly associated with depressive symptoms by sibling gender composition or birth order via a multigroup model (comparing change in fit by free vs. constrained associations). Results indicated that sibling support was not related to depressive symptoms for sisters (β = -.08, p = .56), brothers (β = .00, p = .99), or mixed-gender pairs (β = -.20, p = .06). Conversely, sibling support was significantly associated with depressive symptoms if they were referring to a younger sibling (β = -.33, p < .01), but not if referring to an older sibling (β = .06, p = .54).

Hypothesis 1: Parent, Peer, and Sibling Social Support as Predictors of Depressive Symptoms for First-Year College Students

Because preliminary results for siblings showed potential differences across birth order for sibling social support and depression, I examined the proposed hypothesis 1 (see **Figure 1**) by fitting a multigroup model. This model allowed associations between sibling support and depressive symptoms to vary across sibling birth order groups (i.e., reporting on an older vs.

younger siblings), but constrained the association between parent support and depressive symptoms and peer support and depressive symptoms to be equivalent across sibling birth order groups. Results indicated that despite the significant zero-order association between sibling social support and depressive symptoms for those referring to younger siblings, it was not significant above and beyond parent and peer support ($\beta = .59$, $p = .75$). As these analyses showed sibling support was not significantly associated with depressive symptoms at the multivariate level, I dropped sibling social support and examined the effect of parent and peer support on depressive symptoms alone.

As shown in **Figure 3**, results indicated that both parent ($\beta = -.41$, $p < .001$) and peer ($\beta = -.35$, $p < .001$) support were inversely and significantly associated with symptoms of depression. Covariates of self-reported gender, race, and age were included in a subsequent model to identify if these demographics impacted results (see **Figure 4**); only gender was associated with depressive symptoms, but overall associations between parent and peer support in relation to depressive symptoms did not change as a result of the inclusion of covariates.

As shown in **Figure 5**, parent and peer support were both significant and inversely related to depressive symptoms for both men and women. Constraining the association between peer support and depression to be equivalent across gender showed no significant decrement to model fit ($\Delta\chi^2 (1) = .01$, $p = .92$), but constraining the association between parent support and depression to be equivalent across gender did show a significant decrement in model fit ($\Delta\chi^2 (1) = 4.72$, $p = .03$). Furthermore, the association between parent support and depression appears stronger by about two-fold for females ($\beta = -.47$, B $= -8.05$, $p < .001$) than for males ($\beta = -.25$, B $= -3.67$, $p < .05$).

Hypothesis 2: Parent, Peer, Sibling, and Romantic Partner Social Support as Predictors of

Depressive Symptoms

Given that sibling social support was not significantly related to depressive symptoms alone or above and beyond peer and parent support, it was not evaluated further with romantic partner support as originally hypothesized. Instead, parent, peer, and romantic partner support were evaluated in relation to depressive symptoms (see **Figure 6**). After accounting for the significant impact of parent (β = -.48, p < .001) and peer (β = -.38 p < .001) support in relation to depressive symptoms, and correlations between parent, peer, and romantic partner support, romantic partner support did not significantly predict depressive symptoms (β = -.00, p = .99). Romantic partner support was significantly correlated with parent (β = .28, p = .008) but not peer support (β = .20, p = .07), suggesting any impact of romantic partner support was explained by including parent support into the model. I also explored gender differences for this model, and results showed that the association between romantic partner support and depressive symptoms was not significant for males (β = .24, B = 3.44, p = .43) or females (β = .07, B = 1.63, p = .57). Constraining this path to be equivalent across gender did not result in a significant decrement of model fit ($\Delta\chi^2(1)$ = 1.39, p = .24). Subsequent analysis of including covariates of self-reported gender, race, and age showed no significant associations with depressive symptoms, nor were results impacted by their inclusion in the models.

Exploration of an Alternative Model

In order to further investigate whether results varied by using a clinical-level depressive symptom score of rather than a continuous score of depressive symptoms alone, I also evaluated a multivariate logistic regression predicting a clinical-level symptom cut-off of 16 (Lewinsohn et al., 1997). Results were similar to results from the model evaluating a continuous score of

depressive symptoms. Logistic regression results indicate for every 1 point decrease in either parent or peer support, the odds of meeting the clinical-level threshold for depression increased four- to five-fold (see **Figure 7** for details). Results also indicate that romantic partner support does not significantly affect the odds of meeting the clinical-level threshold for depression above and beyond parent and peer support. Similar to previous findings, romantic partner support was significantly correlated with parent (β = .31, p = .03) but not peer support (β = .20, p = .06), again suggesting any impact of romantic partner support was explained by including parent support into the model. Covariates of age, race, and gender were not significantly related to the clinical-level depressive symptom cutoff and did not impact results.

Gender differences were examined by mean-centering all variables and creating interaction terms between parent support and gender, peer support and gender, and romantic partner support and gender, and then entering the interaction terms into a second multivariate logistic regression. Results indicate that only the romantic partner support by gender interaction term significantly predicted the clinical-level depressive symptoms cutoff (romantic partner support x gender: B = -7.16, p < .001; peer support x gender: B = .10, p = .06; parent support x gender: B = -.00, p = .95). The significant interaction between romantic partner support x gender is shown in **Figure 8**. Females had a greater probability than males of meeting the clinical-level depressive symptom threshold when reporting low levels of romantic relationship support. There was no difference in the likelihood of meeting the clinical-level depressive symptom threshold at high levels of romantic support by gender.

Discussion

Rates of depression are on the rise, particularly for college students, who have been identified as a particularly at-risk population for depressive symptoms and associated problems

(Buchanan, 2012; Eisenberg et al., 2011; Hunt & Eisenberg, 2010; Zivin et al., 2009). College students suffering from depression are more likely to struggle academically, drop out, and have escalating symptoms including increased risk for suicide (Bauer, Chesin, & Jeglic, 2014; Egbert, Miraldi, & Murniadi, 2014). Although prior research has linked various aspects of social support to a reduced likelihood of depression (Garber, 2000; Garber & Rao, 2014), less research has evaluated for the simultaneous or unique effects of parent, peer, sibling, and romantic partner support in relation to depressive symptoms. This study aimed to fill that gap by simultaneously evaluating the effects of support from each of these interpersonal relationships for first-year college students. Results showed that peer and particularly parent support appear most relevant to depressive symptoms in first-year college students, and that parent support and romantic relationship support were particularly relevant for females. Thus results partially supported my expectations that social relationships may be more relevant to females than males, in line with prior research (Arigo & Cavanaugh, 2016; Eagly, 2013).

Depressive Symptoms and Gender Differences

On par with more recent estimates (e.g., Beiter et al., 2015; Ketchen Lipson et al., 2015), 28.7% of this sample met criteria for subthreshold level clinical-level depressive symptoms. These estimates confirm that this is an increasingly significant problem for college students (Eisenberg et al., 2011; Hunt & Eisenberg, 2010; Zivin et al., 2009). Also similar to these estimates, more females (33.3%) than males (21.8%) met criteria for clinically significant depressive symptoms. However, few gender differences emerged in subsequent analyses that evaluate for differences in the associations between different aspects of social support and depression. Greater parent and peer support were the most salient predictors of lower depressive symptoms for both males and females, though the effect of parent support on depression was

stronger for females than males. Additionally, results suggest that romantic partner support is more relevant to clinical-level depressive symptoms for females than for males. Some research has suggested that the interpersonal relationship context is more relevant to females than males (Rhule-Louie & McMahon, 2007; Rose & Rudolph, 2006; Rudolph et al., 2008), and our findings involving parent and romantic partner support seems to support this assertion. This study provides some evidence it may be especially important for parents with daughters to maintain good communication habits and positive support, particularly if they are in a romantic relationship as it may potentially offset the risk of experiencing low romantic partner support. Nonetheless, it is of course important for most students to maintain good communication with parents in their first year of college regardless of gender.

Parent, Peer, and Sibling Support

As predicted, results generally supported previous findings that both parent and peer support are significant and salient predictors of depressive symptoms. As parent and peer support measures in this study especially assessed having a parent or friend to talk to about problems and positive interactions, results supported the notion from interpersonal theories of depression that being able to address problems and establish positive interactions would be associated with lower depressive symptoms (Joiner & Coyne, 1999). This is in line with previous findings, which have suggested that parent support (Stice et al., 2004) and peer support (Buote et al., 2007) decrease the risk for later depressive symptoms in adolescence. Some have also suggested that parent attachment, above and beyond peer support, mitigates depressive symptoms from adolescence into young adulthood (Agerup et al., 2015). Other studies have suggested that in later adolescence parent and peer support become more equally influential as parental influence decreases and peer increases (De Goede, Branje, Delsing, & Meeus, 2009). Results from this

63

study suggest that *both* parent and peer support were significantly and concurrently associated with lower depressive symptoms, and that they had a similar magnitude of effect on depressive symptoms overall.

Though it was expected that sibling support would predict depressive symptoms, initial findings indicated that overall, this was not the case in this study. Further examination of this showed no difference in the association between sibling support and depressive symptoms based on sibling gender composition. On the other hand, perceiving a greater level of support from a younger sibling was associated with lower depressive symptoms - but this effect did not hold up after accounting for perceived support from parents or peers. The general lack of significant associations involving sibling support is likely due to the complex nature of sibling relationships (Buist, Deković, & Prinzie, 2013; Feinberg, Solmeyer, & McHale, 2012; Milevsky, 2011) and the need for large samples to have the power to adequately test for differences by variation in sibling context (e.g., see Samek, McGue, Keyes, & Iacono, 2015). Alternatively, sibling support may be less relevant for college students that no longer live at home with siblings or interact with them on a frequent basis.

Romantic Partner Support

Following prior research (Braithwaite et al., 2010; Fielder et al., 2013), about 35% of freshmen in this sample reported being in a romantic relationship. Although I found a significant correlation between romantic partner support and depressive symptom, this effect did not hold up when accounting for parent and peer support in the same models – at least for males. It may be that other factors related to romantic partners, such as either instrumental support or more negative aspects such as break ups, would have a more significant influence than emotional support. This lack of significance above and beyond peers and parents may also be due to

developmental timing, as research has indicated that relationships during this time period may be less serious and influential than other types of relationships (Fielder et al., 2013; Shulman & Connolly, 2013). That is, it may be that during this time period, students are less dependent on their romantic partners, and are more dependent on parents and peers; especially during life transitions, parent support continues to play a significant role (Ratelle, Simard, & Guay, 2013).

Students may also be more likely to seek advice particularly from their parents (in comparison to other relationships) on several common stressors that influence depression for college students, such as finances, academic success, and post-graduate plans (Beiter et al., 2015). Additionally, in there may be differences in the influence of romantic partner support due to relationship context. For example, factors such as whether the romantic partner relationship is long-distance may also affect feelings of support as well as depression (Waterman, Wesche, Leavitt, Jones, & Lefkowitz, 2017), or how long they have been together. Further analysis of the College Experiences Study sample showed no significant association between romantic partner support and depressive symptoms when students reported being in a relationship for one year or longer ($n = 34$, $\beta = -.21$, B = -5.81, $p = .06$), or one year or less ($n = 38$, $\beta = -.29$, B = -6.79, $p = .21$), although larger sample sizes are likely needed to better explore this effect. Furthermore, parent-child attachment may influence the impact of social support on depressive symptoms such that students with insecure attachment in particular are less likely to form a relationship that would provide emotional support from a romantic partner (Konrath, Chopik, Hsing, & O'Brien, 2014). On the other hand, romantic partner support was significantly predictive of a clinical-level threshold of depressive symptoms for females, above and beyond any effects of parent and peer support. This finding did support my expectation and prior research (Arigo & Cavanaugh, 2016;

Eagly, 2013) that social relationships may be more relevant to females than males; however further research is needed to replicate, extend, and better understand these effects.

Implications for Intervention

As depressive symptoms are becoming more of a problem particularly for college students (Buchanan, 2012), more attention to effective intervention for first-year college students is needed. Findings from this study suggest that support from parents and peers appears to be especially associated with lower symptoms for first-year students, so programs that focus on how to aid parents in effectively supporting their students and in strengthening peer networks may be especially beneficial during the transition to college. For example, targeting effective communication between students and their parents at orientation may be helpful. Disseminating information on coping skills and mental health risk signs to watch for at freshmen orientations may prove to be fruitful. Additionally, mental health counseling and education, in person and perhaps even via online programs (Novotney, 2014) may be helpful in this regard. Education on mental health indicators and ways to support students is essential for students, their families, faculty, and college administration in order to better identify risks and intervene in a timely manner, as it has been demonstrated that treatment outcomes are better for those who receive treatment sooner after the onset of symptoms (Bukh et al., 2013; Ghio et al., 2014; Novotney, 2014).

Future Directions

This study uses cross-sectional data, therefore further longitudinal research is needed to better evaluate antecedent versus consequence effects in the associations between social support and depressive symptoms in the transition to and after the first year of college. It is expected that several social relationships will change across college, such as both shifting friendship groups

and the shifting influence of friends and family members (Feinberg et al., 2012; Patton, Renn, Guido, Quaye, & Forney, 2016). As noted above, several of these changes and relationship effects are likely influenced by a variety of factors (e.g. sibling context, whether or not the romantic relationship is long-distance), which warrant further consideration in a larger sample. Additionally, as this study uses a single item to measure romantic partner support, other measures should be considered. Other aspects of the relationship including length and quality, as well as more negative factors such as experiencing a recent break up, may also be more salient to depressive symptoms in this population and should be further explored. Though examining covariates did not result in many differences within this study, exploring differences in a larger sample with more diversity is important. Exploring other student-specific covariates or moderators is also warranted. Factors such as whether students are first-generation college students should be considered, as first-generation students have previously been found to report less social support and more depressive symptoms (Jenkins, Belanger, Connally, Boals, & Durón, 2013). Some research also indicates that upperclassmen report more depressive symptoms (Beiter et al., 2015), so further examining the development of depressive symptoms across time is imperative particularly for this population.

Conclusion

Despite these limitations, this study was able to explore the relationship between multiple domains of social support and depressive symptoms in a sample of randomly-selected incoming freshmen, who are particularly at risk for depression (Beiter et al., 2015; Buchanan, 2012; Eisenberg et al., 2011; Hunt & Eisenberg, 2010; Zivin et al., 2009). As college enrollment continues to rise (National Center for Education Statistics, 2016), this rise in depression is applicable to many (Kessler et al., 2005). This is especially true as the U.S. Bureau of Labor

Statistics (2016) reported that 69.2% of high school students who graduated in 2015 were enrolled in colleges or universities the following year. While rates of college enrollment have been increasing, understanding the role of social support is imperative. Other studies examining social support and depression in the first year of college have examined generalized social support (e.g., Lee, Dickson, Conley, & Holmbeck, 2014; Taylor, Doane, & Eisenberg, 2014), but this study was able to examine the influence of particular types of support, including the unique impact of parent, sibling, peer, and romantic partner support. Overall, it is clear that positive social support from parents and peers in particular is associated with fewer depressive symptoms during the first year of college. Previous research has explored how to effectively mobilize social support resources to intervene in depressive symptoms (Egbert et al., 2014; Mattanah et al., 2010), and results support the notion that increasing social support may be a good target for intervention. Particularly for freshmen, support from parents and peers may be the most influential areas to target. Education on mental health risk factors as well as effective coping skills is important for students, parents, and college administration, especially the role of social support in effectively mitigating depressive symptoms and encouraging treatment-seeking.

Table 1.

Study demographics (N = 209 first-year college students)

Demographics	*N*	**% of Sample**
Age		
18	98	46.9%
19	110	52.6%
20	1	.5%
Missing	0	0%
Gender		
Male	78	37.3%
Female	129	61.7%
Missing	2	1.0%
Sexual Orientation		
Heterosexual	198	94.7%
Bisexual	4	1.9%
Pansexual	1	.5%
Not Sure	4	1.9%
Missing	2	1.0%
Race/Ethnicity		
White	189	90.4%
Black or African American	12	5.7%
Asian	4	1.9%
American Indian or Alaska Native	1	.5%
Native Hawaiian or Other Pacific Islander	1	.5%
More than One Race	1	.5%
Missing	1	.5%
Ethnicity (Hispanic or Latino, Non-Hispanic or Latino)		
Hispanic or Latino	4	1.9%
Non-Hispanic or Latino	205	98.1%
Mother's Highest Education		
Less than a high school diploma	2	1.0%
High school diploma or equivalent	21	10.0%
Some college	40	19.1%
Bachelor's degree (BA/BS)	92	44.0%
Master's degree	39	18.7%
Professional degree (e.g. Ph.D., J.D.)	14	6.7%
Missing	1	.5%
Father's Highest Education		

Less than a high school diploma	4	1.9%
High school diploma or equivalent	26	12.4%
Some college	28	13.4%
Bachelor's degree (BA/BS)	81	38.8%
Master's degree	47	22.5%
Professional degree (e.g. Ph.D., J.D.)	18	8.6%
Missing	5	2.4 %

Student Current Housing

University dormitory	113	54.1%
Off-campus apartment	72	34.4%
Private dormitory	5	2.4%
Sorority housing	2	1.0%
At home with family	13	6.2%
Other	3	1.4%
Missing	1	.5%

High School Region

Urban	26	12.4%
Suburban	112	53.6%
Small town	57	27.3%
Rural	14	6.7%
Missing	0	0%

Membership in a Sorority/Fraternity

Belong to a sorority	68	32.5%
Belong to a fraternity	18	8.6%
Will try to join a fraternity/sorority this year	9	4.3%
Not in fraternity/sorority and don't have interest in joining one	114	54.5%
Missing	0	0%

Romantic Relationship Status

Never dated or been in a romantic relationship	43	20.6%
Have dated, not currently in a relationship	82	39.2%
Currently in a monogamous relationship	74	35.4%
Currently dating more than one person	5	2.4%
Missing	5	2.4%

Relationship Length (for the 74 participants in a monogamous relationship)

Less than 3 months	11	14.9%
3-6 months	12	16.2%
6-12 months	17	23.0%
1-2 years	25	33.8%
2-3 years	5	6.8%
3-4 years	3	4.1%
6 or more years	1	1.4%

Missing	0	0%

Note. This table shows descriptive statistics and demographics for the College Experiences Study.

Table 2.

Descriptive statistics for key study variables: Raw data.

	1	2	3	4	5
1. Parent Support	--				
2. Sibling Support	.32***	--			
3. Peer Support	.35***	.25***	--		
4. Romantic Partner Support	.28*	.00	.20^{t}	--	
5. Depressive Symptoms	-.48***	-.10	-.48***	-.26*	--
n	208	180	209	74	200
M	3.37	3.01	1.32	3.78	11.70
SD	.58	.46	.50	.53	9.56
minimum	1.18	1.63	1.32	1.00	0.00
maximum	4.00	3.88	4.00	4.00	42.00

Notes. *n* = sample size, *M* = mean, *SD* = standard deviation.

Statistical significance is denoted by ***$p < .001,$ **$p < .01$, *$p < .05$, $^{t}p < .10$
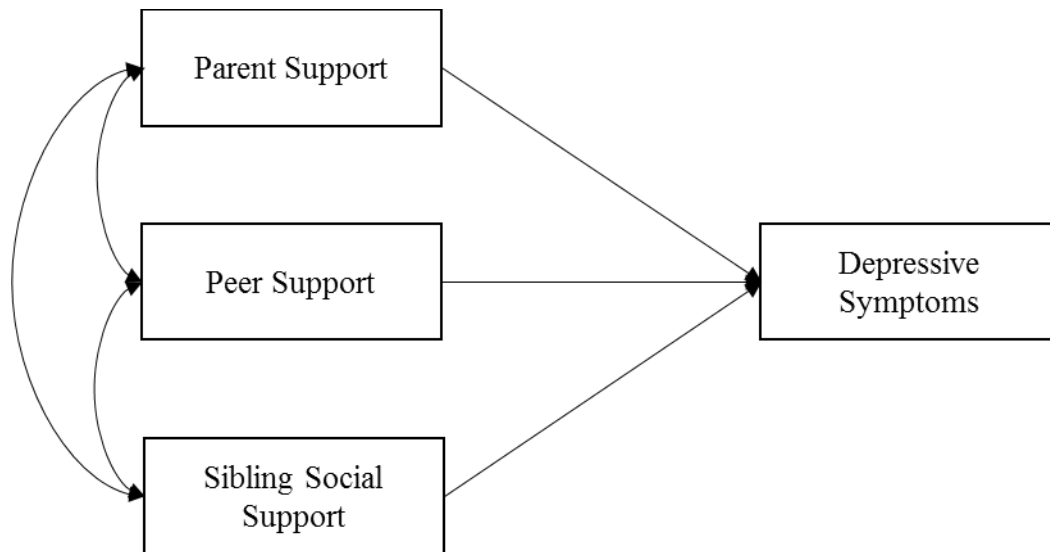
Figure 1. Conceptual model for hypothesis 1. Parent, sibling, and peer support were evaluated as predictors of depressive symptoms. It was expected that parent, sibling, and peer social support would be significantly and inversely associated with symptoms of depression independently of one another. The relative magnitude of effect of each support system was evaluated via standardized coefficients.
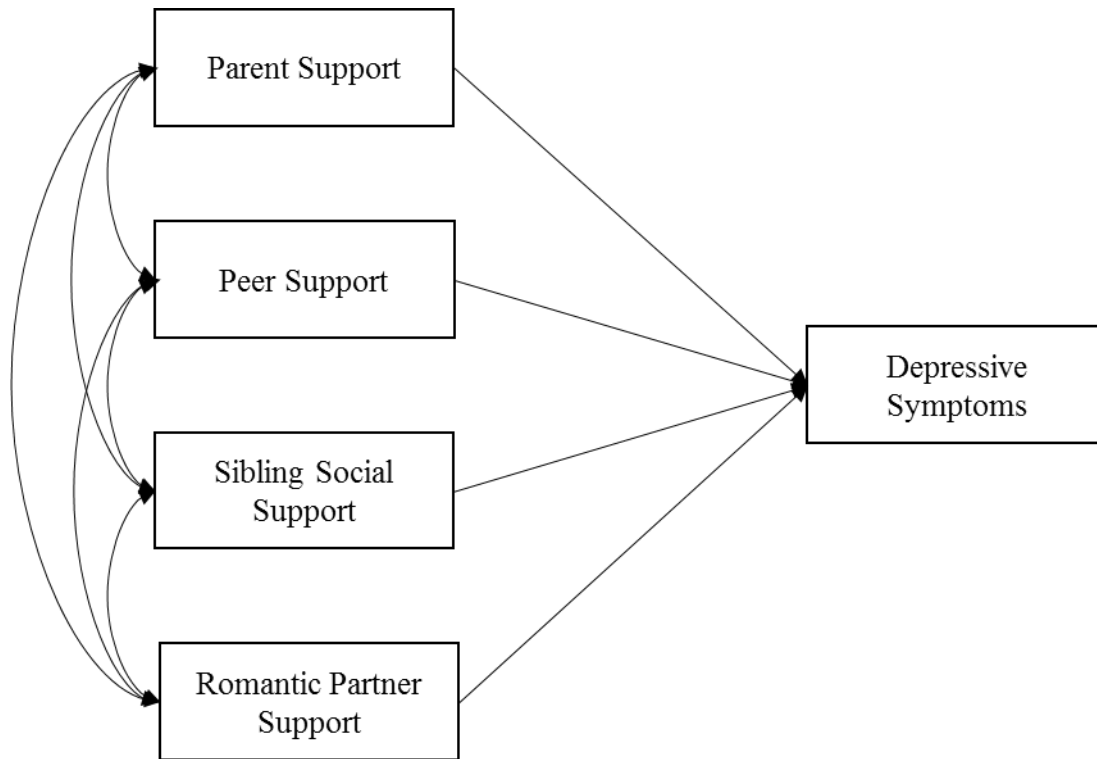
Figure 2. Conceptual model for hypothesis 2. In addition to evaluating parent, sibling, and peer support, romantic relationship quality was also evaluated as a predictor of depressive symptoms. This subsequent analysis was conducted using the sub-sample of those with at least one sibling and involved in a romantic relationship (*n* = 74, 35% of entire sample). It was expected that all four would be significantly, inversely, and independently associated with depression. The relative magnitude of effect of each support system was evaluated via standardized coefficients.
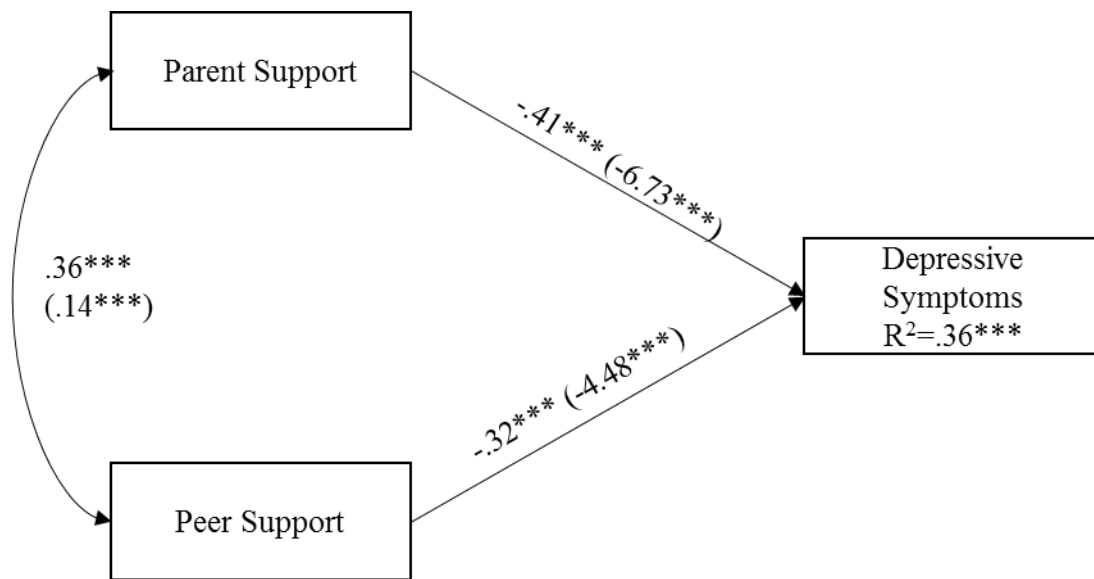
Figure 3. Parent and peer support as predictors of depressive symptoms in first-year college students (*n* = 206). Showing standardized coefficients (unstandardized coefficients). Sibling support was not included in this analysis as it was not significantly associated with Depressive Symptoms.

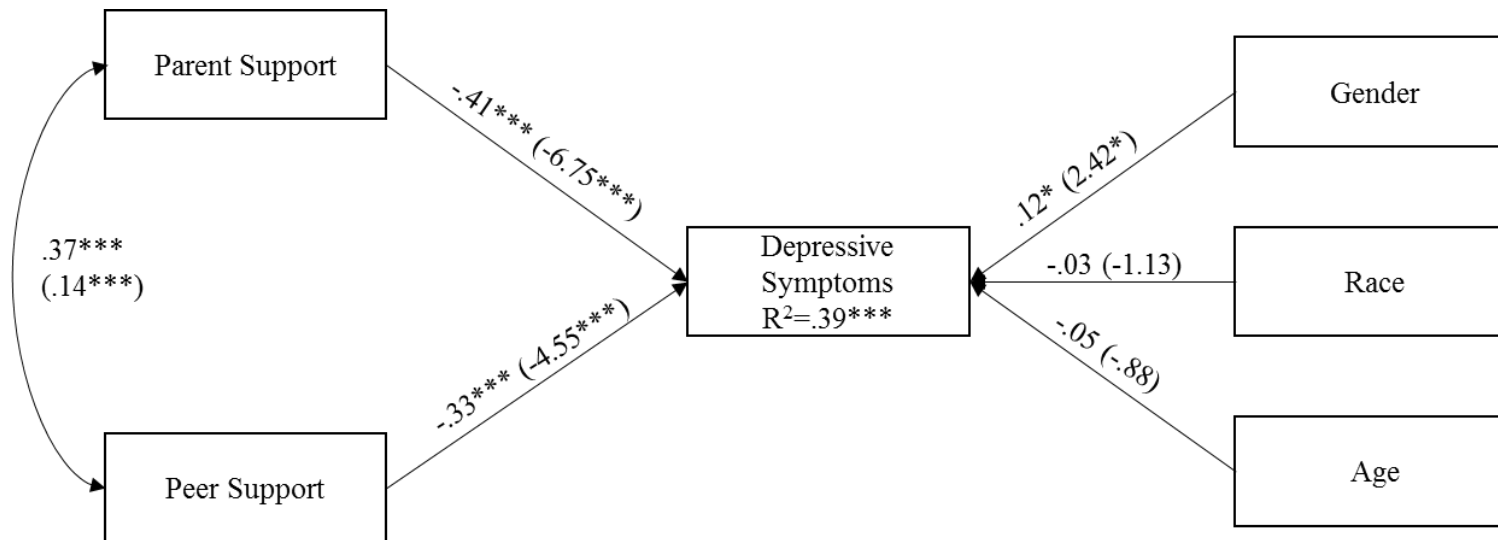Statistical significance is denoted by ***p < .001, **p < .01, *p < .05, ^{t}p < .10

Figure 4. Parent and peer support and covariates of gender, race, and age as predictors of depressive symptoms in first-year college students (*n* = 206). Showing standardized coefficients (unstandardized coefficients) for parent and peer support regressed on depressive symptoms, as well as covariates of self-reported gender (0 = male vs. 1 = female), race (coded as 1 = white vs. 0 = Black or African American, Asian, American Indian or Alaska Native, Native Hawaiian or Other Pacific Islander, or More than One Race), and age at assessment. Results from Figure 4 are not significantly impacted by the inclusion of covariates as parent and peer support are still significantly and inversely associated with depression symptoms.

Statistical significance is denoted by ***p < .001; **p < .01; *p < .05; tp < .10
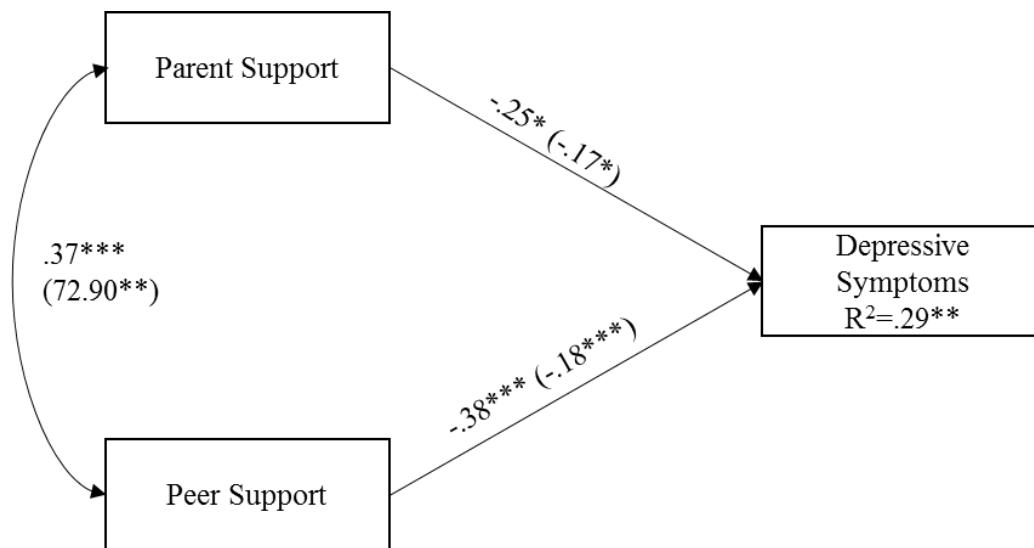
5a. Parent and peers partner support regressed on depression symptoms for males ($n = 78$).
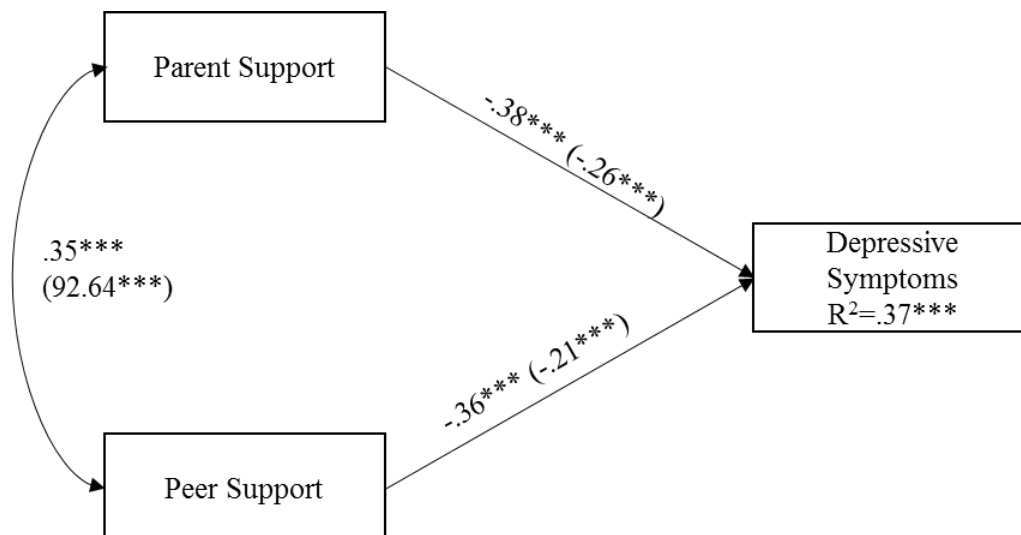
5b. Parent and peers partner support regressed on depression symptoms for females ($n = 129$).

Figure 5. Parent and peer support as predictors of depressive symptoms in first-year college students by gender. Showing standardized (unstandardized) coefficients. Results are presented for males (panel a) and females (panel b). A Chi-Square Difference Test ($\Delta\chi2$) indicated that the association between parent support and depressive symptoms was significantly greater for females than males ($\Delta\chi^2 (1) = 4.72, p = .03$). There was no significant difference in the association between peer support and depressive symptoms by gender ($\Delta\chi^2 (1) = .01, p = .92$).

Statistical significance is denoted by $^{***}p < .001, ^{**}p < .01, ^{*}p < .05, ^{t}p < .10$
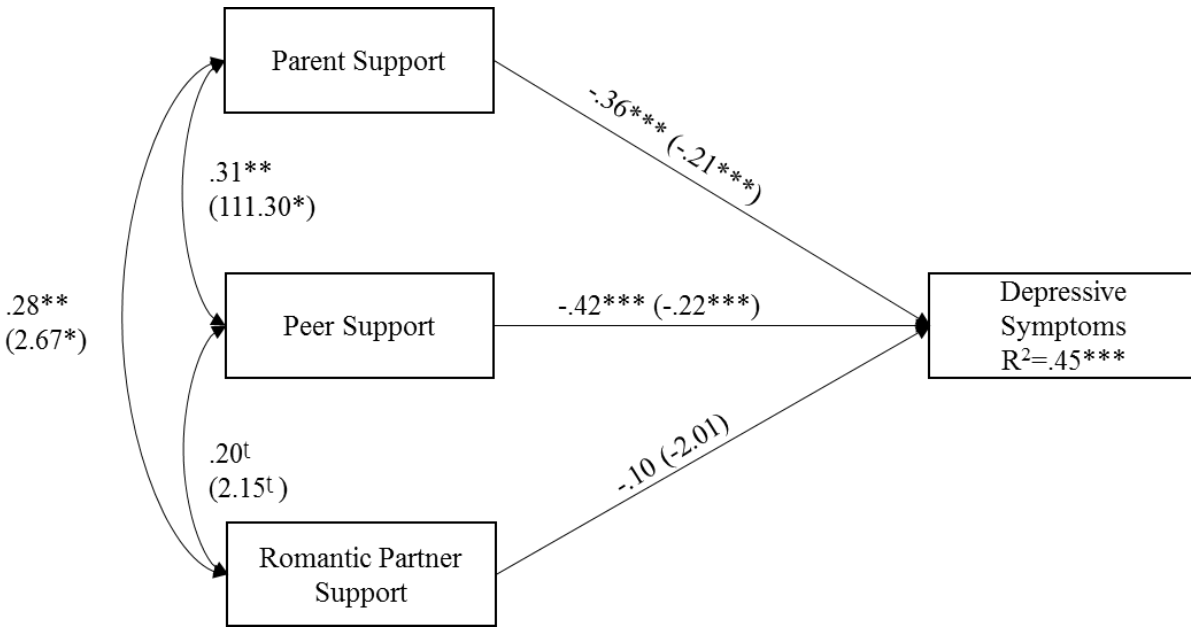
Figure 6. Parent, peer, and romantic partner support as predictors of depressive symptoms in first-year college students. Showing standardized coefficients (unstandardized coefficients in parentheses) for those involved in a romantic relationship ($n = 74$). After accounting for the correlations with parent and peer support, romantic partner support did not have a significant and independent association with depressive symptoms. Subsequent analyses showed the association between romantic partner support and depressive symptoms was not significant for males ($\beta = .24$, B = 3.44, $p = .43$) or females ($\beta = .07$, B = 1.63, $p = .57$), and constraining this path to be equivalent across gender did not result in a significant decrement of model fit ($\Delta\chi^2(1) = 1.39$, $p = .24$)

Statistical significance is denoted by [***]$p < .001$, [**]$p < .01$, [*]$p < .05$, [t]$p < .10$
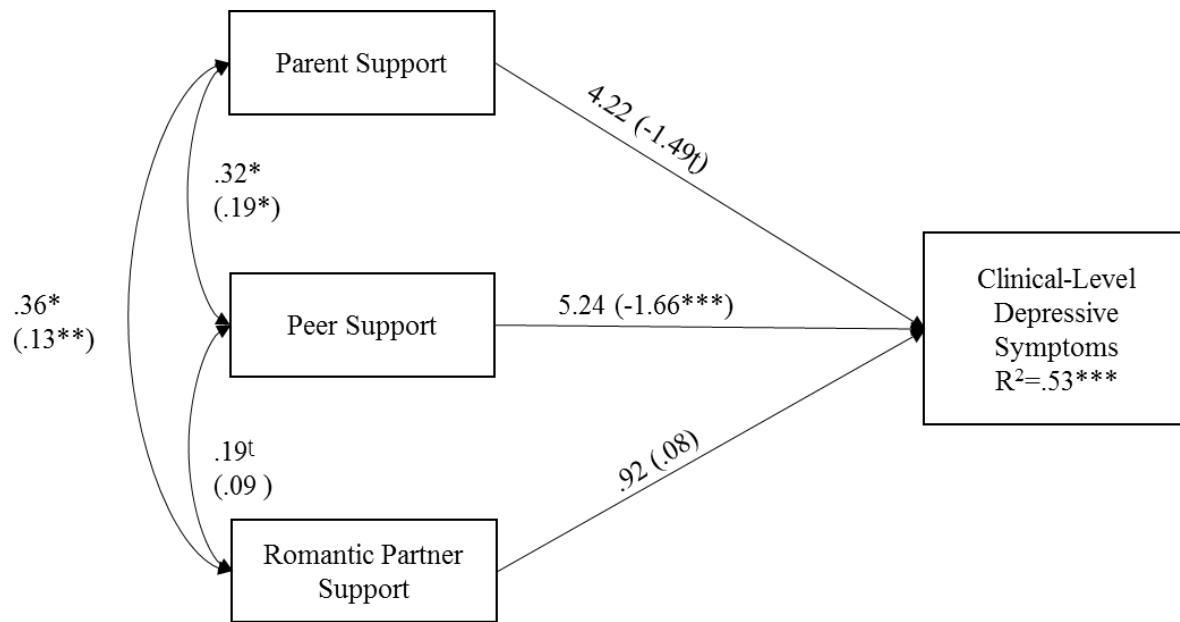
Figure 7. Logistic regression results for parent, peer, and romantic partner support and clinical-level depressive symptoms. Showing reverse odds ratios (unstandardized coefficients in parentheses) for those who reported having a romantic partner (*n* = 74). After accounting for the correlations between parent, peer, and romantic partner support, results showed a one-unit decrease in parent support was associated with a 4.22-fold increase in clinical-level depressive symptoms. A one-unit decrease in peer support was also associated with a 5.24 increase in clinical-level depressive symptoms. Following earlier results that evaluated a continuous depressive symptom count, romantic partner support did not have an effect above and beyond parent or peer social support. Subsequent analyses showed that only the romantic partner support by gender interaction term significantly predicted the clinical-level depressive symptoms cutoff, B = -7.16, *p* < .001 (peer support x gender: B = .10, *p* = .06; parent support x gender: B = -.00, *p* = .95). The significant interaction of parent support by gender is illustrated in Figure 8.

Statistical significance is denoted by ***p* < .001; ***p* < .01; *p* < .05; ᵗ*p* < .10
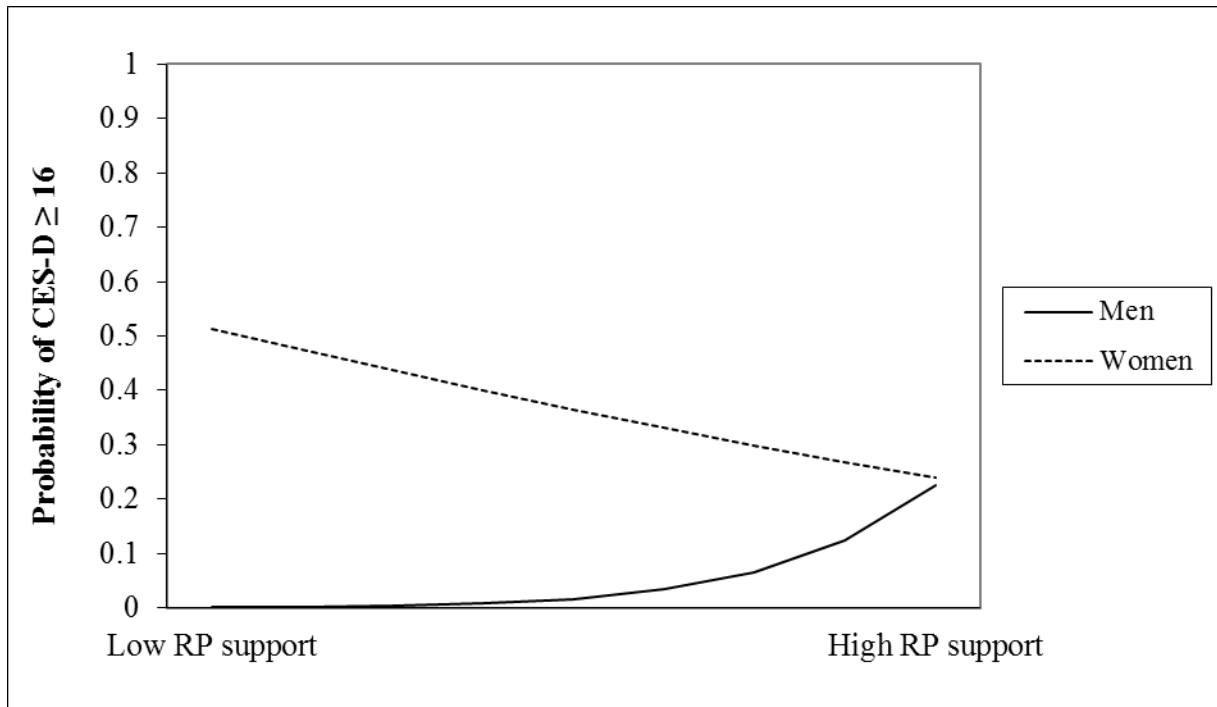
Figure 8. Romantic partner (RP) support x gender interaction predicting the clinical threshold for depressive symptoms. Results show that females had a greater probability than males of meeting the clinical threshold for depressive symptoms when reporting low levels of romantic relationship support. There was no gender difference in the likelihood of meeting the clinical threshold of depressive symptoms at high levels of romantic support by gender.

IV.   General Discussion

Depression is a rapidly growing problem internationally and is expected to be the second leading cause of global disability by 2020; around 300 million people globally are already affected by depression (WHO, 2017b). As depressive symptoms are most likely to manifest and peak in adolescence and young adulthood (APA, 2013), it is imperative to understand the development of symptoms during this time period. It is also evident that we need to better understand risk profiles for that rates of depression. This is particularly the case for at-risk groups, such as those transitioning into college (Eisenberg et al., 2011; Ketchen Lipson et al., 2015; Taylor et al., 2014). Interpersonal relationship factors have been indicated as both augmenters of depression (e.g. conflictual relationships can increase symptoms) as well as buffers (e.g. positive social support can increase seeking professional treatment). Studies from this dissertation sought to explore the impact of both problematic relationships (Study 1) and positive social support (Study 2) on depressive symptoms in both large community samples (Study 1) and smaller samples of at-risk populations (i.e., college students, Study 2).

Results from both of these studies supported interpersonal theories of depression (Joiner et al., 2006; Joiner & Coyne, 1999; Rudolph et al., 2008), as they revealed links between interpersonal relationship factors and depressive symptoms. Study 1 especially highlights that both selection and socialization processes are relevant – and that this is true across development and for both genders, contrary to expectations. Results suggest that interpersonal relationship problems may serve as both antecedent and consequence in relation to depressive symptoms across adolescence and young adulthood, supporting the notion from attachment theory and

interpersonal theories of depression that the relationships between interpersonal relationship problems and depressive symptoms are transactional (Agerup et al., 2015; Joiner et al., 2006; Joiner & Coyne, 1999; Simpson et al., 2007; Sroufe et al., 1999a). Whereas Study 1 focuses on the impact of problematic relationships, Study 2 highlights that positive aspects of parent and peer support are especially associated with lower depressive symptoms. This is in line with the interpersonal theories of depression expectation that negative social interactions may elicit further depressive symptoms and that positive social interactions may buffer against depressive symptoms (Joiner et al., 2006; Joiner & Coyne, 1999). In both cases, clear links between interpersonal relationship factors and depressive symptoms suggest that features of interpersonal relationships should be carefully considered in future research as well.

Both studies also explored gender differences. Prevalence estimates of depression are typically considerably higher for women than men (Cicchetti & Toth, 1998; Hankin et al., 1998; Kessler, 2003; NIMH 2014b; Piccinelli & Wilkinson, 2000), and in both studies, the prevalence of symptoms was higher for females than for males. However, and in line with previous research on externalizing disorders (Samek et al., 2016b), findings from Study 1 suggest that though prevalence estimates may differ, the overall risk profiles of social relationships in relation to depression are fairly similar. There were some gender differences that warrant further exploration, however, including the notion that parent-child relationship problems and support, as well as romantic partner relationship problems and support, may be more relevant for females than males (preliminary evidence from Study 1, stronger evidence from Study 2). There was also some preliminary evidence from Study 1 that and antisocial peer affiliation may be more relevant for males than females, although this difference was not significant. Effect sizes were small, suggesting that other factors may also influence these relationships, but the complex interplay

between social relationship features and other aspects of individual differences, such as personality or genetic risk, should be further explored.

Both studies present numerous strengths as well as challenges that should be considered in future work. Strengths of this dissertation include the analysis of a large, community-based sample for Study 1 ($N = 1,517$), with longitudinal data collection from ages 11 to 29. This provided adequate power to test a full developmental cascade model and to test for gender differences thoroughly. Strengths of Study 2 include taking a more in-depth approach to examining first-year college students, as they are a particularly at-risk population for depression ($N = 209$). Furthermore, this study also assessed not only parent and peer support, but also less frequently studied aspects of support including that of siblings and romantic partners.

Following both studies, an important future direction is continuing to understand how features of romantic relationships may impact or be impacted by depressive symptoms. In particular, a future direction from Study 1 is to further evaluate socialization and selection involving romantic partners in adolescence, rather than just young adulthood, because it has been demonstrated that romantic partners have been shown to influence depressive symptoms in adolescence (Connolly & McIsaac, 2011; La Greca et al., 2008; La Greca & Harrison, 2005). In Study 2, it was highlighted that other aspects of romantic relationships may be important (rather than just social support) or using more comprehensive measures of romantic partner support. Additionally, it would be informative to explore the dyadic influence of relationships and depressive symptoms (i.e., involving reports of both target and romantic partner depressive symptoms and relationship support or relationship problems). Prior research has shown romantic relationship partners impact one another and that this may also influence depressive symptoms for each partner (Kim & Capaldi, 2004; Rhule-Louie & McMahon, 2007). Thus, the interplay

between these interpersonal relationship qualities across partners and their impact on individual depressive symptoms should be further explored.

Finally, both studies support a complex interplay between interpersonal relationships and depressive symptoms and have implications for treatment. It has been demonstrated that the remission rate for depression has been shown to be better for individuals who are treated sooner after the onset of depression than those who do not receive treatment soon after onset (Bukh et al., 2013; Ghio et al., 2014). In order to effectively treat depression, it is imperative that treatment is available and that those who need it are encouraged to seek treatment. Healthy relationships provide a context for rapidly identifying problems and encouraging treatment-seeking (Bukh et al., 2013; Ketchen Lipson et al., 2015; Perry & Pescosolido, 2015), so understanding the development of depressive symptoms within these relationships is important. It has been demonstrated that interventions involving social support effectively aid in reducing symptoms of depression (Pfeiffer et al., 2011; Solantaus et al., 2010), and that education on mental health risk factors and mental health services is also particularly important and helpful (Novotney, 2014).

These studies also suggest that in effectively intervening, understanding which interpersonal relationships are most developmentally salient is key. For example, Study 2 in particular highlights the importance of peer and especially parent support for first-year college students, so targeting effective communication between parents and students may be especially important for prevention and intervention related to depressive symptoms. Study 1 also demonstrates that effective interventions should focus on both socialization and selection processes within interpersonal relationships throughout adolescence and young adulthood. That is, clinicians should help clients to work on alter negative thoughts and behaviors and increasing

positive coping skills to improve their close relationships with others, as well as work with parents, peers, or romantic partners in an intervention setting to address relationship-level problems like communication or trust. Together, findings suggest that these relationships warrant further attention, especially for at-risk populations and at specific developmental transitions, to effectively strengthen intervention efforts.

References

Agerup, T., Lydersen, S., Wallander, J., & Sund, A. M. (2015). Associations between parental attachment and course of depression between adolescence and young adulthood. *Child Psychiatry & Human Development, 46*, 632-642. doi:10.1007/s10578-014-0506-y

American Psychological Association. (2013). *Diagnostic and statistical manual of mental disorders: DSM-5*. Washington, DC: American Psychiatric Association.

Aquilino, W. S. (2006). Family relationships and support systems in emerging adulthood. In J. J. Arnett & J. L. Tanner (Eds.), *Emerging adults in America: Coming of age in the 21st century* (pp. 193-217). Washington, DC: American Psychological Association.

Arigo, D., & Cavanaugh, J. (2016). Social perceptions predict change in women's mental health and health-related quality of life during the first semester of college. *Journal of Social & Clinical Psychology, 35*, 643-663. doi:10.1521/jscp.2016.35.8.643

Auerbach, R. P., Bigda-Peyton, J. S., Eberhart, N. K., Webb, C. A., & Ho, M.-H. R. (2011). Conceptualizing the prospective relationship between social support, stress, and depressive symptoms among adolescents. *Journal of Abnormal Child Psychology, 39*, 475-487. doi:10.1007/s10802-010-9479-x

Avenevoli, S., Swendsen, J., He, J.-P., Burstein, M., & Merikangas, K. R. (2015). Major depression in the National Comorbidity Survey–Adolescent Supplement: Prevalence, correlates, and treatment. *Journal of the American Academy of Child & Adolescent Psychiatry, 54*, 37-44. doi:10.1016/j.jaac.2014.10.010

86

Bauer, R. L., Chesin, M. S., & Jeglic, E. L. (2014). Depression, delinquency, and suicidal

behaviors among college students. *Crisis, 35*, 36-41. doi:10.1027/0227-5910/a000226

Beiter, R., Nash, R., McCrady, M., Rhoades, D., Linscomb, M., Clarahan, M., & Sammut, S.

(2015). The prevalence and correlates of depression, anxiety, and stress in a sample of

college students. *Journal of Affective Disorders, 173*, 90-96.

doi:10.1016/j.jad.2014.10.054

Belanger, E. (2014). Auburn University ranked in bottom 5 percent of nation for admitting low-

income students. *AL.com*. Retrieved from

http://www.al.com/news/index.ssf/2014/06/auburn_university_ranked_in_bo.html

Blais, R. K., & Renshaw, K. D. (2014). Perceptions of partners' attributions for depression in

relation to perceptions of support and conflict in romantic relationships. *Journal of

Marital and Family Therapy, 40*, 498-508. doi:10.1111/jmft.12055

Braithwaite, S. R., Delevi, R., & Fincham, F. D. (2010). Romantic relationships and the physical

and mental health of college students. *Personal Relationships, 17*, 1-12.

doi:10.1111/j.1475-6811.2010.01248.x

Branje, S. J., Hale, W. W., Frijns, T., & Meeus, W. H. (2010). Longitudinal associations between

perceived parent-child relationship quality and depressive symptoms in adolescence.

Journal of Abnormal Child Psychology, 38, 751-763. doi:10.1007/s10802-010-9401-6

Buchanan, J. L. (2012). Prevention of depression in the college student population: A review of

the literature. *Archives of Psychiatric Nursing, 26*, 21-42.

doi:10.1016/j.apnu.2011.03.003

Buist, K. L., Deković, M., & Prinzie, P. (2013). Sibling relationship quality and psychopathology

    of children and adolescents: A meta-analysis. *Clinical Psychology Review, 33*, 97-106.

    doi:10.1016/j.apnu.2011.03.003

Bukh, J. D., Bock, C., Vinberg, M., & Kessing, L. V. (2013). The effect of prolonged duration of

    untreated depression on antidepressant treatment outcome. *Journal of Affective*

    Disorders, 145, 42-48. doi:10.1016/j.jad.2012.07.008

Buote, V. M., Pancer, S. M., Pratt, M. W., Adams, G., Birnie-Lefcovitch, S., Polivy, J., &

    Wintre, M. G. (2007). The importance of friends friendship and adjustment among 1st-

    year university students. *Journal of Adolescent Research, 22*, 665-689.

    doi:10.1177/0743558407306344

Centers for Disease Control. (2015). Depression. Retrieved from

    http://www.cdc.gov/mentalhealth/basics/mental-illness/depression.htm

Cicchetti, D., & Rogosch, F. A. (2002). A developmental psychopathology perspective on

    adolescence. *Journal of Consulting and Clinical Psychology, 70*, 6-20. doi:10.1037/0022-

    006X.70.1.6

Cicchetti, D., & Toth, S. L. (1998). The development of depression in children and adolescents.

    American Psychologist, 53, 221-241. doi:10.1037/0003-066X.53.2.221

Cicirelli, V. G. (1989). Feelings of attachment to siblings and well-being in later life. *Psychology*

    and Aging, 4, 211-216. doi:10.1037/0882-7974.4.2.211

Cicirelli, V. G. (1994). The longest bond: The sibling life cycle. In L. L'Abate (Ed.), *Handbook*

    of developmental family psychology and psychopathology (pp. 44-59). Oxford, England:

    John Wiley & Sons.

Cicirelli, V. G. (2013). *Sibling relationships across the life span*. New York, NY: Springer

    Science & Business Media.

Cohen, J. R., Spiro, C. N., Young, J. F., Gibb, B. E., Hankin, B. L., & Abela, J. R. (2015).

    Interpersonal risk profiles for youth depression: A person-centered, multi-wave,

    longitudinal study. *Journal of Abnormal Child Psychology, 43*, 1415-1426.

    doi:10.1007/s10802-015-0023-x

Cohen, S. (2004). Social relationships and health. *American Psychologist, 59*, 676-684.

    doi:10.1037/0003-066X.59.8.676

Cohen, S., & Hoberman, H. M. (1983). Positive events and social supports as buffers of life

    change stress. *Journal of Applied Social Psychology, 13*, 99-125. doi:10.1111/j.1559-

    1816.1983.tb02325.x

Cohen, S., Mermelstein, R., Kamarck, T., & Hoberman, H. M. (1985). Measuring the functional

    components of social support. In I. G. Sarason & B. R. Sarason (Eds.), *Social support:*

    Theory, research and applications (pp. 73-94). The Hague, Holland: Springer.

Collins, A., & van Dulmen, M. (2006). Friendships and romance in emerging adulthood:

    Assessing distinctiveness in close relationships. In J. J. Arnett & J. L. Tanner (Eds.),

    Emerging adults in America: Coming of age in the 21st century (pp. 219-234).

    Washington, DC: American Psychological Association.

Conger, K. J., Bryant, C. M., & Brennom, J. M. (2004). The changing nature of adolescent

    sibling relationships: A theoretical framework for evaluating the role of relationship

    quality. In R. D. Conger, F. O. Lorenz, & K. A. S. Wickrama (Eds.), *Continuity and*

    change in family relations: Theory, methods, and empirical findings (pp. 319-344).

    Mahwah, NJ: Lawrence Erlbaum Associates.

Conger, K. J., & Little, W. M. (2010). Sibling relationships during the transition to adulthood. *Child Development Perspectives, 4*, 87-94. doi:10.1111/j.1750-8606.2010.00123.x

Conners, C. K. (1969). A teacher rating scale for use in drug studies with children. *American Journal of Psychiatry, 126*, 884-888. doi:10.1176/ajp.126.6.884

Connolly, J., & McIsaac, C. (2011). Romantic relationships in adolescence. In M. K. Underwood & L. H. Rosen (Eds.), *Social development: Relationships in infancy, childhood, and adolescence* (pp. 180-206). New York, NY: The Guilford Press.

Coplan, R. J., Rose-Krasnor, L., Weeks, M., Kingsbury, A., Kingsbury, M., & Bullock, A. (2013). Alone is a crowd: Social motivations, social withdrawal, and socioemotional functioning in later childhood. *Developmental Psychology, 49*, 861-875. doi:10.1037/a0028861

Costello, J. E., Erkanli, A., & Angold, A. (2006). Is there an epidemic of child or adolescent depression? *Journal of Child Psychology and Psychiatry, 47*, 1263-1271. doi:10.1111/j.1469-7610.2006.01682.x

Crane, N. A., Langenecker, S. A., & Mermelstein, R. J. (2015). Gender differences in the associations among marijuana use, cigarette use, and symptoms of depression during adolescence and young adulthood. *Addictive Behaviors, 49*, 33-39. doi:10.1016/j.addbeh.2015.05.014

Daley, S. E., & Hammen, C. (2002). Depressive symptoms and close relationships during the transition to adulthood: Perspectives from dysphoric women, their best friends, and their romantic partners. *Journal of Consulting and Clinical Psychology, 70*, 129-141. doi:10.1037/0022-006X.70.1.129

De Goede, I. H., Branje, S. J., Delsing, M. J., & Meeus, W. H. (2009). Linkages over time between adolescents' relationships with parents and friends. *Journal of Youth and Adolescence, 38*, 1304-1315. doi:10.1007/s10964-009-9403-2

DiMatteo, M. R., Lepper, H. S., & Croghan, T. W. (2000). Depression is a risk factor for noncompliance with medical treatment: Meta-analysis of the effects of anxiety and depression on patient adherence. *Archives of Internal Medicine, 160*, 2101-2107. doi:10.1001/archinte.160.14.2101

Eagly, A. H. (2013). *Sex differences in social behavior: A social-role interpretation*. Hove, UK: Psychology Press.

Eberhart, N. K., & Hammen, C. L. (2006). Interpersonal predictors of onset of depression during the transition to adulthood. *Personal Relationships, 13*, 195-206. doi:10.1111/j.1475-6811.2006.00113.x

Egbert, N., Miraldi, L. B., & Murniadi, K. (2014). Friends don't let friends suffer from depression: How threat, efficacy, knowledge, and empathy relate to college students' intentions to intervene on behalf of a depressed friend. *Journal of Health Communication, 19*, 460-477. doi:10.1080/10810730.2013.821554

Eisenberg, D., Golberstein, E., & Gollust, S. E. (2007). Help-seeking and access to mental health care in a university student population. *Medical Care, 45*, 594-601. doi:10.1097/MLR.0b013e31803bb4c1

Eisenberg, D., Hunt, J., Speer, N., & Zivin, K. (2011). Mental health service utilization among college students in the United States. *The Journal of Nervous and Mental Disease, 199*, 301-308. doi:10.1097/NMD.0b013e3182175123

Elkins, I. J., McGue, M., & Iacono, W. G. (1997). Genetic and environmental influences on

parent–son relationships: Evidence for increasing genetic influence during adolescence.

Developmental Psychology, 33, 351. doi:10.1037/0012-1649.33.2.351

Feinberg, M. E., Solmeyer, A. R., & McHale, S. M. (2012). The third rail of family systems:

Sibling relationships, mental and behavioral health, and preventive intervention in

childhood and adolescence. *Clinical Child and Family Psychology Review, 15*, 43-57.

doi:10.1007/s10567-011-0104-5

Ferguson, C. J., San Miguel, C., & Hartley, R. D. (2009). A multivariate analysis of youth

violence and aggression: The influence of family, peers, depression, and media violence.

The Journal of Pediatrics, 155, 904-908. doi:10.1016/j.jpeds.2009.06.021

Fergusson, D. M., Wanner, B., Vitaro, F., Horwood, L. J., & Swain-Campbell, N. (2003).

Deviant peer affiliations and depression: Confounding or causation? *Journal of Abnormal

Child Psychology, 31*, 605-618. doi:10.1023/A:1026258106540

Fielder, R. L., Carey, K. B., & Carey, M. P. (2013). Are hookups replacing romantic

relationships? A longitudinal study of first-year female college students. *Journal of

Adolescent Health, 52*, 657-659. doi:10.1016/j.jadohealth.2012.09.001

Fincham, F. D., Beach, S. R., Harold, G. T., & Osborne, L. N. (1997). Marital satisfaction and

depression: Different causal relationships for men and women? *Psychological Science, 8*,

351-356.

Fletcher, J. M. (2008). Adolescent depression: Diagnosis, treatment, and educational attainment.

Health Economics, 17, 1215-1235. doi:10.1002/hec.1319

Flynn, H. K., Felmlee, D. H., & Conger, R. D. (2014). The social context of adolescent

friendships: Parents, peers, and romantic partners. *Youth & Society*, 1-27.

doi:10.1177/0044118X14559900

Furr, S. R., Westefeld, J. S., McConnell, G. N., & Jenkins, J. M. (2001). Suicide and depression

among college students: A decade later. *Professional Psychology: Research and

Practice, 32*, 97-100. doi:10.1037/0735-7028.32.1.97

Garber, J. (2000). Development and depression. In A. Sameroff, M. Lewis, & S. M. Miller

(Eds.), *Handbook of developmental psychopathology* (2nd ed., pp. 467-490). New York:

Kluwer Academic/Plenum Publishers.

Garber, J., & Rao, U. (2014). Depression in children and adolescents. In M. Lewis & K. D.

Rudolph (Eds.), *Handbook of developmental psychopathology* (3rd ed., pp. 489-520).

New York: Springer.

Ghio, L., Gotelli, S., Marcenaro, M., Amore, M., & Natta, W. (2014). Duration of untreated

illness and outcomes in unipolar depression: A systematic review and meta-analysis.

Journal of Affective Disorders, 152, 45-51. doi:10.1016/j.jad.2013.10.002

Giletta, M., Scholte, R. H., Burk, W. J., Engels, R. C., Larsen, J. K., Prinstein, M. J., & Ciairano,

S. (2011). Similarity in depressive symptoms in adolescents' friendship dyads: Selection

or socialization? *Developmental Psychology, 47*, 1804-1814. doi:10.1037/a0023872

Graber, J. A., & Sontag, L. M. (2004). Internalizing problems during adolescence. In R. M.

Lerner & L. Steinberg (Eds.), *Handbook of adolescent psychology* (2nd ed.). Hoboken,

NJ: John Wiley & Sons, Inc.

Grant, K. E., McMahon, S. D., Carter, J. S., Carleton, R. A., Adam, E. K., & Chen, E. (2014).

The influence of stressors on the development of psychopathology. In M. Lewis & K. D.

Rudolph (Eds.), *Handbook of developmental psychopathology* (3rd ed., pp. 205-223).

New York: Springer.

Greenberg, P. E., Fournier, A.-A., Sisitsky, T., Pike, C. T., & Kessler, R. C. (2015). The

economic burden of adults with major depressive disorder in the United States (2005 and

2010). *Journal of Clinical Psychiatry, 76*, 155-162. doi:10.4088/JCP.14m09298

Greenberg, P. E., Kessler, R. C., Birnbaum, H. G., Leong, S. A., Lowe, S. W., Berglund, P. A.,

& Corey-Lisle, P. K. (2003). The economic burden of depression in the United States:

How did it change between 1990 and 2000? *Journal of Clinical Psychiatry, 64*, 1465-

1475.

Gullone, E., & Robinson, K. (2005). The inventory of parent and peer attachment—Revised

(IPPA-R) for children: A psychometric investigation. *Clinical Psychology &*

Psychotherapy, 12, 67-79. doi:10.1002/cpp.433

Hankin, B. L., Abramson, L. Y., Moffitt, T. E., Silva, P. A., McGee, R., & Angell, K. E. (1998).

Development of depression from preadolescence to young adulthood: Emerging gender

differences in a 10-year longitudinal study. *Journal of Abnormal Psychology, 107*, 128-

140. doi:10.1037/0021-843X.107.1.128

Hankin, B. L., Young, J. F., Abela, J. R., Smolen, A., Jenness, J. L., Gulley, L. D., . . .

Oppenheimer, C. W. (2015). Depression from childhood into late adolescence: Influence

of gender, development, genetic susceptibility, and peer stress. *Journal of Abnormal*

Psychology, 124, 803-816. doi:10.1037/abn0000089

Heaven, P. C., Newbury, K., & Mak, A. (2004). The impact of adolescent and parental

characteristics on adolescent levels of delinquency and depression. *Personality and*

Individual Differences, 36, 173-185. doi:10.1016/S0191-8869(03)00077-1

Hunt, J., & Eisenberg, D. (2010). Mental health problems and help-seeking behavior among

    college students. *Journal of Adolescent Health, 46*, 3-10.

    doi:10.1016/j.jadohealth.2009.08.008

Iacono, W. G., Carlson, S. R., Taylor, J., Elkins, I. J., & McGue, M. (1999). Behavioral

    disinhibition and the development of substance-use disorders: Findings from the

    Minnesota Twin Family Study. *Development and Psychopathology, 11*, 869-900.

Ibarra-Rovillard, M. S., & Kuiper, N. A. (2011). Social support and social negativity findings in

    depression: Perceived responsiveness to basic psychological needs. *Clinical Psychology*

    Review, 31, 342-352. doi:10.1016/j.cpr.2011.01.005

Ibrahim, A. K., Kelly, S. J., Adams, C. E., & Glazebrook, C. (2013). A systematic review of

    studies of depression prevalence in university students. *Journal of Psychiatric Research,*

    47, 391-400. doi:10.1016/j.jpsychires.2012.11.015

Jenkins, S. R., Belanger, A., Connally, M. L., Boals, A., & Durón, K. M. (2013). First-generation

    undergraduate students' social support, depression, and life satisfaction. *Journal of*

    College Counseling, 16, 129-142. doi:10.1002/j.2161-1882.2013.00032.x

Joiner, T. E., Brown, J. S., & Kistner, J. (Eds.). (2006). *The interpersonal, cognitive, and social*

    nature of depression. Mahwah, New Jersey: Routledge.

Joiner, T. E., & Coyne, J. C. (Eds.). (1999). *The interactional nature of depression: Advances in*

    interpersonal approaches. Washington, DC: American Psychological Association.

Kandel, D. B. (1978). Homophily, selection, and socialization in adolescent friendships.

    American Journal of Sociology, 84, 427-436. doi:http://www.jstor.org/stable/2777857

Kenny, D. A. (2015). Measuring Model Fit. Retrieved from http://davidakenny.net/cm/fit.htm

Kessler, R. C. (2003). Epidemiology of women and depression. *Journal of Affective Disorders, 74*, 5-13. doi:10.1016/S0165-0327(02)00426-3

Kessler, R. C., Avenevoli, S., Costello, E. J., Georgiades, K., Green, J. G., Gruber, M. J., . . . Petukhova, M. (2012). Prevalence, persistence, and sociodemographic correlates of DSM-IV disorders in the National Comorbidity Survey Replication Adolescent Supplement. *Archives of General Psychiatry, 69*, 372-380. doi:10.1001/archgenpsychiatry.2011.160

Kessler, R. C., Berglund, P., Demler, O., Jin, R., Koretz, D., Merikangas, K. R., . . . Wang, P. S. (2003). The epidemiology of major depressive disorder: Results from the National Comorbidity Survey Replication (NCS-R). *JAMA, 289*, 3095-3105. doi:10.1001/jama.289.23.3095

Kessler, R. C., Berglund, P., Demler, O., Jin, R., Merikangas, K. R., & Walters, E. E. (2005). Lifetime prevalence and age-of-onset distributions of DSM-IV disorders in the National Comorbidity Survey Replication. *Archives of General Psychiatry, 62*, 593-602. doi:10.1001/archpsyc.62.6.593

Kessler, R. C., Foster, C. L., Saunders, W. B., & Stang, P. E. (1995). Social consequences of psychiatric disorders, I: Educational attainment. *American Journal of Psychiatry, 152*, 1026-1032.

Ketchen Lipson, S., Gaddis, S. M., Heinze, J., Beck, K., & Eisenberg, D. (2015). Variations in student mental health and treatment utilization across US colleges and universities. *Journal of American College Health, 63*, 388-396. doi:10.1080/07448481.2015.1040411

Kim, H. K., & Capaldi, D. M. (2004). The association of antisocial behavior and depressive symptoms between partners and risk for aggression in romantic relationships. *Journal of Family Psychology, 18*, 82-96. doi:10.1037/0893-3200.18.1.82

Kline, R. B. (2005). *Principles and practice of structural equation modeling* (2nd ed.). New York: Guilford Press.

Kline, R. B. (2015). *Principles and practice of structural equation modeling* (4th ed.). New York: Guilford Press.

Klostermann, S., Connell, A., & Stormshak, E. A. (2016). Gender differences in the developmental links between conduct problems and depression across early adolescence. *Journal of Research on Adolescence, 26*, 76-89. doi:10.1111/jora.12170

Konrath, S. H., Chopik, W. J., Hsing, C. K., & O'Brien, E. (2014). Changes in adult attachment styles in American college students over time: A meta-analysis. *Personality and Social Psychology Review, 18*, 326-348. doi:10.1177/1088868314530516

Kretschmer, T., Sentse, M., Meeus, W., Verhulst, F. C., Veenstra, R., & Oldehinkel, A. J. (2015). Configurations of adolescents' peer experiences: Associations with parent–child relationship quality and parental problem behavior. *Journal of Research on Adolescence, 26*, 474-491. doi:10.1111/jora.12206

La Greca, A. M., Davila, J., & Siegel, R. (2008). Peer relations, friendships, and romantic relationships: Implications for the development and maintenance of depression in adolescents. *Adolescent Emotional Development and the Emergence of Depressive Disorders*, 318-336.

La Greca, A. M., & Harrison, H. M. (2005). Adolescent peer relations, friendships, and romantic

    relationships: Do they predict social anxiety and depression? *Journal of Clinical Child*

    and Adolescent Psychology, 34, 49-61. doi:10.1207/s15374424jccp3401_5

Lee, C., Dickson, D. A., Conley, C. S., & Holmbeck, G. N. (2014). A closer look at self-esteem,

    perceived social support, and coping strategy: A prospective study of depressive

    symptomatology across the transition to college. *Journal of Social & Clinical*

    Psychology, 33, 560-585. doi:10.1521/jscp.2014.33.6.560

Lefkowitz, E. S. (2005). "Things have gotten better": Developmental changes among emerging

    adults after the transition to university. *Journal of Adolescent Research, 20*, 40-63. doi:

    10.1177/0743558404271236

Lewinsohn, P. M., Seeley, J. R., Roberts, R. E., & Allen, N. B. (1997). Center for Epidemiologic

    Studies Depression Scale (CES-D) as a screening instrument for depression among

    community-residing older adults. *Psychology and Aging, 12*, 277-287. doi:10.1037/0882-

    7974.12.2.277

Lewis, G., Collishaw, S., Thapar, A., & Harold, G. T. (2014). Parent–child hostility and child

    and adolescent depression symptoms: The direction of effects, role of genetic factors and

    gender. *European Child & Adolescent Psychiatry, 23*, 317-327. doi:10.1007/s10964-009-

    9403-2

Lin, N., Dean, A., & Ensel, W. M. (1986). *Social support, life events, and depression*. London:

    Academic Press.

Linder, J. R., Crick, N. R., & Collins, W. A. (2002). Relational aggression and victimization in

    young adults' romantic relationships: Associations with perceptions of parent, peer, and

romantic relationship quality. *Social Development, 11*, 69-86. doi:10.1111/1467-9507.00187

Mahmoud, J. S. R., Staten, R. T., Hall, L. A., & Lennie, T. A. (2012). The relationship among young adult college students' depression, anxiety, stress, demographics, life satisfaction, and coping styles. *Issues in Mental Health Nursing, 33*, 149-156. doi:10.3109/01612840.2011.632708

Marcus, S. C., & Olfson, M. (2010). National trends in the treatment for depression from 1998 to 2007. *Archives of General Psychiatry, 67*, 1265-1273. doi:10.1001/archgenpsychiatry.2010.151

Marmorstein, N. R., & Iacono, W. G. (2004). Major depression and conduct disorder in youth: Associations with parental psychopathology and parent–child conflict. *Journal of Child Psychology and Psychiatry, 45*, 377-386. doi:10.1111/j.1469-7610.2004.00228.x

Masten, A. S., & Cicchetti, D. (2010). Developmental cascades. *Development and Psychopathology, 22*, 491-495. doi:10.1017/S0954579410000222

Masten, A. S., Roisman, G. I., Long, J. D., Burt, K. B., Obradović, J., Riley, J. R., . . . Tellegen, A. (2005). Developmental cascades: Linking academic achievement and externalizing and internalizing symptoms over 20 years. *Developmental Psychology, 41*, 733-746. doi:10.1037/0012-1649.41.5.733

Mattanah, J. F., Ayers, J. F., Brand, B. L., Brooks, L. J., Quimby, J. L., & McNary, S. W. (2010). A social support intervention to ease the college transition: Exploring main effects and moderators. *Journal of College Student Development, 51*, 93-108. doi:10.1353/csd.0.0116

McHale, S. M., Updegraff, K. A., & Whiteman, S. D. (2012). Sibling relationships and

influences in childhood and adolescence. *Journal of Marriage and Family, 74*, 913-930.

doi:10.1111/j.1741-3737.2012.01011.x

McLeod, B. D., Weisz, J. R., & Wood, J. J. (2007). Examining the association between parenting

and childhood depression: A meta-analysis. *Clinical Psychology Review, 27*, 986-1003.

doi:10.1016/j.cpr.2007.03.001

Milevsky, A. (2005). Compensatory patterns of sibling support in emerging adulthood:

Variations in loneliness, self-esteem, depression and life satisfaction. *Journal of Social

and Personal Relationships, 22*, 743-755. doi:10.1177/0265407505056447

Milevsky, A. (2011). *Sibling relationships in childhood and adolescence: Predictors and

outcomes*. New York: Columbia University Press.

Monahan, K. C., Oesterle, S., Rhew, I., & Hawkins, J. D. (2014). The relation between risk and

protective factors for problem behaviors and depressive symptoms, antisocial behavior,

and alcohol use in adolescence. *Journal of Community Psychology, 42*, 621-638.

doi:10.1002/jcop.21642

Monahan, K. C., Steinberg, L., & Cauffman, E. (2009). Affiliation with antisocial peers,

susceptibility to peer influence, and antisocial behavior during the transition to adulthood.

Developmental Psychology, 45, 1520-1530. doi:10.1037/a0017417

Muthén, L. K., & Muthén, B. O. (1998-2016). Mplus User's Guide. Seventh Edition. Los

Angeles, CA: Muthén & Muthén.

National Center for Education Statistics. (2016). Undergraduate Enrollment Retrieved from

https://nces.ed.gov/programs/coe/indicator_cha.asp

National Institute of Mental Health. (2014a). Major Depression Among Adolescents. Retrieved

from https://www.nimh.nih.gov/health/statistics/prevalence/major-depression-among-

adolescents.shtml

National Institute of Mental Health. (2014b). Major Depression Among Adults. Retrieved from

https://www.nimh.nih.gov/health/statistics/prevalence/major-depression-among-

adults.shtml

Novotney, A. (2014). Students under pressure. *Monitor on Psychology, 45*, 37-41.

Office of Institutional Research. (2016). Total enrollment by gender and race/ethnicity: Selected

fall terms, 1976-2016. Retrieved from

https://web.auburn.edu/ir/factbook/enrollment/enrtrends/eebg.aspx

Oswald, D. L., & Clark, E. M. (2003). Best friends forever?: High school best friendships and

the transition to college. *Personal Relationships, 10*, 187-196. doi:10.1111/1475-

6811.00045

Overbeek, G., Stattin, H., Vermulst, A., Ha, T., & Engels, R. C. (2007). Parent-child

relationships, partner relationships, and emotional adjustment: A birth-to-maturity

prospective study. *Developmental Psychology, 43*, 429-437. doi:10.1037/0012-

1649.43.2.429

Parker, J. G., Rubin, K. H., Erath, S. A., Wojslawowicz, J. C., & Buskirk, A. A. (2006). Peer

relationships, child development, and adjustment: A developmental psychopathology

perspective. In D. Cicchetti & D. J. Cohen (Eds.), *Developmental psychopathology:*

Theory and method (2nd ed., Vol. 1). Hoboken, NJ: John Wiley & Sons.

Patton, L. D., Renn, K. A., Guido, F. M., Quaye, S. J., & Forney, D. S. (2016). *Student development in college: Theory, research, and practice* (3rd ed.). San Francisco: CA: Jossey-Bass (John Wiley & Sons).

Peirce, R. S., Frone, M. R., Russell, M., Cooper, M. L., & Mudar, P. (2000). A longitudinal model of social contact, social support, depression, and alcohol use. *Health Psychology, 19*, 28-38. doi:10.1037/0278-6133.19.1.28

Perry, B. L., & Pescosolido, B. A. (2015). Social network activation: The role of health discussion partners in recovery from mental illness. *Social Science & Medicine, 125*, 116-128. doi:10.1016/j.socscimed.2013.12.033

Pfeiffer, P. N., Heisler, M., Piette, J. D., Rogers, M. A., & Valenstein, M. (2011). Efficacy of peer support interventions for depression: a meta-analysis. *General Hospital Psychiatry, 33*, 29-36. doi:10.1016/j.genhosppsych.2010.10.002

Piccinelli, M., & Wilkinson, G. (2000). Gender differences in depression. *The British Journal of Psychiatry, 177*, 486-492. doi:10.1192/bjp.177.6.486

Pike, A., & Eley, T. C. (2009). Links between parenting and extra-familial relationships: Nature or nurture? *Journal of Adolescence, 32*, 519-533. doi:10.1016/j.adolescence.2008.07.002

Prinstein, M. J. (2007). Moderators of peer contagion: A longitudinal examination of depression socialization between adolescents and their best friends. *Journal of Clinical Child and Adolescent Psychology, 36*, 159-170. doi:10.1080/15374410701274934

Radloff, L. S. (1977). The CES-D scale: A self-report depression scale for research in the general population. *Applied Psychological Measurement, 1*, 385-401.

Rao, U., Hammen, C., & Daley, S. E. (1999). Continuity of depression during the transition to adulthood: A 5-year longitudinal study of young women. *Journal of the American*

Academy of Child & Adolescent Psychiatry, 38, 908-915. doi:10.1097/00004583-199907000-00022

Ratelle, C. F., Simard, K., & Guay, F. (2013). University students' subjective well-being: The role of autonomy support from parents, friends, and the romantic partner. *Journal of Happiness Studies, 14*, 893-910. doi:10.1007/s10902-012-9360-4

Raudino, A., Fergusson, D. M., & Horwood, L. J. (2013). The quality of parent/child relationships in adolescence is associated with poor adult psychosocial adjustment. *Journal of Adolescence, 36*, 331-340. doi:10.1016/j.adolescence.2012.12.002

Rauer, A. J., Pettit, G. S., Lansford, J. E., Bates, J. E., & Dodge, K. A. (2013). Romantic relationship patterns in young adulthood and their developmental antecedents. *Developmental Psychology, 49*, 2159-2171. doi:10.1037/a0031845

Rauer, A. J., Pettit, G. S., Samek, D. R., Lansford, J. E., Dodge, K. A., & Bates, J. E. (2016). Romantic relationships and alcohol use: A long-term, developmental perspective. *Development and Psychopathology, 28*, 773-789. doi:10.1017/S0954579416000304

Reich, W. (2000). Diagnostic interview for children and adolescents (DICA). *Journal of the American Academy of Child & Adolescent Psychiatry, 39*, 59-66. doi:10.1097/00004583-200001000-00017

Rhule-Louie, D. M., & McMahon, R. J. (2007). Problem behavior and romantic relationships: Assortative mating, behavior contagion, and desistance. *Clinical Child and Family Psychology Review, 10*, 53-100. doi:10.1007/s10567-006-0016-y

Robinson, N. S., & Garber, J. (1995). Social support and psychopathology across the life span. In D. Cicchetti & D. J. Cohen (Eds.), *Developmental Psychopathology: Risk, Disorder, and Adaptation.* (2nd ed., Vol. 3). Oxford, England: John Wiley & Sons.

Rose, A. J., & Rudolph, K. D. (2006). A review of sex differences in peer relationship processes:

    Potential trade-offs for the emotional and behavioral development of girls and boys.

    Psychological Bulletin, 132, 98-131. doi:10.1037/0033-2909.132.1.98

Rosenthal, B., & Wilson, W. C. (2008). Mental health services: Use and disparity among diverse

    college students. *Journal of American College Health, 57*, 61-68.

    doi:10.3200/JACH.57.1.61-68

Rubin, K. H., Bukowski, W. M., & Laursen, B. (2011). *Handbook of peer interactions,*

    relationships, and groups. New York, NY: Guilford Press.

Rudolph, K. D., Flynn, M., & Abaied, J. L. (2008). A developmental perspective on

    interpersonal theories of youth depression. In J. R. Z. Abela & B. L. Hankin (Eds.),

    Handbook of depression in children and adolescents (pp. 79-102). New York, NY:

    Guilford Press.

Rueger, S. Y., Malecki, C. K., Pyun, Y., Aycock, C., & Coyle, S. (2016). A meta-analytic review

    of the association between perceived social support and depression in childhood and

    adolescence. *Psychological Bulletin, 142*, 1017-1067. doi:10.1037/bul0000058

Rueter, M. A., Scaramella, L., Wallace, L. E., & Conger, R. D. (1999). First onset of depressive

    or anxiety disorders predicted by the longitudinal course of internalizing symptoms and

    parent-adolescent disagreements. *Archives of General Psychiatry, 56*, 726-732.

    doi:10.1001/archpsyc.56.8.726

Rutter, M. (1967). A children's behaviour questionnaire for completion by teachers: Preliminary

    findings. *Journal of Child Psychology and Psychiatry, 8*, 1-11. doi:10.1111/j.1469-

    7610.1967.tb02175.x

Samek, D. R., Goodman, R. J., Erath, S. A., McGue, M., & Iacono, W. G. (2016a). Antisocial

    peer affiliation and externalizing disorders in the transition from adolescence to young

    adulthood: Selection versus socialization effects. *Developmental Psychology, 52*, 813-

    823. doi:10.1037/dev0000109

Samek, D. R., Keyes, M. A., Iacono, W. G., & McGue, M. (2013). Peer deviance, alcohol

    expectancies, and adolescent alcohol use: Explaining shared and nonshared

    environmental effects using an adoptive sibling pair design. *Behavior Genetics, 43*, 286-

    296. doi:10.1007/s10519-013-9595-9

Samek, D. R., McGue, M., Keyes, M., & Iacono, W. G. (2015). Sibling facilitation mediates the

    association between older and younger sibling alcohol use in late adolescence. *Journal of

    Research on Adolescence, 25*, 638-651. doi:10.1111/jora.12154

Samek, D. R., Wilson, S., McGue, M., & Iacono, W. G. (2016b). Genetic and environmental

    influences on parent–child conflict and child depression through late adolescence.

    Journal of Clinical Child & Adolescent Psychology, 1-16.

    doi:10.1080/15374416.2016.1141357

Scarr, S., & McCartney, K. (1983). How people make their own environments: A theory of

    genotype→ environment effects. *Child Development, 52*, 424-435.

    doi:http://www.jstor.org/stable/1129703

Schulenberg, J. E., & Zarrett, N. R. (2006). Mental health during emerging adulthood:

    Continuity and discontinuity in courses, causes, and functions. In J. J. Arnett & J. L.

    Tanner (Eds.), *Emerging adults in America: Coming of age in the 21st century* (pp. 135-

    172). Washington, DC: American Psychological Association.

Schwartz-Mette, R. A., & Rose, A. J. (2012). Co-rumination mediates contagion of internalizing symptoms within youths' friendships. *Developmental Psychology, 48*, 1355-1365. doi:10.1037/a0027484

Sentse, M., & Laird, R. D. (2010). Parent–child relationships and dyadic friendship experiences as predictors of behavior problems in early adolescence. *Journal of Clinical Child & Adolescent Psychology, 39*, 873-884. doi:10.1080/15374416.2010.517160

Shah, R., & Waller, G. (2000). Parental style and vulnerability to depression: The role of core beliefs. *The Journal of Nervous and Mental Disease, 188*, 19-25.

Shahar, G., Joiner, T. E., Zuroff, D. C., & Blatt, S. J. (2004). Personality, interpersonal behavior, and depression: Co-existence of stress-specific moderating and mediating effects. *Personality and Individual Differences, 36*, 1583-1596. doi:10.1016/j.paid.2003.06.006

Shaver, P., Furman, W., & Buhrmester, D. (1985). Transition to college: Network changes, social skills, and loneliness. In S. Duck & D. Perlman (Eds.), *Understanding personal relationships: An interdisciplinary approach* (pp. 193-219). Thousand Oaks, CA: Sage Publications.

Shulman, S., & Connolly, J. (2013). The challenge of romantic relationships in emerging adulthood: Reconceptualization of the field. *Emerging Adulthood, 1*, 27-39. doi:10.1177/2167696812467330

Simpson, J. A., Collins, W. A., Tran, S., & Haydon, K. C. (2007). Attachment and the experience and expression of emotions in romantic relationships: A developmental perspective. *Journal of Personality and Social Psychology, 92*, 355. doi:10.1037/0022-3514.92.2.355

Solantaus, T., Paavonen, E. J., Toikka, S., & Punamäki, R.-L. (2010). Preventive interventions in families with parental depression: Children's psychosocial symptoms and prosocial behaviour. *European Child & Adolescent Psychiatry, 19*, 883-892. doi:10.1007/s00787-010-0135-3

South, S. C., Krueger, R. F., Elkins, I. J., Iacono, W. G., & McGue, M. (2016). Romantic relationship satisfaction moderates the etiology of adult personality. *Behavior Genetics, 46*, 124-142. doi:10.1007/s10519-015-9767-x

Spanier, G. B. (1976). Measuring dyadic adjustment: New scales for assessing the quality of marriage and similar dyads. *Journal of Marriage and the Family, 38*, 15-28. doi:10.2307/350547

Spitzer, R. L., Williams, J. B., Gibbon, M., & First, M. B. (1992). The structured clinical interview for DSM-III-R (SCID): I: History, rationale, and description. *Archives of General Psychiatry, 49*, 624-629. doi:10.1001/archpsyc.1992.01820080032005

Sroufe, L. A., Carlson, E. A., Levy, A. K., & Egeland, B. (1999a). Implications of attachment theory for developmental psychopathology. *Development and Psychopathology, 11*, 1-13.

Sroufe, L. A., Egeland, B., & Carlson, E. A. (1999b). One social world: The integrated development of parent-child and peer relationships. In A. Collins & B. Laursen (Eds.), *Relationships as developmental contexts: The Minnesota symposia on child psychology* (Vol. 30, pp. 241-261). Mahwah, New Jersey: Lawrence Erlbaum Associates, Inc.

Stice, E., Ragan, J., & Randall, P. (2004). Prospective relations between social support and depression: Differential direction of effects for parent and peer support? *Journal of Abnormal Psychology, 113*, 155-159. doi:10.1037/0021-843X.113.1.155

Tanner, J. L. (2006). Recentering during emerging adulthood: A critical turning point in life span human development. In J. J. Arnett & J. L. Tanner (Eds.), *Emerging adults in America: Coming of age in the 21st century* (pp. 21-55). Washington, DC: American Psychological Association.

Taylor, Z. E., Doane, L. D., & Eisenberg, N. (2014). Transitioning from high school to college: Relations of social support, ego-resiliency, and maladjustment during emerging adulthood. *Emerging Adulthood, 2*, 105-115. doi:10.1177/2167696813506885

Toro, P. A., Urberg, K. A., & Heinze, H. J. (2004). Antisocial behavior and affiliation with deviant peers. *Journal of Clinical Child & Adolescent Psychology, 33*, 336-346. doi:10.1207/s15374424jccp3302_15

Umberson, D., Chen, M. D., House, J. S., Hopkins, K., & Slaten, E. (1996). The effect of social relationships on psychological well-being: Are men and women really so different? *American Sociological Review, 61*, 837-857. doi:http://www.jstor.org/stable/2096456

Umberson, D., Crosnoe, R., & Reczek, C. (2010). Social relationships and health behavior across life course. *Annual Review of Sociology, 36*, 139-157. doi:10.1146/annurev-soc-070308-120011

Van Lier, P. A., Vitaro, F., Wanner, B., Vuijk, P., & Crijnen, A. A. (2005). Gender differences in developmental links among antisocial behavior, friends' antisocial behavior, and peer rejection in childhood: Results from two cultures. *Child Development, 76*, 841-855. doi:10.1111/j.1467-8624.2005.00881.x

Vanderhorst, R. K., & McLaren, S. (2005). Social relationships as predictors of depression and suicidal ideation in older adults. *Aging & Mental Health, 9*, 517-525. doi:10.1080/13607860500193062

Waldinger, R. J., Vaillant, G. E., & Orav, E. J. (2007). Childhood sibling relationships as a predictor of major depression in adulthood: A 30-year prospective study. *American Journal of Psychiatry, 164*, 949-954.

Waterman, E. A., Wesche, R., Leavitt, C. E., Jones, D. E., & Lefkowitz, E. S. (2017). Long-distance dating relationships, relationship dissolution, and college adjustment. *Emerging Adulthood, XX*, 1-12. doi:10.1177/2167696817704118

Welner, Z., Reich, W., Herjanic, B., Jung, K. G., & Amado, H. (1987). Reliability, validity, and parent-child agreement studies of the Diagnostic Interview for Children and Adolescents (DICA). *Journal of the American Academy of Child & Adolescent Psychiatry, 26*, 649-653. doi:10.1097/00004583-198709000-00007

World Health Organization. (2017a). Depression. Retrieved from http://www.who.int/mediacentre/factsheets/fs369/en/

World Health Organization. (2017b). Gender and women's mental health. Retrieved from http://www.who.int/mental_health/prevention/genderwomen/en/

Wulsin, L. R., Vaillant, G. E., & Wells, V. E. (1999). A systematic review of the mortality of depression. *Psychosomatic Medicine, 61*, 6-17.

Zivin, K., Eisenberg, D., Gollust, S. E., & Golberstein, E. (2009). Persistence of mental health problems and needs in a college student population. *Journal of Affective Disorders, 117*, 180-185. doi:10.1016/j.jad.2009.01.001