Parent and Peer Social-Emotional Support as Predictors of Depressive Symptoms in the Transition into and out of College

by

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Abstract

Depression is common in the college student population. Parent and peer socio-emotional support have long been shown to be associated with greater well-being and less depressive symptoms, including a smoother transition to college. Less is known about how parent and peer support work together to predict subsequent depressive symptoms in both the transition into and out of college. I hypothesized both parent and peer support would predict less depressive symptoms and that peer support would be increasingly predictive of depressive symptoms compared to parent support over time. I also hypothesized that greater peer support would offset risk for low parent support (i.e., moderate the association). The longitudinal College Experiences Study ($N = 209$; 60% female, 90% white, 85% retention at Wave 2, 80% retention at Wave 3) was used to test hypotheses. Results from the random-intercept cross-lagged panel model showed that parent and peer support in the first year of college was significantly correlated with depressive symptoms that year. No cross-effects or longitudinal associations were observed between parent and peer support in relation to subsequent depressive symptoms in either developmental transition (Wave 1 to Wave 2 or Wave 2 to Wave 3). However, residual correlations at Wave 3 showed that only peer support and not parent support was significantly associated with less depressive symptoms in the transition out of college, suggesting peer support may gain in importance as students' transition out. There was no support for the moderation hypotheses. Given the strong stability of depressive symptoms over time, and the fact that this stability was largely attributed to stable, trait-like influences, these findings highlight the importance of early identification of depression in the college student population along with empirically validated intervention and prevention programs.

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Chapter 1: Introduction

Depression is a pertinent issue for American college students. Depression is a common, but serious mood disorder that impacts how one feels, thinks, and handles daily activities like sleeping, eating and working (National Institute of Mental Health [NIMH], 2018). Symptoms of depression are manifested as feelings of sadness or unhappiness, loss of interest in daily activities, sleep changes, feelings of helplessness and hopelessness, loss of energy, appetite and/or weight changes, unexplained aches and pains, irritability or restlessness, concentration problems and even self-loathing and feelings of suicide (NIMH, 2018).

In 2018, the American College Health Association's National College Health Assessment noted that 41.9% of students felt so depressed that it was difficult to function within the last 12 months. A 2018 study of ten-year trends of mental health service utilization showed that treatment increased from 19% in 2007 to 34% by 2017, and the rate of students with lifetime diagnoses of depression grew from 22% to 36% (Lipson et al., 2018). Many other studies have noted that the prevalence of depression is increasing in the college student population as well (Ibrahim et al., 2013; Liu et al., 2019; Michael et al., 2006). Depression is associated with many negative outcomes including: academic impairment and failure (Heiligenstein & Guenther, 1996), relationship dysfunction (Kerr & Capaldi, 2011), and long-term emotional and physical health problems (Scott et al., 2007), as well as increased suicide risk (Silverman & Meyer, 1997). This indicates that depression is a serious problem, especially during college.

The current study expands on prior research by evaluating the interplay between parent and peer socio-emotional support as predictors of depressive symptoms in the transition into and out of college. Although prior research has demonstrated protective links between parent and peer socio-emotional support (Duncan et al., 2019; Friedlander et al., 2007; Hickman et al.,

2000; Lowe & Dotterer, 2018; Moore Ii & Shell, 2017; Smith & Renk, 2007; Swenson et al., 2008), less research has evaluated this longitudinally in the transition into as well as out of college, as well as whether one type of support is meaningful than the other. I hypothesized that both types of support would predict a lower likelihood of depressive symptoms, but that peer support would have a larger effect size in and the transition out of college. Further, I hypothesized there would be a significant interaction between these types of support, such that peer socio-emotional support would operate in a protective-stabilizing manner (Luthar et al., 2000), such that greater peer support would offset the risk for subsequent depressive symptoms under conditions of less parent socio-emotional support – particularly concerning the developmental transition out of college. Such findings would illustrate the importance of developmental context when identifying key risk or protective factors of depressive symptoms in the population of college students.

Chapter 2: Literature Review

There is a strong body of research showing that both inadequate social support, including parent and peer socio-emotional support, are related to higher levels of depression in adolescence and young adulthood (Costello et al., 2008; Li et al., 2014; Needham, 2008). For example, one study showed inadequacies in parent but not peer support was predictive of greater depressive symptomology and the onset of major depression in early adolescence (Stice et al., 2004b). Similarly, another study found parent but not peer support was predictive of depressive symptoms in 9th grade (Newman et al., 2007). On the other hand, for those in their first year of college, Friedlander and colleagues (2007) showed that perceived peer rather than family support was most relevant to overall adjustment. This suggests peer support may become increasingly relevant to offsetting risk for depression as students transition through college.

Further, the nature of the associations between parent support, peer support, and depressive symptoms are likely associated and bidirectional in effect. This follows Joiner et al. (2006)'s interpersonal theory of depression, which proposes that close relationships both influence and are influenced by depressive symptomology. Illustrating this, Needham (2008) showed support for reciprocal associations between inadequate social support's during adolescence association with later depressive symptomology during emerging adulthood and vice versa. Stice, et al. (2004b) also note that depressive symptomology as well as major depression predicted subsequent deficits in peer support during adolescence.

Although the aforementioned research sufficiently links depression, parent, and peer support, much less work has evaluated the interplay between parent and peer support as predictors of depressive symptoms in the transition and out of college. These are critical turning points in the transition between adolescence and young adulthood. Schulenberg and Maggs,

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(2002) utilize a developmental-contextual perspective to evaluate how changes associated with transitions into college can have a strong impact on changes in alcohol use behavior, due to increased freedom and selection into environments that promote such behavior. This is also applicable to understanding what promotes or deters depressive symptoms not only in the transition into college, but as well as out of college; at both points, social roles and settings change remarkably. Loneliness and depression are common in the first years of college (Mounts et al., 2006; Nicpon et al., 2006; Wei et al., 2005). Further, the transition out of college represents a time of great change in career trajectory and couple and family formation. Analyzing for changes in the predictive power of parent and peer support, and their interaction, in these important developmental turning points is an important gap to address in the literature.

A Closer look at the Literature on Parenting

Parent support has long been shown to be associated with greater well-being and less depressive symptoms (Institute of Medicine, 2015) including a smoother transition to college (Friedlander et al., 2007). One of the most commonly used parenting style classification systems is Baumrind (1971) who proposed three main parenting styles including: permissive, authoritarian and authoritative. According to his classification, permissive parents use high warmth, but low demand punishment, or control; authoritarian parents provide little warmth, but high demand, punishments, and control; and finally, authoritative parents provide high warmth, in addition to high demand, but their disciplinary measures are used with flexibility, discussion and reason (Baumrind, 1971). Research has linked the in authoritative parenting style to better high school student adjustment, more confidence about abilities', and competent in their areas of achievement (Steinberg et al., 1995).

Research has consistently linked parent support to college student adjustment as well (Darlow et al., 2017; Friedlander et al., 2007; Lowe & Dotterer, 2018). Another study examined how changes in family cohesion are related to depressive symptoms during college, they found that depressive symptoms significantly increased during the first semester of college and that reported increases in family cohesion were associated with declines in depressive symptoms for girls (Moreira & Telzer, 2015). Another relevant study used cross-sectional data of 101 first year college students, Hickman and colleagues (2000), they showed support for a positive and significant relationship between authoritative parenting and academic adjustment in the first year of college. Additionally, these relevant studies found that first year undergraduates with high perceived parent support reported less anxiety and depression and higher well-being and happiness (Holahan et al., 1995). Healthy parent support may also play an important role in decreased rates of loneliness, particularly when college students are shy (Mounts et al., 2006). Supporting this, higher parent support is associated with increased quality of friendship (Mounts et al., 2006). Altogether, these studies suggest that parent support for college students is likely paramount in predicting academic success, psychological adjustment and health, as well as friendship quality in the college student population.

A Closer look at the Literature on Peers

In addition to the aspects of parenting style and support that have been linked to depressive symptoms, aspects of peer relationships are relevant as well (Friedlander et al., 2007; Swenson et al., 2008). For example, one study (Swenson et al., 2008) showed that a close, good quality relationship with an "old" high school friend is beneficial to successful adjustment to college in the first months. However, later into the first semester in college, Swenson and colleagues showed gaining a close, good quality friendship with a "new" college friend is more

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beneficial to the continuing success of college adjustment. Furthermore, lower quality of friendship as well as higher levels of loneliness were associated with increased depression and anxiety (Mounts et al., 2006). These results indicate that not only are college students continuing preceding friendships, and making friendships in college important, but that the quality of friendship made is important in reducing the risk of depression and other mental health issues.

Recent research has demonstrated that having many friends on social media that college students do not have face-to-face contact with is associated with a greater likelihood of depressive symptoms (Shensa et al., 2018). On the other hand, the more friends college students had on social media that were also close in terms of face-to-face relationships, the lower likelihood of depressive symptoms. Further, another recent study demonstrated that greater depressive symptoms were associated with greater subsequent social media use for adolescent girls (Heffer et al., 2019). However, greater social media use was not associated with greater subsequent depressive symptoms for males or females in college or earlier adolescence.

There is less research that has evaluated for both parent and peer support as well as the interplay between parent and peer support, as predictors of depression in adolescence and the transition to young adulthood. Li et al. (2014) compared the predictive power of parent vs. peer support in relation to depressive symptoms in a cross-sectional study of college students. Results showed both types of support were significant predictors of depression and they were of equal magnitude. As mentioned earlier, other work has shown that peer support was more predictive of overall adjustment for first year college students (Friedlander et al., 2007). Together, this works suggests developmental context may be relevant to understanding these associations and that further work is needed to evaluate the interplay of parent and peer support not only in the transition into college, but the transition out.

There is some research that has shown that parent support moderates the association between peer support and depressive symptoms in adolescence. Young et al. (2005) showed that peer support was associated with less depressive symptoms in the context of high parent support, but in the context of low parent support, peer support was associated with greater depressive symptoms (Young et al., 2005). However, this was analyzed in a sample of 11-16-year-olds who were followed up at ages 13 to 18. In a longitudinal sample of college students (over four semesters), Li et al. (2014) showed that the association between parent support and college student mental health (a composite of self-esteem and depressive symptoms) was partially mediated by peer support, support an internal working model and attachment hypothesis. However, no research to date has evaluated the interaction between parent and peer support in relation to depressive symptoms in the transition into and out of college.

The interplay demonstrated for younger adolescents is likely different than what we might find in the population of adolescents and young adults transitioning into and out of college for several reasons. For example, research has shown that during the transition from adolescence to emerging adulthood individuals are in a time of identity development that involves individuation from parents in a step toward independence (Jiang et al., 2017; Koepke & Denissen, 2012; McLean & Pratt, 2006). Further, additional research has shown that the function of friendships continue to evolve throughout the lifespan from early childhood through late adulthood (Wrzus et al., 2016). Two other studies evaluated friendships during adolescence, they both concluded that friends begin to replace parents in their roles of companions and confidants as well as serve as a working model for future romantic relationships (Fraley & Davis, 1997; Hartup & Stevens, 1997). Further, Fraley and Davis (1997) showed that these roles of attachment strengthened as the duration of the peer relationship continued. This research indicates a shift in

the desire of attachment toward a parent starting during adolescence and progressing through emerging adulthood. According to this research, peer relationships serve as a transitional model where individuals develop from children who require the attachment of parents into adolescents who are shifting in their needs from their parents into independent adults. That said, parent and peer relationships and their impacts will differ based on developmental period and research specifically evaluating college students is needed in order to assess the interplay of parent and peer socio-emotional support during the transition into and out of college.

I expect that peer support will not only be more relevant to depression in the transition out of college compared to the transition in, but further, that peer support will be more likely to offset risk associated with less parent support in the transition out compared to the transition in. That is, I expect peer support will act as a protective-stabilizing factor (Luthar et al., 2000) such that when peer support is high, it confers "stability in competence" (i.e., less depression) despite the increased risk associated with low parent support (p. 547, Luthar et al., 2000). This follows research that supports an increased salience of peer relationship factors relative to parent-child relationships regarding the change in attachment in the transition to early adulthood (Fraley & Davis, 1997) and the continuing evolution of peer relationships and their function in early adulthood (Wrzus et al., 2016).

Gender Differences

It is important to note gender differences that have been indicated in prevalence rates of depression. By adolescence and adulthood depression varies significantly by gender where women experience depression at almost twice the rate of men (Boughton & Street, 2007; Nolen-Hoeksema & Girgus, 1994). A recent study on undergraduate students concluded that that females experience higher rates of depression and that gender has a direct and significant effect

on severity of depression (Ryba & Hopko, 2012). Further, there is some evidence that gender may moderate the associations between family support factors and depression. Moreira & Telzer (2015) examined family cohesion and depression during college, they found that females who reported increases in family cohesion reported declines in depressive symptoms during the transition to college. This was not found for males. I will explore this by evaluating for gender differences in the prospective associations between parent support, peer support, and depressive symptoms in the transition into and out of college, with the expectation that the associations between parent support and depression may be more relevant for females than males.

Study Summary

This study aims to evaluate the interplay between parent and peer socio-emotional support in relation to depressive symptoms in the transition into and out of college. First, I hypothesized that greater parent and peer support would each be associated with less depressive symptoms in both the transition into and out of college. Second, I expect that greater peer support would offset risk associated with lower parent support, such that the association between peer support and depressive symptoms would be stronger under conditions of low vs. high parent support. I also explored whether this was true at all developmental transitions, and whether results varied by gender.

Chapter 3: Materials and Methods

Participants

Participants were recruited through random selection at a moderately sized University in the Southeast United States. In Fall of 2015, 700 first year college students were randomly selected and invited to participate in our comprehensive online survey. Seventy-three percent (N = 511) of those students were successfully located and of those, 209 agreed to participate. Written consent was obtained before participants received survey instructions. At the second assessment (2016-2017 academic year), 85% (N = 178) of the original participants completed an additional survey. The overwhelming majority (96% of all wave 2 cases) of participants were students at Wave 2. The average time between evaluation was approximately 11 months (range = 7.26-16.48 months). At the third assessment (2019-2020 academic year), 80% (N = 167) of the original participants completed another survey. The average time lag between the first and last assessment was about 4 years (M = 3.6 years, SD = .24, range 3.10 to 4.35 years). Nearly half number of participants reporting being currently in college (n = 90, 43% and just over half (n = 109, 52%) reported recently graduating.

Of the 209 eligible participants at Wave 1, 61.7% were female, 90.4% were white, 6% were black, and 4% self-identified as another ethnic minority status. Mean age was 19.1 years (SD = 0.40) at Wave 1, 19.9 years (SD = 0.39) at Wave 2, and 22.7 years (SD = .38) at Wave 3. Students were more likely to be white (90% vs. 80%) and female (60% vs. 50%) than the general population of first year students at this university (Office of Institutional Research, 2016). There were no significant differences in participation at Waves 2 or 3 based on race/ethnicity (Wave 2: χ^2 (1) = 1.53, p = .22; Wave 3: Wave 2: χ^2 (1) = 1.21, p = .27), gender (Wave 2: χ^2 (1) = 2.74, p = .10; Wave 3: χ^2 (1) = 1.08, p = .30) or Wave 1 depressive symptom count (Wave 2: t(198)

=.22, *p* = .83; Wave 3: *t*(198) = .65, *p* = .52), suggesting little impact of attrition relevant to this study's analyses.

Measures

Depressive Symptoms. The Center for Epidemiologic Studies Depression Scale (CES-D) was used to measure depressive symptoms (Radloff, 1977). The scale is a brief self-report questionnaire and consists of 20-items (α = .90 at Wave 1, .90 at Wave 2, .90 at Wave 3). Items in the measure assess depressive symptoms by asking participants to respond to statements like "I was bothered by things that don't usually bother me" or "I felt depressed" on a four-point scale rarely or none of the time to most or all of the time based on how often they experienced these symptoms in a normal week. The scores were summed and ranged from 0 to 60. A score of 16 or above indicates reaching a clinical threshold for depression and is highly concordant with a risk of Major Depressive Disorder (Lewinsohn, Seeley, Roberts, & Allen, 1997). A significant percent of participants in this data set reached the clinical threshold for depression at each Wave; 27% at Wave 1, 31% at Wave 2, and 29.1% at Wave 3, which is on par with recent statistics for this population (e.g., see American College Health Association's National College Health Assessment, 2018; Lipson et al., 2018)

Parent Social and Peer Socio-Emotional Support. Parent social and peer socio-emotional support was measured using an adapted form of the Belonging and Appraisal scales from the College version of the Interpersonal Support Evaluation List (ISEL) (Cohen, 2014; Cohen & Hoberman, 1983; Cohen, et al., 1985) and the Inventory of Parent and Peer Attachment—Revised (Gullone & Robinson, 2005). The items were responded to on a scale of 1 to 4 where 1 = *definitely true* and 4 = *definitely false*. Parent support was measured by summing22 items and indicates the degree to which the participant can rely on their parents for

help and support (α = .95 at Wave 1, .96 at Wave 2, .96 at Wave 3; e.g., "I can depend on my parents to help me solve a problem"). Peer support was measured summing 34 items (α = .96 at Wave 1, .96 at Wave 2, .96 at Wave 3; e.g., "My friends support me to talk about my worries," "In general, I feel like I can rely on my friends for support"). The items were responded to on a scale of 1 to 4 where 1 = *definitely true* and 4 = *definitely false*. Items were summed so that a greater a score indicated greater support.

Analytic Plan. All analyses were conducted in Mplus, 8.0, which uses full information maximum likelihood to handle missing data. A random-intercept cross-lagged panel model (RI-CLPM; (Hamaker, Kuiper, & Grasman, 2015) was used to evaluate the prospective associations between parent and peer socio-emotional support and depressive symptoms from Waves 1-3. The advantage of the RI-CLPM over the CLPM is that accounts for both within- and between-person associations. As demonstrated in **Figure 1 (see in Appendix C)**, this model evaluates extent to which two random intercepts (parent support and depressive symptoms) predict one another over time (as depicted by the autoregressive and cross-lagged paths), after accounting for their stable, trait-like individual differences (as depicted as the latent variables "Depressive Sx Between" and "Parent Support Between"). This figure demonstrates the full analytical model for evaluating just two random intercepts. This was adapted this for three random intercepts (including peer in addition to parent socio-emotional support and depressive symptoms; all measures available in **Appendix A**). The third intercept is estimated identically to the first two (both between- and within-level estimates), but is not shown in **Figure 1** for clarity of presentation. For learning purposes, I compared results from the traditional CLPM and the RI-CLPM and provide results in **Appendix C** and **D**).

I also evaluated the interactions between parent and peer support at Waves 1 and 2 as predictors of depressive symptoms at Waves 2 and 3 by first mean-centering all predictors and creating an interaction term. Any significant interactions were probed by conducting follow-up analyses of conditional slopes based on the guidelines of (Whisman & McClelland, 2005). Given the sample size, gender differences will be explored with the expectation that females will report greater depressive symptoms than males, but that the associations between parent and peer socio-emotional support in relation to subsequent depressive symptoms will likely not vary by gender.

Chapter 4: Results

Correlations and Descriptive Statistics

Table 1 shows descriptive statistics for average depressive symptoms, and summed parent and peer support for each assessment. Depressive symptoms in the first year of college were negatively correlated with parent and peer support at all Waves. Depressive symptoms were significantly and moderately correlated over time (*rs* ranged from .43 to .54, all *ps* < .001). Average depressive symptoms ranged from 11.70 to 12.90 to 12.47 from Wave 1 to Wave 2 to Wave 3, respectively (see **Table 1** for details in **Appendix B**). Supporting expectations, results showed females reported greater average depressive symptoms (*M* = 12.61, *SD* = 10.29) than males (*M* = 10.12, *SD* = 7.96) at Wave 1 (*t*(181.23) = 1.90, *p* = .06; Cohen's *d* = .27). Females also reported greater average depressive symptoms at Wave 2 (*M* = 13.62, *SD* = 9.42) than males (*M* = 11.56, *SD* = 10.29). The gender differences in depressive symptoms at wave 2 also did not reach the significance threshold: *t*(172) = 1.33, *p* = .18, but Cohen's *d* = .21 indicated a small difference in overall effect size. At Wave 3, females reported slightly greater depressive symptoms (*M* = 12.74, *SD* = 9.90) than males (*M* = 12.02, *SD* = 9.90), but this difference was also not significantly different than zero: *t*(155) = .440, *p* = .90. Cohen's *d* = .07, indicating little to no difference between genders for depressive symptoms at Wave 3 compared to Waves 1 and 2.

Traditional Cross-Lagged Panel Model Results

As shown in **Figure 2 (Appendix C),** traditional cross-lagged panel model results showed strong stability in depressive, parent support, and peer support over time. Peer support at Wave 1 was associated with rank-order decreases in depressive symptoms at Wave 2 (β = -.14, *p* = .08); no other cross-paths approached statistical significance. There was moderate to strong

stability in depressive symptoms and parent and peer support over time. For example, depressive symptoms significantly predicted depressive symptoms from Wave 1 to Wave 2 ($\beta = .48$, $p <$ .001) and from Wave 2 to Wave 3 ($\beta = .30$, $p < .001$). Parent support also significantly predicted subsequent parent support from Wave 1 to Wave 2 ($\beta = .65$, $p < .001$) and from Wave 2 to Wave 3 ($\beta = .62$, $p < .001$). Additionally, peer support also significantly predicted subsequent peer support from Wave 1 to Wave 2 ($\beta = .42$, $p < .001$) and from Wave 2 to Wave 3 ($\beta = .22$, $p =$ .04). Within-time point correlations were significant at all Waves. For example, the association between parent and peers support at Wave 1 = .32 ($p < .001$), and the association between parent support and depressive symptoms at Wave 1 = -.47 ($p < .001$). Only the residual correlation between peer support and depressive symptoms was significant at Wave 3 (see **Figure 1** for details).

A subsequent model was evaluated that tested the interactions between parent and peer support at Wave 1 and 2 as predictors of depressive symptoms at Wave 2 and between parent and peer support at Waves 2 and 3 as predictors of depressive symptoms at Wave 3. This model did not fit the data well (χ^2 (26) = 230.86, RMSEA = .21, CFI = .55, SRMR = .15). Following this, none of the interactions were significantly different than zero, showing little support for the moderation hypotheses. Specifically, the interaction between parent and peer support at Wave 1 as a predictor of depressive symptoms at Wave 2 was not significant (B = -.00, S.E. = .00, $p =$ .31). Additionally, the interaction between parent and peer support at Wave 2 as a predictor of depressive symptoms at Wave 2 was not significant (B = .00, S.E. = .00, $p = .74$). The interaction between parent and peer support at Wave 2 as a predictor of depressive symptoms at Wave 3 was also not significant (B = .00, S.E. = .00, $p = .18$). Additionally, the interaction between parent and peer support at Wave 3 as a predictor of depressive symptoms at Wave 3 was not significant

(B = -.00, S.E. = .00, p = .15). A subsequent model was conducted to evaluate whether these four

interactions varied by gender by calculating a three-way interaction score (parent support*peer

support*gender) and none of these additional four interactions were significantly different than

zero suggesting no gender differences in these null associations.

Random-Intercept Cross-Lagged Path Model

Results from the within-level estimate component of the random-intercept cross-lagged

panel model (RI-CLPM) are shown in **Figure 3.** The between-level estimates were all

significant. This included the estimated factor loadings for depressive symptoms (βs ranged from

.67-.68), parent support (βs ranged from .76 to .83), and peer support (βs ranged from .63 to .72;

all ps < .001), as well as the correlations between these higher-order latent factors. The between-

level correlation between depressive symptoms and parent support = -.62 (p < .001). The

between-level correlation between depressive symptoms and peer support = -.58 (p < .001). The

between-level correlation between parent and peer support = .59 (p = .002).

After adjusting for between-level influences and following the results of the traditional

cross-lagged panel model, and following results from the traditional CLPM, there were no

significant within-level cross-effects. Only within-assessment correlations at Wave 1 (between

depressive symptoms, parent support, and peer support), the residual corrections at Wave 2, and

the residual correlation between depressive symptoms and peer support at Wave 3 were

significant (see **Figure 3** for details).

A subsequent model was evaluated that tested the interactions between parent and peer

support at Wave 1 and 2 as predictors of depressive symptoms at Wave 2 and between parent

and peer support at Waves 2 and 3 as predictors of depressive symptoms at Wave 3. This model

did not fit the data well (χ^2 (26) = 231.06, RMSEA = .23, CFI = .60, SRMR = .14). Following

this, none of the interactions were significantly different than zero, showing little support for the moderation hypotheses. Specifically, the interaction between parent and peer support at Wave 1 as a predictor of depressive symptoms at Wave 2 was not significant (B = -.00, S.E. = .00, p = .06). Additionally, the interaction between parent and peer support at Wave 2 as a predictor of depressive symptoms at Wave 2 was not significant (B = .00, S.E. = .00, p = .61). The interaction between parent and peer support at Wave 2 as a predictor of depressive symptoms at Wave 3 was also not significant (B = .00, S.E. = .00, p = .29). Additionally, the interaction between parent and peer support at Wave 3 as a predictor of depressive symptoms at Wave 3 was not significant (B = -.00, S.E. = .00, p = .45). As I did for the traditional CLPM, I ran a subsequent model to test for whether these interactions varied by gender (parent support*peer support*gender) and found these interactions were not significantly different than zero.

Gender: Some Potential Differences in Associations

To explore potential gender differences in associations between variables, separate models were conducted for females and males (see **Appendix D, Figures 4 and 5**). In general, results showed a similar pattern of results in that there were no significant cross-effects. The only notable difference was that the correlations between depressive symptoms and parent support at Wave 1 and peer support at Wave were significant for females (n = 129) but not males (n = 80). For males, peer support and depressive symptoms were significantly correlated at Wave 3 but not females. At Wave 2, depressive symptoms were significantly correlated with parent support but not peer support, whereas for males, depressive symptoms were significantly correlated with peer but not parent support (see **Appendix D, Figures 4 and 5** for details). The sample size was not powered enough to test whether these associations significantly varied by gender, but suggest gender may play a role in these associations.

Chapter 5: Discussion

Prior research has demonstrated consistent links between depression and negative outcomes, such as academic impairment and failure (Heiligenstein & Guenther, 1996), relationship dysfunction (Kerr & Capaldi, 2011), and long-term emotional and physical health problems (Scott et al., 2007), as well as increased suicide risk (Silverman & Meyer, 1997). The purpose of this study was to evaluate how parent and peer socio-emotional support work together to predict depressive symptoms during the transition into and out of college in order to better inform potential prevention and intervention practices. Results showed relatively strong stability of depressive symptoms from the first year of college to four years later, which was mostly explained by stable, time invariant, and trait-like factors. Contrary to expectations, longitudinal findings showed no consistent evidence that parent and peer socio-emotional support predicted subsequent depressive symptoms or vice versa; rather, within time associations were most relevant. There was also no support for moderation by peer support in the association between parent support and depressive symptoms.

Given the stability of depressive symptoms over time and evidence of trait-like, stable influences on depressive symptoms from the transition into and of college, results highlight the importance of early screening and treatment of depression in the college population. One program created specifically for use on college campuses, the Action for Depression Awareness, Prevention and Treatment (ADAPT) was developed as a community-based program implemented in four stages: the planning stage, implementation stage, program evaluation, and expansion stage (Field et al., 2006). The ADAPT program succeeded in increasing the awareness and prevention of mental health issues in the college student population with support and collaboration from the institution, administrators, faculty, staff and students. Field and colleagues

(2006) note that the ADAPT program serves as a positive foundation for other colleges to utilize and build upon. Further, Farabaugh et al., (2018) evaluate a small ($n = 30$) Cognitive and Behavioral Therapy (CBT) intervention for college students already experiencing depression and found that CBT resulted in significantly reduced depression, anxiety, suicidality and some forms of negative cognition. A recent study noted the lack of any validated early detection programs that are widely implemented on college campuses (Burke et al., 2020). In order to address this void, they designed and evaluated an early detection and prevention program. They found that the majority of participants enjoyed the intervention and would recommend it to a friend, more importantly, the early detection and prevention program was effective in reducing depression, anxiety and sub-clinical psychotic symptoms. They also noted improvements in resilience-promoting capacities and social functioning. Burke and colleagues (2020) go on to argue that not only are early detection and prevention programs feasible, but can also decrease psychological illness and improve resilience and social functioning. This research indicates that more can be done to detect and prevent depression on college campuses.

Another important finding from this study concerned the strong correlations between parent support, peer support, and depressive symptoms at the between-level. That is, it is not as if parent and peer support are not associated with depressive symptoms in the transition into and out of college, in fact they are quite strongly correlated (absolute correlations ranged from .58 to .62). However, by the time of college entrance, individual-level change appears to be less relevant. This still follows Joiner et al.'s, (2006) interpersonal theory of depression, which proposes that close relationships both influence and are influenced by depressive symptomology. It is just that results from this study suggest that within-individual change (e.g., how parent support predicts subsequent depressive symptoms or vice versa) is less relevant to explaining the

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longitudinal links between variables (e.g., parent support and depressive symptoms) by the developmental timing of late adolescence and early adulthood. It could be that with larger sample sizes the prospective cross-effects would reach significance, but overall effect size based on this study's findings suggesting these are small effects.

On the other hand, it may be that other factors are more relevant to predicting longitudinal depressive symptoms at this time. For example, other aspects of parent and peer relationship quality, rather than general perceived support, may be more relevant. Additionally, the amount and quality of communication may be important, as well as the time actually spent with peers and the activities completed. One study described how communication— and more specifically, emotionally supportive communication was negatively linked to depression in college students (MacGeorge et al., 2005). Emotional support included attentive listening, sympathy, and expressions of affection while informational support included providing information and advice.

There was some support for a development-contextual perspective (e.g., Schulenberg & Maggs, 2002; Samek, Goodman et al., 2016; Scarr & McCartney, 1983), in that different unique relationship factors appeared to have unique associations with the outcome of interest depending on developmental context. The transition into college can have an impact on changes in behavior due to increased freedom and selection into environments that promote such behavior. With time and more distance from the rearing family, peer factors were expected to be more relevant. Results supported this expectation somewhat, as parent and peer support were both significantly associated with depressive symptoms in the transition into college and only peer support was significantly associated with depressive symptoms in the transition out of college. On the other hand, exploration of gender differences in these associations may also be at play. My findings

showed that for females, parent support was more relevant to concurrent depressive symptoms at Waves 1 and 2, whereas for males, peer support was more relevant to concurrent depressive symptoms at Waves 2 and 3. This supports research from Moreira and Telzer (2015) which reported that changes (increases and decreases) in family cohesion in the transition into college were related to changes in depression for girls, but not for boys. Additionally, Slavin and Rainer (1990) found that initial depressive symptoms predicted changes in family support for girls, but not boys. These results may suggest that our hypotheses regarding peer support becoming relevant over time may not be true for girls as it is for boys. It may be that co-rumination, or excessively discussing and rehashing problems (Hankin, et al., 2010), may explain the lack of protective effects for females ,as previous studies have shown females engage in co-rumination more than males (Felton, et al., 2019). Another possibility is that males may perceive support more positively through shared activities rather than through intimate conversations about concerns and feelings, as has been demonstrated by earlier studies (Gorrese & Ruggieri, 2012; Kenny, et al., 2013; Maccoby, 2002), and it is the shared activities rather than intimate self-disclosure that is more relevant to offsetting for depression for males than females. It is imperative for future research to replicate and expand on these results to better understand the nature of this potential gender difference.

However, there was no support for the protective-stabilizing hypothesis. Robust analyses of moderation showed peer support did not necessarily offset risk associated with parent support. Following our previously stated results, it may be that individual-level change of any kind is less relevant by early adulthood relative to earlier in the lifespan. This follows work by Young et al. (2005), which evidenced a significant interaction between parent and peer support in relation to depressive symptoms earlier in adolescence (and contrary to our expectations). Further research

is needed to address whether interactions at the individual-level are less relevant to adult compared to earlier adolescent depression.

In additional to relationship factors relevant to depression, there are also other domains relevant to studying depressive symptoms. Such factors include those at the individual-level, such as personality traits related to neuroticism and negative emotionality, which have shown to be relevant to depression in prior studies (Duggan et al., 1990; Jorm et al., 2000; Renner et al., 2013). Larger macro factors such as SES are likely highly relevant to this topic as well. For example, greater parent support may predict greater academic engagement or achievement, and these associations also likely depend on socioeconomic status. Following this, Benner and colleagues (2016) found that educational attainment attributed to parental involvement differed based on socioeconomic status where more disadvantaged youth benefitted from school-based parental involvement and more advantaged youth benefitted from academic socialization.

Concluding Thoughts

There are of course limitations to this study, including that lack of parent and peer reporters and use of self-report alone. Future research would also benefit with attempts to replicate this study with larger sample sizes and utilizing measures of other aspects of parent and peer relationship quality not evaluated here. There are many strengths as well, including the longitudinal assessment with adequate retention over a four-year period, the use of multiple analytic strategies, and the theoretically-based study hypotheses.

Altogether, the current study has brought to light a better look at the concurrent and prospective associations between depressive symptoms, and parent and peer socio-emotional support during the transition into and out of college. Although there was little support for individual-level change in parent or peer support predicting subsequent depressive symptoms,

parent and peer support were strongly correlated with depressive symptoms by the time of college entrance. Further, concurrent or within-time point associations showed parent and peer support were significantly and moderately correlated with depressive symptoms in the first and second years of college. But by the transition out of college, only peer support was significantly and moderately correlated with depressive symptoms. Although our results indicated there may be important gender differences in these associations, our sample was not powered enough to test for such differences. Further work is needed to address this. Nonetheless, findings are relevant for parents, college students, university administrators, and therapists to be aware of in their understanding of and pursuit of minimizing the potentially detrimental influence of depression during this developmental stage.

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Appendix A

<u>Center for Epidemiologic Studies Depression Scale</u>
Below is a list of some of the ways you may have felt or behaved. Please indicate how often you have felt this way during the past week.
Participants were asked to respond with:
- Rarely or none of the time (less than 1 day)
- Some or a little of the time (1-2 days)
- Occasionally or a moderate amount of the time (3-4 days)
- Most or all of the time (5-7 days)

1. In the past week, I was bothered by things that usually don't bother me.
2. In the past week, I did not feel like eating; my appetite was poor.
3. In the past week, I felt that I could not shake off the blues even with help from my family or friends.
4. In the past week, I felt I was just as good as other people.
5. In the past week, I had trouble keeping my mind on what I was doing.
6. In the past week, I felt depressed.
7. In the past week, I felt that everything I did was an effort.
8. In the past week, I felt hopeful about the future.
9. In the past week, I thought my life had been a failure.
10. In the past week, I felt fearful.
11. In the past week, my sleep was restless.
12. In the past week, I was happy.
13. In the past week, I talked less than usual.
14. In the past week, I felt lonely.
15. In the past week, people were unfriendly.
16. In the past week, I enjoyed life.
17. In the past week, I had crying spells.
18. In the past week, I felt sad.
19. In the past week, I felt that people disliked me.
20. In the past week, I could not get going.

Parent Socio-Emotional Support

Belonging and Appraisal scales from College version of the Interpersonal Support Evaluation List (ISEL) (Cohen, 2014; Cohen & Hoberman, 1983; Cohen et al., 1985) and the Inventory of Parent and Peer Attachment—Revised (Gullone & Robinson, 2005).

Participants were asked to respond with:

- Definitely True (1)
- Probably True (2)
- Probably False (3)
- Definitely False (4)

1. I talk to my parents or another member of my family at least once a week.
2. My parents generally know about my day-to-day activities.
3. I talk to my parents about major life events. (e.g., choice of major, whether I have a boyfriend/girlfriend, how things are going at school)
4. I can depend on my parents to help me solve a problem.
5. I like to get my parents' view on things I'm worried about.
6. My parents can tell when I'm upset about something.
7. I feel silly or ashamed when I talk about my problems with my parents.
8. My parents expect too much from me.
9. When I talk about things with my parents they listen to what I think.
10. My parents listen to my opinions.
11. My parents have their own problems, so I don't bother them with mine.
12. My parents help me to understand myself better.
13. I tell my parents about my problems and troubles.
14. I feel angry with my parents.
15. My parents support me to talk about my worries.
16. When I am angry about something, my parents try to understand.
17. My parents don't understand my problems.
18. I can count on my parents when I need to talk about a problem.
19. If my parents know that I am upset about something, they ask me about it.
20. My parents respect my feelings.
21. My parents accept me as I am.
22. I trust my parents.

Peer Socio-Emotional Support

Adapted from the Belonging and Appraisal scales from College version of the Interpersonal Support Evaluation List (ISEL) (Cohen, 2014; Cohen & Hoberman, 1983; Cohen et al., 1985) and the Inventory of Parent and Peer Attachment—Revised (Gullone & Robinson, 2005).

For all following questions participants were asked to respond with:

- Definitely True (1)
- Probably True (2)
- Probably False (3)
- Definitely False (4)

1. I have friends I can regularly hang out with.
2. I have friends I can regularly study with.
3. I have friends I can regularly have fun with.
4. I have friends that I can talk to about problems I'm having with adjusting to college life.
5. I have friends that I can talk to about problems I'm having with meeting people.
6. I have friends that I can talk to about problems I might have getting along with my parents.
7. I have friends that I can talk to about problems I might have getting along with my boyfriend or girlfriend.
8. I have friends that I can talk to about problems I might have with school.
9. I have friends that I can talk to about problems I might have with work.
10. I have friends that I can talk to about problems I might have with my social life.
11. I like to get my friends' opinions on things I'm worried about.
12. My friends can tell when I'm upset about something.
13. When we talk, my friends listen to my opinion.
14. I feel silly or ashamed when I talk about my problems with my friends.
15. I wish I had different friends.
16. My friends understand me.
17. My friends support me to talk about my worries.
18. My friends accept me as I am.
19. I wish I were around my friends more often.
20. My friends don't understand my problems.
21. I do not feel like I belong when I am with my friends.
22. My friends listen to what I have to say.
23. My friends are good friends.
24. My friends are fairly easy to talk to.
25. When I am angry about something, my friends try to understand.
26. My friends care about the way I feel.
27. I can count on my friends to listen when something is bothering me.
28. I trust my friends.
29. My friends respect my feelings.
30. I get upset a lot more than my friends know about.
31. My friends get annoyed with me for no reason.
32. I tell my friends about my problems and troubles.
33. If my friends know that I am upset about something, they ask me about it.
34. In general, I feel like I can rely on my friends for support.

Table 1. Correlations and descriptive statistics.

	1	2	3	4	5	6	7	8	9
1. Depressive Sx (w1)	1.0								
2. Depressive Sx (w2)	.54***	1.0							
3. Depressive Sx (w3)	.46***	.43***	1.0						
4. Parent Support (w1)	-.48***	-.35***	-.42***	1.0					
5. Parent Support (w2)	-.41***	-.43***	-.33***	.69***	1.0				
6. Parent Support (w3)	-.32***	-.38***	-.41***	.64***	.66***	1.0			
7. Peer Support (w1)	-.43***	-.35***	-.23**	.32***	.32***	.28**	1.0		
8. Peer Support (w2)	-.37***	-.44***	-.34***	.39***	.41***	.29***	.51***	1.0	
9. Peer Support (w3)	-.23**	-.23***	-.43***	.34***	.23*	.41***	.32***	.28**	1.0
M	11.70	12.90	12.47	73.62	74.14	73.46	99.24	100.64	99.03
SD	9.56	9.76	9.88	13.85	13.35	14.45	14.33	12.99	14.73
Min	0	0	0	3	26	26	37	36	28
Max	42	48	52	88	88	88	112	112	112
n	200	174	157	208	175	166	209	175	166

Notes. Sx = symptom. w1 = Wave 1, w2 = Wave 2, w3 = Wave 3. Significance is denoted by *** $p < .001$, ** $p < .01$, *$p < .05$

Table 2

Summary of Path Analysis Results for Cross-Sectional Analyses

Variable	Model 1				Model 2				Model 3			
	Depressive Symptoms (W1)				Depressive Symptoms (W2)				Depressive Symptoms (W3)			
	B	*SE*	*β*	*p*	*B*	*SE*	*β*	*p*	*B*	*SE*	*β*	*p*
Parent support	-.27	.08	-.39	<.001	-.22	.06	-.30	<.001	-.19	.05	-.28	<.001
Peer support	-.22	.05	-.33	<.001	-.24	.07	-.32	<.001	-.26	.05	-.38	<.001
Parent x Peer support	-.00	.00	-.11	.17	.00	.00	-.01	.95	-.00	.00	-.12	.20
R^2			.32	<.001			.27	<.001			.26	<.001

Notes. W1 = Wave 1, W2 = Wave 2, W3 = Wave 3. This table shows results for cross-sectional analyses at each Wave (i.e., Wave 1 predictors of W1 depressive symptoms, W2 predictors of depressive symptoms at W2, and W3 predictors of depressive symptoms at W3). All predictors were mean-centered a prior to analyses. *B* = unstandardized coefficient, *SE* = standard error of the unstandardized coefficient, *β* = standardized coefficient, *p* = p-value.
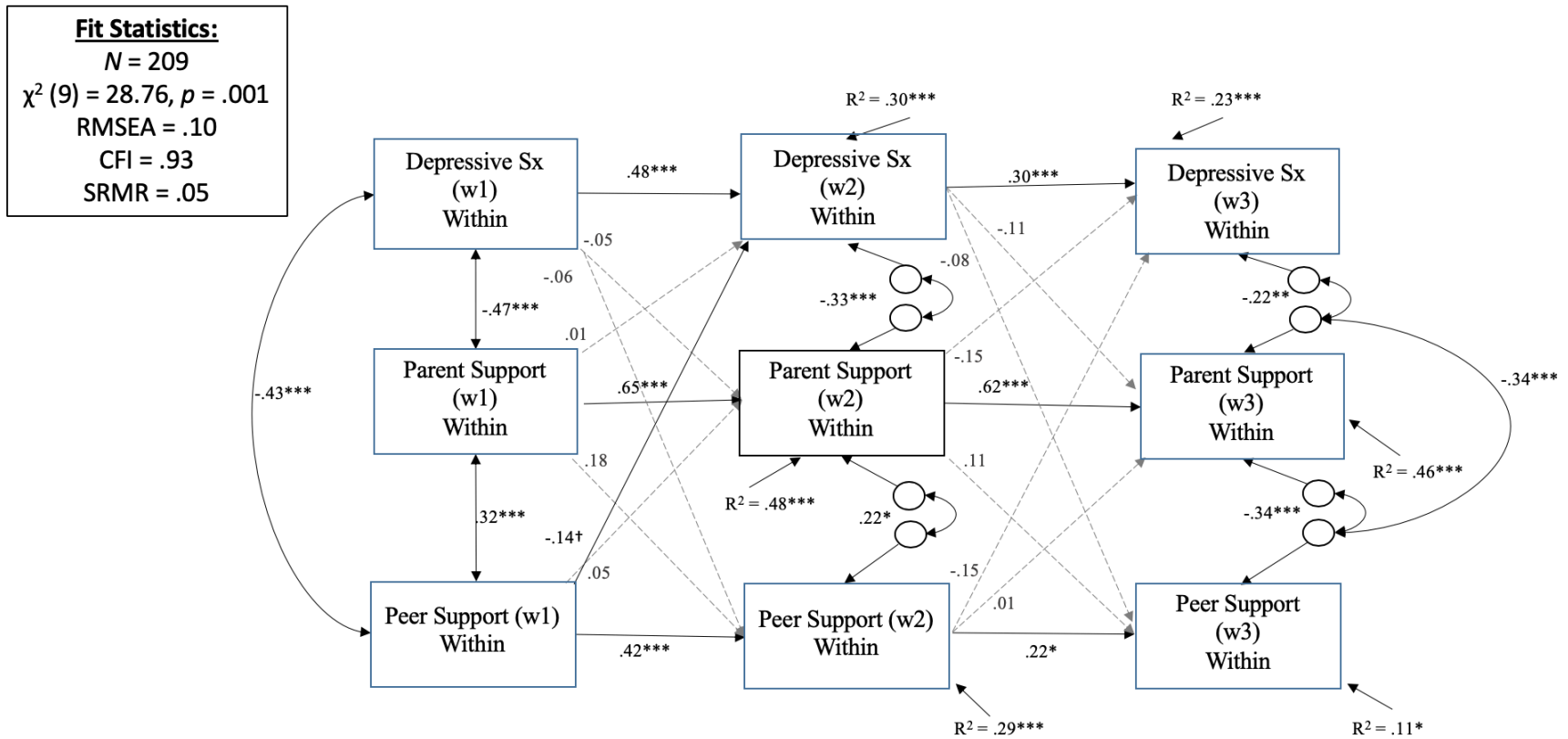
Appendix C

Figure 2. Results from the Traditional Cross-Lagged Panel Model. Depressive Sx = Depressive Symptoms, w1 = Wave 1, w2 = Wave 2, w3 = Wave 3. Showing standardized coefficients. Significance is denoted by *** $p < .001$, ** $p < .01$, * $p < .05$, † $p < .10$, non-significant paths dashed/grayed for clarity of presentation. Not shown for clarity of presentation: the residual correlation between depressive symptoms at Wave 2 with peer support at Wave 2 for purposes of presentation of the figure (ß = -.29, $p < .001$).

Appendix D
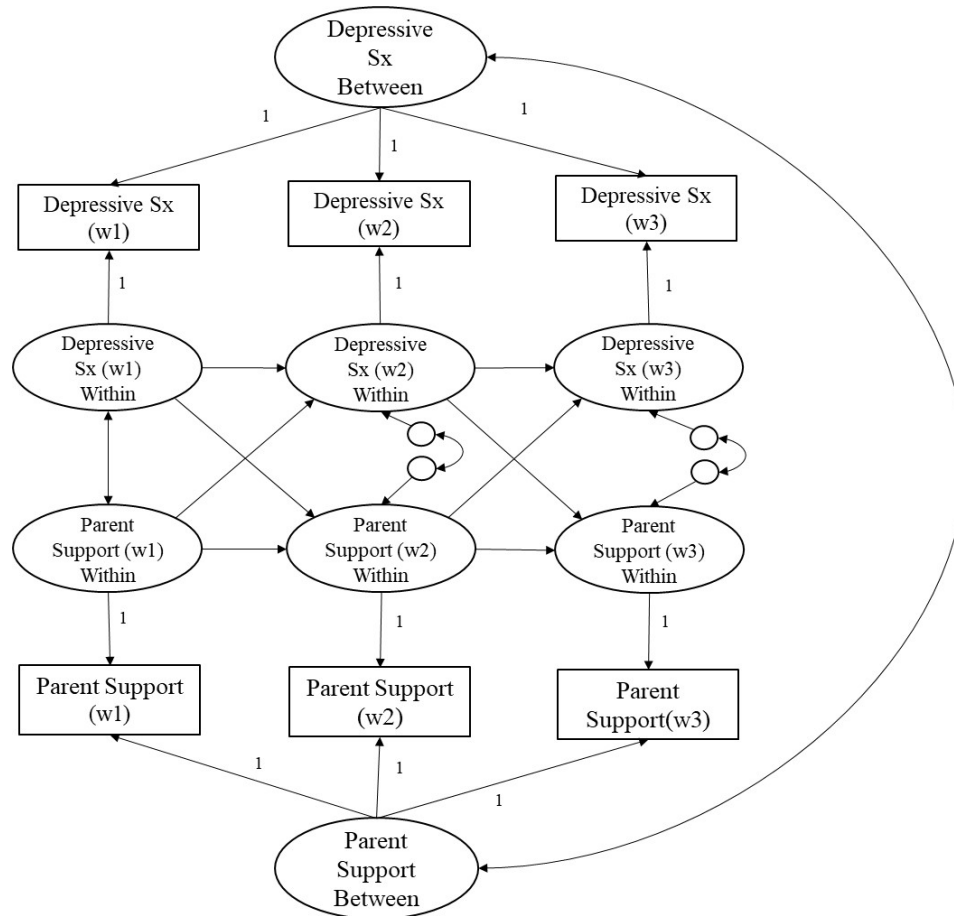
Figure 1. The Random-Intercept Cross-Lagged Panel (RI-CPM) Analytic model involving Depressive Symptoms and Parent Support. This figure shows two random intercepts (Depressive Symptoms between and Parent Support Between) that reflect time-invariant between-person differences. Within-personal stability is modeled over time (as shown by the autoregressive paths of Depressive Symptoms and Parent Support), as well as reciprocal cross-effects (e.g. the effect of Depressive Symptoms on subsequent Parent Support and Parent Support on subsequent Depressive Symptoms), the correlation between Depressive Symptoms and Parent Support

at Wave 1, and the residual correlations at Waves 2 and 3. This model was adapted to include a third random intercept: Peer support, which was estimated in a similar fashion as Depressive Symptoms and Parent support.
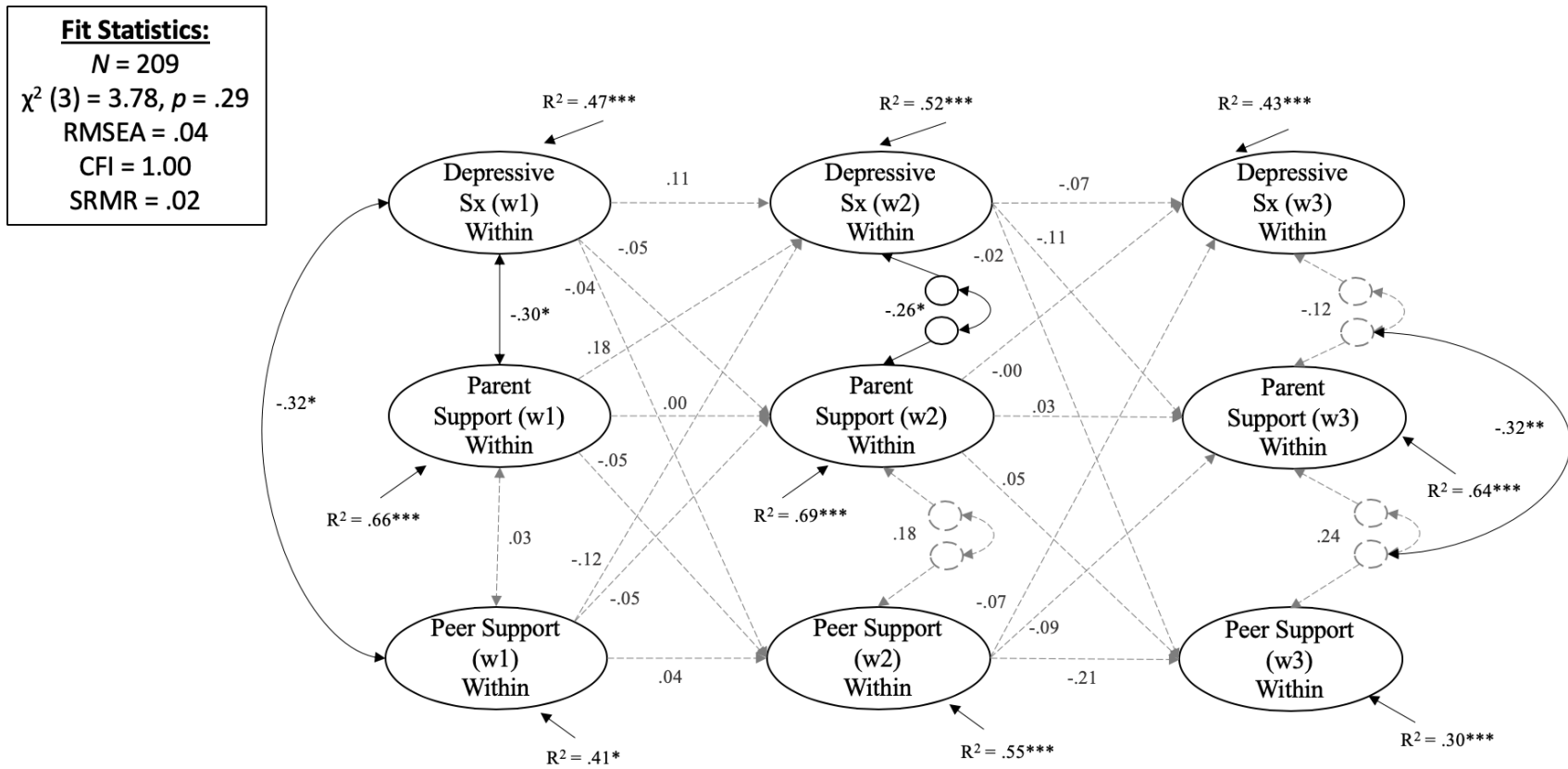
Figure 3. The Random Intercept-Cross Lagged Panel Model (RI-CLPM): Results for the full sample. Depressive Sx = Depressive Symptoms, w1 = Wave 1, w2 = Wave 2, w3 = Wave 3. Showing standardized coefficients. Significance is denoted by *** $p < .001$, ** $p < .01$, * $p < .05$, non-significant paths dashed/grayed for clarity of presentation. Not shown for clarity of presentation: the residual correlation between depressive symptoms and peer support at Wave 2 (ß = -.23, $p = 0.12$).
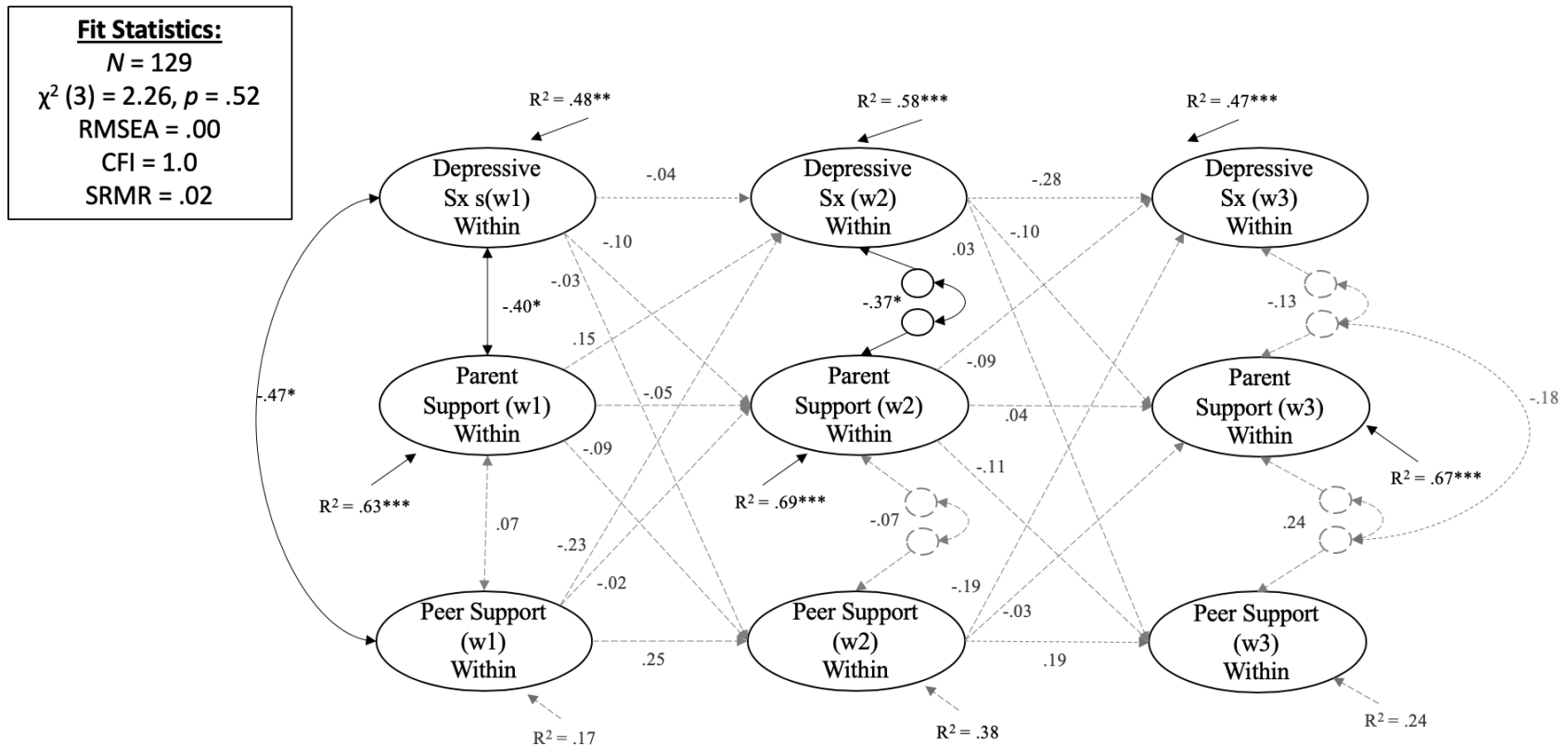
Figure 4. The Random-Intercept Cross-Lagged Panel Analyses (RI-CLPM) involving Depression, and Parent and Peer Socio-Emotional Support: Results for females. Depressive Sx = Depressive Symptoms, w1 = Wave 1, w2 = Wave 2, w3 = Wave 3. Showing standardized coefficients. Significance is denoted by *** $p < .001$, ** $p < .01$, * $p < .05$, non-significant paths dashed/grayed for clarity of presentation. Not shown for clarity of presentation: the residual correlation between depressive symptoms and peer support at Wave 2 (ß = -.28, $p = 0.05$).
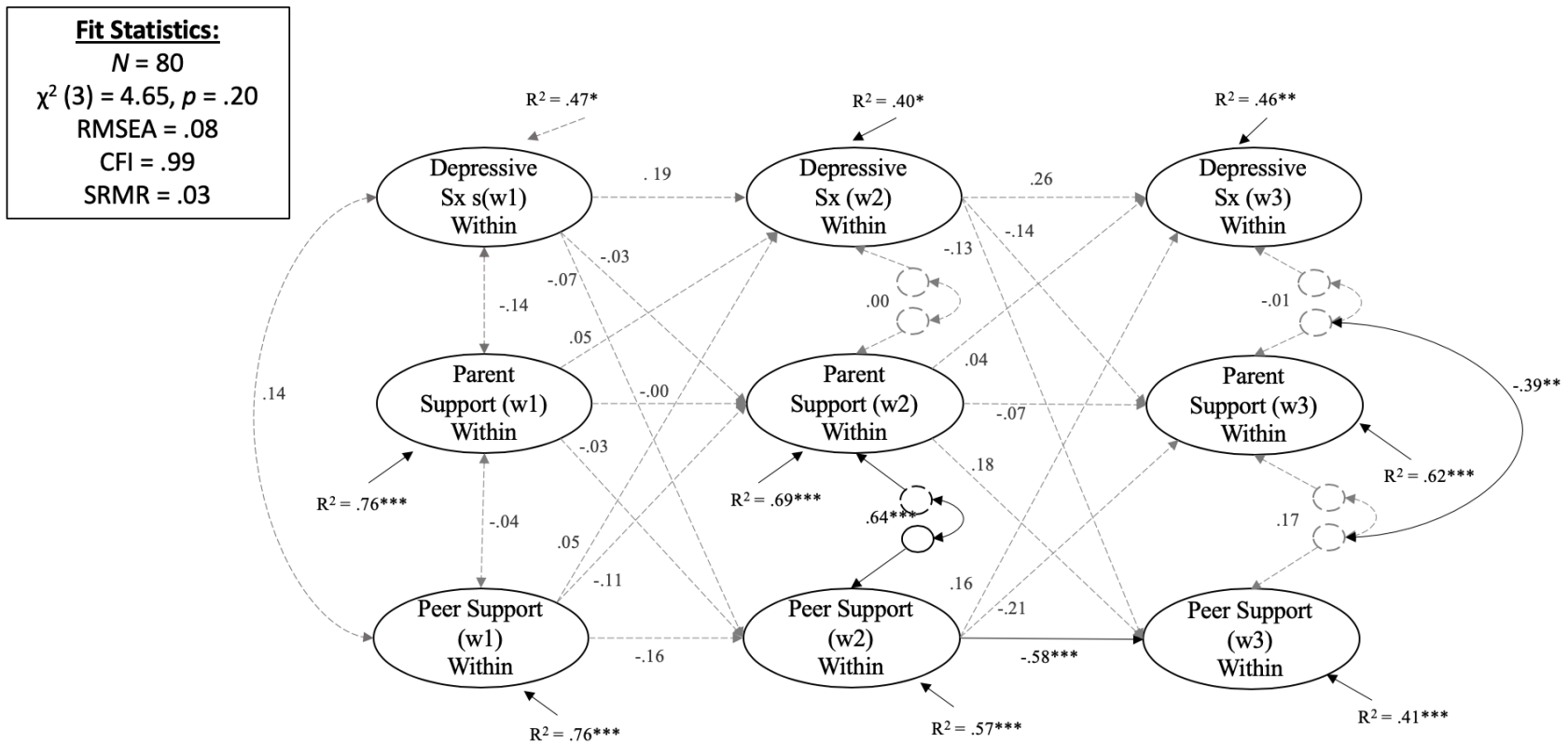
Figure 5. The Random-Intercept Cross-Lagged Panel Analyses (RI-CLPM) involving Depression, and Parent and Peer Socio-Emotional Support: Results for Males. Depressive Sx = Depressive Symptoms, w1 = Wave 1, w2 = Wave 2, w3 = Wave 3. Showing standardized coefficients. Significance is denoted by *** $p < .001$, ** $p < .01$, * $p < .05$, non-significant paths dashed/grayed for clarity of presentation. Not shown for clarity of presentation: the residual correlation between depressive symptoms and peer support at Wave 2 (ß = -.24, $p = 0.26$).