THE ROLE OF ROOMMATE RELATIONSHIPS AND FAMILY OF ORIGIN
FUNCTIONING IN STUDENTS' MENTAL HEALTH AND COLLEGE
ADJUSTMENT OUTCOMES

by

Sarah Elizabeth Erb
A Dissertation
Submitted to the
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of
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in Partial Fulfillment of
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of
Doctor of Philosophy
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The Role of Roommate Relationships and Family of Origin Functioning in Students' Mental Health and College Adjustment Outcomes

A Dissertation submitted in partial fulfillment of the requirements for the degree of Doctor of Philosophy at George Mason University

by

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Master of Arts
George Mason University, 2010

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DEDICATION

This dissertation is dedicated to Pascal W. Cooper: my grandfather, mentor, and friend. Dr. Cooper was the first person in our family to attend college, and earned his Ph.D. in Chemistry from The Ohio State University in 1949. As I follow in his footsteps, I treasure many precious memories of the advice, support, and encouragement he so graciously gave me.

This dissertation is also dedicated to Roma Erb, my voluptuous calico roommate. Her companionship and purrs eased my stress while brainstorming, proposing, conducting, analyzing, writing, and defending this dissertation.

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ABSTRACT

THE ROLE OF ROOMMATE RELATIONSHIPS AND FAMILY OF ORIGIN FUNCTIONING IN STUDENTS' MENTAL HEALTH AND COLLEGE ADJUSTMENT OUTCOMES

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For college students in the emerging adulthood developmental stage, interpersonal relationships in general, and roommate relationships specifically, affect important mental health outcomes. However, previous roommate relationship studies often have small sample sizes, do not take into account roommates' interdependence, or use outdated analyses. The current study tests an empirical conceptualization of the role of roommate relationships on college student mental health and adjustment to college by drawing upon family systems theory. Data were collected from 104 pairs of college student roommates and analyzed in an actor-partner interdependence model using structural equation modeling. Results support actor effect hypotheses that students' perceptions of dysfunction in their roommate relationships are significantly associated with their adjustment to college and with their negative emotional symptoms. However, results do not support an association between family of origin dysfunction and roommate

relationship dysfunction. Likewise, partner effects and mediational hypotheses were nonsignificant. Instead, this study suggests that family of origin dysfunction and roommate relationship dysfunction have an additive effect on adjustment to college and negative emotional symptoms. This study concludes with a discussion of implications for future research, clinical applications, and Student Affairs practice.

1. INTRODUCTION

Forty-one percent of all Americans between ages 18 to 24 are currently enrolled as undergraduate students (U.S. Department of Education, 2012). For those 21 million traditional-aged students, the college years represent a developmentally critical time period. Several major psychological theories all agree on the importance of social functioning in particular during these years. For example, Erikson (1968) asserted that young adults' primary objective is to experience intimacy in relationships rather than isolation. Likewise, cultivating mature interpersonal relationships was one of Chickering's (1969) seven vectors of psychosocial developmental issues faced by college students. Lastly, traditional-age college students fall within Arnett's (2000) emerging adulthood stage (i.e., a new lifespan stage, which is the result of demographic shifts in industrialized nations during the past several decades). Emerging adulthood is characterized by prolonged identity formation (Arnett, 2000), and this identity formation is closely tied to romantic relationships and friendships (Barry, Madsen, Nelson, Carroll & Badger, 2009). In sum, for the millions of traditional-aged college students, interpersonal relationships are seen as essential to psychological development.

This theoretical importance of interpersonal relationships for college students is supported by empirical studies linking social functioning to students' mental health and adjustment to college life. College students' ability to form meaningful relationships with

other students leads to gains in multiple dimensions of psychological well-being, including environmental mastery, personal growth, purpose in life and self-acceptance (Bowman, 2010). The quality of new friendships formed at college predicts how well students are able adjust to interpersonal experiences at college, their feelings of attachment to the university itself, and their ability to adjust to the academic demands of college (e.g., Buote et al., 2007). In addition, students' ability to develop quality friendships at college predicts decreases in both internalizing and externalizing problem behaviors (Pittman & Richmond, 2008). Though studies such as these conclude that forming and maintaining social relationships is a key developmental task, little is known about the roles of specific types of social relationships. One such category of relationships specific to college students is their roommate relationship.

THE IMPORTANCE OF COLLEGE STUDENTS' ROOMMATE RELATIONSHIPS

There are many reasons why college roommate relationships are a highly important aspect of students' social functioning and college life in general. To begin with, roommates are a specific type of interpersonal relationship *widely* and *uniquely* experienced by college students. In a sample of 23,518 undergraduates from 44 U.S. campuses, 40% reported living on campus: either in a campus residence hall, fraternity or sorority house, or other university housing (American College Health Association, 2012). Given that undergraduates are more likely to live on-campus than graduate students, it is likely that the majority of undergraduate students share the common experience of living on-campus. Although this is a significant percentage of college students overall,

aggregate percentages such as this mask the fact that the portion of undergraduates living on campus varies considerably. For example, while some universities have a small on-campus population, others such as Princeton University have as many as 97% of their undergraduates living on-campus (Wecker, 2011). Thus, many undergraduate students (especially those at universities with large on-campus populations) share the common experience of living with roommates.

In addition to being a widely experienced component of college life, the college roommate relationship is unique among all of students' interpersonal relationships, because roommates are the only individuals with whom students must share their living space. This sharing typically necessitates (at a minimum) frequent contact, negotiation of room responsibilities, and compromises about the living environment (e.g., noise level, sleep vs. waking hours, visitors, decor). As a residence hall is often students' first living arrangement since departing from their families of origin, students' roommates are typically the first non-family member students live with, and the first person of equal status (i.e., in contrast to a parent-child relationship) with whom they live. These 'firsts' bring added challenges to young adults' ability to get along well with one another in this new type of interpersonal relationship.

Lastly, unlike most of students' friendships, their roommate is not always freely chosen, making this relationship potentially even more challenging due to possible personality mismatches. It is probably not surprising, then, that peaceful cohabitation among these college roommates is not a given. In a sample of 31,500 college students in a nationwide survey, 50.1% of women and 44.1% of men reported "frequent" or

"occasional" conflict with roommates or housemates (Liu, Sharkness & Pryor, 2008).

Thus, conflict with one's roommate is a relatively widespread experience among college students.

Despite college roommate relationships studies spanning several decades, there are no literature reviews summarizing and synthesizing the empirical knowledge about roommate relationships available to date. In addition, many of the studies of roommate relationships use weak methodologies and/or are outdated. Therefore, one purpose of this manuscript is to review the literature on roommate relationships in order critically examine the quality of previous studies and inform future studies. Next, we combine the field's empirical knowledge of roommate relationships with family systems theory in order to provide a conceptualization of roommate relationships. The current study then tests several hypotheses inherent in the proposed conceptualization of college roommate relationships. Lastly, we end with a discussion of research, clinical, and Student Affairs implications of our findings.

EMPIRICAL EVIDENCE OF THE IMPORTANCE OF ROOMMATE RELATIONSHIPS

Given the factors reviewed above, it is not surprising that empirical evidence suggests that roommate relationships play an important role in students' adjustment to college and mental health. Several studies suggest that positive roommate relationships are associated with students' mental health and may be a protective factor buffering psychological distress. For example, in an early study of college students in a large Midwestern university, the five pairs of on-campus roommate participants who scored the

highest on a measure of trust and intimacy within the relationship were compared to the five pairs with the lowest levels (Waldo & Fuhriman, 1981). The high-quality relationship group rated themselves as having significantly higher overall emotional adjustment than the low-quality relationship group (Waldo & Fuhriman, 1981). Thus, despite its small sample size, this study demonstrates an association between roommate relationship and emotional adjustment.

In a larger study of 138 students from a large east coast university, raters assessed students' roommate communication skills based on their written responses of what they would say to their roommate in four different situations (Waldo, 1984). Students' use of positive roommate communication skills was significantly associated with more positive overall psychological adjustment (Waldo, 1984). In a subsequent follow-up study of 127 of these participants, positive roommate communication skills, as well as self-report of higher quality relationships with roommates, were each significantly associated with higher GPA and with greater retention, as indicated by their registration the following semester (Waldo, 1986). Of note, the design and data analysis techniques in these early studies did not account for any interdependence that may exist between roommate's communication skills or their adjustment by explicitly recruiting roommate pairs and treating them as dyads in analyses. However, taken together, the results of these studies do demonstrate an important association between the quality of roommate relationships and students' psychological and academic functioning.

A more recent, larger and more methodologically complex study of college roommates provides even stronger evidence for the roommate relationship serving as a

protective factor for college student mental health. Lepore's (1992) study of 228 college students showed that a supportive college roommate relationship can exert a cross-domain buffering effect of social support, which occurs when social support within one area of social functioning lessens the negative effects of social difficulties in another domain. In this study, high levels of social support from roommates 2 weeks after moving in together moderated the association between conflict within general friendships (also assessed 2 weeks after move-in) and psychological distress 7 weeks later, even after adjusting for the effects of baseline psychological distress (Lepore, 1992). Specifically, the association was weaker at higher levels of roommate support. Although participants lived with their roommates in off-campus apartments, which may have been a somewhat different environment than traditional on-campus roommate living situations (e.g., voluntarily choosing their roommates), this study demonstrated that roommate relationships have the potential to serve as a significant protective factor for students' mental health in the face of stressors in other areas of interpersonal functioning.

In the same vein, evidence also suggests that a negative roommate relationship can serve as a risk factor for mental health problems and poor adjustment to college. In a relatively recent study of 462 college students at a Midwestern university living in a residence hall, having frequent conflict with one's roommate was a significant predictor of students' overall stress level (Dusselier, Dunn, Wang, Shelley, & Whalen, 2005). Students who elaborated on their roommate conflict in open-ended responses frequently mentioned their perception of their roommates' habits, such as coming home late and waking them up, as annoying (Dusselier et al., 2005). Furthermore, in a recent study of

127 students living on campus at a large east coast university, having a poor roommate relationship was significantly associated with higher levels of anxiety, lower life satisfaction, worse academic adjustment to college, worse social functioning in college, and less attachment to college (Erb & Short, 2012). Higher levels of perceived criticism from roommates were also significantly associated with these same outcomes, as well as with students' depression (Erb & Short, 2012). Finally, in the same sample, dysfunction within roommate relationships moderated the relationship between stress and depression in women, such that the association became stronger as roommate relationships were rated as being more dysfunctional (Machell, Erb, Kleiman, & Short, 2012). (Of note, when both genders were included in the analysis, the moderation only trended toward significance; however, the small number of males [n = 39] prohibited formal statistical analysis of a gender difference in this moderation.)

Overall, these studies provide strong evidence that a negative roommate relationship can be detrimental to college students. This notion is consistent with the frequency with which research journals associated with National Association of Student Personnel Administrators (NASPA) publish articles associated with residence life issues, which also demonstrates the importance that individuals within Student Affairs place on factors such as college roommates. For example, in qualitative studies of how students from diverse populations adjust to college, interactions with roommates are often discussed as a source of stress (e.g., Bradbury & Mather, 2009). In fact, in a longitudinal study of high school students' often romanticized expectations about a variety of aspects of college life and their subsequent disillusionment at the reality of college once there,

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the difficulty of navigating roommate relationships was among the greatest disappointments of the first year; moreover, such difficulties often had a negative impact on students' feelings of overall satisfaction (Keup, 2007). Recommendations for increased programming to help students orient to their new shared living situation, establish 'ground rules,' and build communication and conflict management skills further suggest the importance of roommate relationships to students' mental health and well-being (Keup, 2007).

Thus, college roommate relationships are a type of interpersonal relationship specific to college students that have important implications for their mental health and adjustment to college. Despite the consistency of the findings of this small handful of studies, the overall dearth of empirical research on college roommate relationships is notable. In particular, the scarcity of such research limits the ability of counseling center therapists, RA's and others in the college community to conceptualize roommate relationships. In turn, the lack of a thorough conceptualization of roommate relationships prohibits theoretically informed research regarding *how* interpersonal dynamics between roommates develop, and the function that roommate relationships serve in students' adjustment to college and mental health. To begin to address this need, the following section will examine family systems theory in order to propose a theoretically informed, empirically testable conceptualization of college roommate relationships to fill this void.

FAMILY SYSTEMS THEORY

Family systems theory emerged during the mid-20th century as an outgrowth of general systems theory, which swept through biology, physics and chemistry in the early

20th century (Doherty & McDaniel, 2010). A reaction to the reductionistic tendency to understand complex phenomena by reducing them to their smallest parts, systems theory instead emphasized relationships between parts, and that a system is not simply the sum of its parts. General systems theory asserted that living organisms can be conceptualized into groups that form patterns and boundaries with feedback loops to maintain the stability of the system over time (Cottrell & Boston, 2002).

Family systems theory developed as an application of this general systems logic to intimate relationships and families. Thus, family systems theory concluded that one individual family members' functioning is influenced by other interactions or relationships within the family system (Doherty & McDaniel, 2010). For example, children whose parents are depressed are at significantly higher risk for a variety of behavior problems and psychological symptoms than children whose parents are not depressed (Cummings & Davies, 1994). In addition, family systems theory posits that subsystems within the family (e.g., dyadic relationships) influence other subsystems within the family and the family functioning as a whole. For example, intense closeness between mothers and adolescents (of either gender) predicts a higher likelihood of marital separation, whereas closeness between fathers and younger (of either gender) children has a much more positive impact on the husband-wife relationship, and predicts a lower likelihood of marital separation (Schindler & Coley, 2012). By conceptualizing individuals through their experiences within the greater family system of interactions among various individuals or subgroups, family systems theory heavily emphasizes the interdependence of individual family members.

Family systems researchers have long grappled with the methodological dilemma of how to best account for the nonindependence between family members in their research designs and statistical analyses (Fisher, 1982). For example, many researchers have criticized the previously accepted approach within family research of using the average of family members' scores to represent a summary of the family, rather than taking into account the individual contributions of each family member's scores (e.g., Ransom et al., 1990; Handel, 1996). Among emerging data analysis techniques to address the interdependence of family members is an approach specific to conceptualizing and empirically testing associations within and between dyads (Campbell & Kashy, 2002; Cook & Kenny, 2005; Rayens & Svavarsdottir, 2003). Known as the actor-partner interdependence model (APIM), this technique allows researchers to examine the extent to which a family member's score on an independent variable of interest affects both his or her own score on an outcome (i.e., the actor effect) and another family member's outcome score (i.e., the partner effect). Researchers can then examine how both actor and partner effects within a dyad affect overall dyad outcomes (Rayens & Svavarsdottir, 2003). Family systems theory and the APIM design can be aid to our understanding of other interpersonal systems as well.

APPLICATION OF FAMILY SYSTEMS TO ROOMMATE RELATIONSHIPS. Family systems theory may be particularly well-suited to the conceptualization of college roommates for a number of reasons. College roommates are a clearly defined interpersonal system, due to the simple fact that they live together. In fact, college students' roommates are often the first non-biologically related individuals

that students have shared living space with. As in biological families, sharing living space results in frequent contact and shared experiences, which necessitates communication in order to negotiate expectations of one another, and problem-solving to reach compromises on day-to-day issues. Thus, interpersonal patterns common to family systems may manifest themselves within college roommates systems in similar ways as they do in biological family systems. There are, of course, some clear differences in these systems. For instance, college roommates are usually not biologically related and do not include parent-child hierarchies. However, the similarities that do exist suggest that family systems theory overall may be applicable to understanding some aspects of college roommate relationships.

Based on this reasoning, a systemic conceptualization of college roommate relationships would posit that college students' outcomes (e.g., mental health and adjustment to college) are influenced by one another, and are, thus, interdependent. Indeed, there is some empirical support for this assertion. Anderson, Keltner, and John (2003) conducted a study of 37 same-sex pairs of dormitory roommates at a large Midwestern university. These roommates were assessed after living together for 2 weeks and again at the end of the school year after living together for 9 months. Correlations of roommates' emotional expressiveness after 9 months were significantly larger than those after 2 weeks, which demonstrated emotional convergence (i.e., significant increases in similarity of emotional expressiveness) among both male and female pairs of college roommates (Anderson et al., 2003). Haeffel and Hames (2013) conducted a similar study with a larger sample of 103 pairs of randomly assigned freshman roommates at a

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selective, private, midsized, Midwestern university. Results indicated that participants

whose roommate had a ruminative response style (i.e., a cognitive vulnerability to

depression that involves tendency to focus attention on one's negative mood) were more

likely to also develop higher levels of cognitive vulnerability over 3 and 6 month

intervals (Haeffel & Hames, 2013). These studies were particularly informative with

regard to the college roommate system, as they collected data from both roommates and

used data analysis techniques that accounted for the interdependence of roommates'

functioning (APIM). These results support the idea that the functioning of one student is

influenced by the functioning of his or her roommate relationship, and that this

relationship may indeed represent a type of interpersonal system.

A systemic understanding of college roommate relationships would add to the

previously reviewed literature on college roommate relationships that consistently has

suggested the importance of college roommate relationships to students' mental health

and adjustment to college, by accounting for this interdependence within roommate

dyads. Such a conceptualization of college roommate relationships would necessitate

collecting data from both roommates and using data analysis techniques that account for

interdependence (such as APIM). Testing such a conceptualization would represent a

methodological improvement upon the previously reviewed roommate studies (the vast

majority of which collected data from only one roommate within the system), by

allowing researchers to examine each roommate's influence on one another. Just as the

use of the APIM in family research clarified family systems researchers' understanding

of both actor and partner effects within family systems, APIM could be used to test the

current conceptualization of roommate systems and potentially allow for a more nuanced understanding of roommate interdependence.

In addition to providing a framework for a systemic understanding of roommate relationships, family systems theory and research can further add to our conceptualization of college roommate systems by providing a potential explanation for *where* interpersonal dynamics among roommates originate: their family of origin. There is significant evidence that family of origin functioning affects college students' social and psychological functioning. For example, in a study conducted at a large public southern university, 17 students from dysfunctional family of origin environments (either disengaged or enmeshed) and 21 students from positively functioning family of origin environments (balanced in cohesion and flexibility) role-played interpersonal conflict scenarios (Larkin, Frazer & Wheat, 2011). Both male and female students from dysfunctional family environments exhibited significantly more negative and less positive verbal behaviors than students from positively functioning environments (Larkin, Frazer & Wheat, 2011). Furthermore, in a sample of 208 mostly junior and senior college students from a Midwestern university, college students' ratings of the overall functioning of their family during their upbringing significantly predicted the quality of their friendships at college (Wise & King, 2008). In addition, in a sample of 320 students from a public north eastern university, students from less emotionally expressive families tended to employ an avoidant emotional coping style and had significantly more difficulty adjusting to college than students from more expressive families of origin (Johnson, Gans, Kerr, & LaValle, 2010). Thus, there is clear evidence that dysfunction

within students' families of origin is associated with similarly poor social and psychological functioning in college. Although these studies did not focus on roommate relationships, the findings are consistent with the notion that dysfunction within families of origin may also be associated with dysfunction within roommate relationships.

This hypothesis about the connection between families of origin and roommate relationships is similar to a core component of systemic family theory: the intergenerational transmission of interpersonal patterns. This concept posits that family patterns and styles of interactions tend to be 'passed down' from one generation to the next (Bowen, 1987; Harvey, Curry, & Bray, 1991). For example, children's exposure to interpersonal aggression and abuse, conflict and divorce, parenting styles, and communication patterns within their families of origin increases their likelihood of reenacting these dynamics within their future families as adults (e.g., Serbin & Karp, 2004). Through modeling, families may teach children behavioral repertoires for interacting within family systems, and therefore, families act as a socializing agent (Halberstadt, 1986). For example, the degree of emotional expressiveness within college students' families of origin predicts their style of emotional expression and skill in communication when discussing topics that are personally meaningful to them (Halberstadt, 1986). Given that college roommate relationships may act as the first interpersonal system within which students live after geographically separating from their family of origin, a full conceptualization of roommate relationships should take into account the likelihood that students' families of origins influence how this system functions.

SUMMARY. In conclusion, family systems theory is applicable to the proposed conceptualization of college roommate relationships for three overall reasons. First, groups of college roommates are interpersonal systems which, like biological families, are made up of varying numbers of individuals who live together and share similar challenges (e.g., negotiating expectations of one another). Second, like biological family members, college roommates' outcomes (e.g., mental health and adjustment to college) may be interdependent with one another. Lastly, college students may bring familiar relational patterns from their families of origin with them into their roommate relationships. Thus, a systemic perspective of roommate relationships helps explain *how* such relationships develop over time (interdependently) and *where* dynamics among roommates originate (their family of origin).

2.   THE CURRENT STUDY

As previously described, there is currently no definitive standard for conceptualizing roommate relationships. The current paper proposes a conceptualization of college roommates based on family systems theory, which provides an explanation for how interpersonal dynamics between roommates develop and the role they play in students' adjustment to college and mental health. The current study is designed as a pilot of this empirically-testable and clinically-applicable conceptualization of roommate relationships. It proposes utilizing data from both roommates within a roommate dyad and analyzing them via APIM, which allows an examination of both actor and partner effects. The specific hypotheses to be tested, which derive from the overall conceptualization, are as follows.

HYPOTHESES 1 AND 2: Students' perception of roommate relationship dysfunction will be associated with both their own adjustment to college and negative emotional symptoms, and those of their roommate. Hypothesis 1 and 2 are designed to test the interdependence within the proposed conceptualization of roommate relationship dysfunction and its effects on students' adjustment to college and negative emotional symptoms. Hypothesis 1 posits that roommates' perception of dysfunction within their roommate relationship is related to their own adjustment to college (i.e., actor

effect) and to their roommate's adjustment to college (i.e., partner effect). Specifically, I hypothesize that students who rate their roommate relationship as being highly dysfunctional will be likely to rate themselves as having poor adjustment to college, as will their roommate. Hypothesis 2 is identical to hypothesis 1, except that the outcome variables are each roommate's negative emotional symptoms.

Figures 1 and 2 show the Actor-Partner Interdependence Model (APIM) used to test these hypotheses. Horizontal arrows represent actor effects, whereas diagonal arrows are partner effects. The covariance between the unexplained variances in each roommate's rating of the dysfunction within their relationship (e_{X1} and e_{X2}), the covariance between the unexplained variances in each roommate's rating of their adjustment to college (Hypothesis 1, e_{Y1} and e_{Y2}), and the covariance between the unexplained variances in each roommate's rating of their negative emotional symptoms (Hypothesis 2, e_{Y1} and e_{Y2}) represent the interdependence in the data.

HYPOTHESIS 3: Current dysfunction within students' family of origin will be associated with both their own perception of dysfunction within the roommate relationship, and that of their roommate. Hypothesis 3 is designed to test the interdependent effect of dysfunction within students' family of origin on their roommate relationship. Hypothesis 3 posits that students' perception of dysfunction within their family of origin is related to their own perception of dysfunction within their roommate relationship (i.e., actor effect) and their roommate's perception of dysfunction within their roommate relationship (i.e., partner effect). I hypothesize that students who rate

their family of origin as being highly dysfunctional will be likely to rate their roommate relationship as highly dysfunctional, as will their roommate.

Figure 3 shows the Actor-Partner Interdependence Model (APIM) used to test this hypothesis. Horizontal arrows represent actor effects, while diagonal arrows are partner effects. The covariance between the unexplained variances in each roommate's rating of the dysfunction within their relationship (e_{Y1} and e_{Y2}) represents the interdependence in the data.

HYPOTHESES 4 AND 5: College roommate relationship dysfunction will mediate any association of family of origin dysfunction with adjustment to college and negative emotional symptoms. Next, I will combine the prior three hypotheses into a comprehensive model to test the proposed overall conceptualization of *where* dysfunction within roommate relationships originates (i.e., their family of origin) and *how* it affects college students (i.e., via their adjustment to college and negative emotional symptoms). Hypothesis 4 variables include current dysfunction within each roommates' families of origin (predictor variables, X_1 and X_2), each roommate's rating of their adjustment to college (outcome variables, Y_1 and Y_2), and each roommate's rating of dysfunction within the roommate relationship (mediator variables, M_1 and M_2). Specifically, hypothesis 4 posits that students' ratings of the current functioning of their families of origin are associated their own adjustment to college (i.e., actor effect) and their roommate's adjustment to college (i.e., partner effect), but that this association can largely be explained by the roommates' ratings of dysfunction within the roommate relationship (mediators), which are also assumed to be interdependent. Specifically, I

hypothesize that students who rate their families as being highly dysfunctional will be likely to rate their roommate relationship as being highly dysfunctional and, thus, will be more likely to rate themselves as having poor adjustment to college, as will their roommate.

Figure 4 shows the Actor-Partner Interdependence Mediation Model (APIMeM) used to test this hypothesis. Horizontal arrows represent actor effects, while diagonal arrows are partner effects. The covariance between the unexplained variances in each roommate's rating of dysfunction within the roommate relationship (e_{M1} and e_{M2}) and the covariance between the unexplained variances in each roommate's rating of his or her own adjustment to college (e_{Y1} and e_{Y2}) represents the interdependence in the data. Hypothesis 5 is identical to hypothesis 4, except that the outcome variables are negative emotional symptoms rather than college adjustment.

3. METHOD

PARTICIPANTS

Participants were 104 pairs of same-sex undergraduate roommates (71 female roommate pairs, 33 male roommate pairs) between the ages of 17 and 25 ($M = 18.94$ $SD = 1.15$). See Table 1. All participants lived on-campus at George Mason University in a "double" (or a "quad" *if* their primary roommate with whom they shared a bedroom agreed to participate). George Mason University is a large, ethnically diverse, public university located on the East Coast of the United States with a residential population of approximately 5,000 students. Thirty-eight percent of participants reported they were randomly assigned to their roommate, while 62% chose to live together voluntarily. Participants knew their roommates for an average of 20.81 months ($SD = 36.32$ months) and had been living together for an average of 7.42 months ($SD = 20.55$ months). Fifty-five percent of participants were freshman, 27% were sophomores; 14% were juniors; and 4% were seniors. About half of the sample identified as Caucasian (54%). The remaining participants were 18% African-American, 10% Asian-American, 5% Hispanic, and 5% Multiracial, 1% Pacific Islander, 1% Native American, and 7% "Other."

Sixty-seven percent of the sample indicated that their family of origin consisted of both of their parents continuously married, 8% indicated that their parents divorced and neither remarried, 15% said that their parents divorced and one or more of their parents

remarried, 3% said that they grew up in a single parent household, 1% identified their grandparents, and 6% endorsed the category "Other." Family income was relatively normally distributed, with 13% indicating their family's annual income was under $50,000, 14% said $50,000-$75,000, 18% said $75,000-$100,000, 20% said $100,000-$150,000 10% said $150,000-$20,000, 10% said over $200,000, and 15% indicated that they preferred not to answer this question.

Table 1. Sample demographics.

Pairs of same-sex undergraduate roommates	N = 104
Female pairs	N = 71
Male pairs	N = 33
Year in College	
Freshman	55%
Sophomore	27%
Junior	14%
Senior	4%
Roommate assignment	
Random assignment	38%
Voluntarily chosen	62%
Number of months roommates knew each other	$M = 20.81$, $SD = 36.32$
Number of months roommates lived together	$M = 7.42$, SD 20.55
Family of origin structure	
Continuously married parents	67%
Parents divorced, neither remarried	8%
Parents divorced, one or both remarried	15%
Single parent household	3%
Grandparents only	1%
Other	6%
Family of origin income	
Under $50,000	13%
$50,000 - $75,000	14%
$75,000 - $100,000	18%
$100,000 - $150,000	20%
$150,000 - $200,000	10%
Over $200,000	10%
Preferred not to answer	15%

MEASURES

Family of Origin Dysfunction was assessed using the General Functioning scale of the Family Assessment Device (FAD; Epstein, Baldwin & Bishop, 1983; Miller, Epstein, Bishop, & Keitner, 1985). The FAD is a 60-item measure that assesses seven

dimensions of family functioning. Each item asks participants to rate their own family's similarity to each statement using a 4-point scale from "strongly agree" to "strongly disagree." Higher scores indicate greater levels of dysfunction within the family. Participants completed the FAD based on their biological family of origin's functioning at the present time.

The 11-item General Functioning scale of the FAD provides a global indicator of overall health/pathology within the family system, and is made up the 12 most highly intercorrelated items from the five subscales. Factor analyses of the FAD support the use of the General Functioning scale, rather than individual subscales, as the most valid and reliable component of the FAD (Ridenour, Daley, & Reich, 1999).

The FAD General Functioning scale demonstrates adequate test-retest reliability ($r = .71$, $p < .05$ one-week apart) and substantial concurrent validity ($r > .50$, $p < .05$) when compared with the Family Adaptability and Cohesion Scales (Miller et al., 1985; Olson, Sprenkle, & Russell, 1979). The FAD General Functioning Scale also predicts mental health symptomatology among biological family members (e.g., Stein et al., 2000). In college student samples, the FAD General Functioning scale demonstrates high internal consistency ($\alpha = 0.90$) and predicts anxiety (Ballash et al., 2006). In the current sample, internal consistency for the FAD General Functioning Scale was excellent ($\alpha = .93$).

Dysfunction within roommate relationships was assessed using a modified version of the FAD General Functioning Scale. Since this modified version of the FAD refers to participants' roommate(s), 3 items were modified slightly (e.g., from "Making

decisions is a problem for our family" to "Making decisions is a problem for my roommate and me"), while most other items remained the same (e.g., "In times of crisis we can turn to each other for support"). Using a family systems measure to assess roommate relationship functioning fits with the proposed systemic conceptualization of roommate relationships.

A 2012 study by Erb and Short provided evidence of the reliability and validity of using the FAD to assess college roommate relationship functioning. In that study, the FAD General Functioning scale demonstrated excellent reliability ($\alpha = .90$) for use with college roommates. The correlations between students' FAD General Functioning ratings of their family of origin and their FAD General Functioning ratings of their roommate relationships were moderate and significant ($r = .25$, $p < .01$), suggesting that these two versions of FAD measure related but distinct systems (Erb & Short, 2012). The FAD General Functioning scale's moderate to strong correlations with other relationship measures also supports its concurrent validity: $r = -.83$, $p < .01$ with the Relationship Assessment Scale (RAS; Hendrick, Dicke, & Hendrick, 1998), $r = .40$, $p < .01$ with the Quality of Relationships Inventory (QRI; Pierce, Sarason & Sarason, 1991) Conflict subscale, $r = -.77$, $p < .01$ with the QRI Support subscale, and $r = -.70$, $p < .01$ with the QRI depth subscale (Erb & Short, 2012). In the current study, the FAD General Functioning scale demonstrated good internal reliability ($\alpha = .87$).

In a previous study (Erb & Short, 2012), current roommate dysfunction (as measured by the FAD GF) was associated with higher levels of anxiety ($r = .22$, $p < .05$), lower life satisfaction ($r = -.24$, $p < .05$), worse academic adjustment to college ($r = -.29$,

$p < .05$), worse social functioning in college ($r = -.34$, $p < .05$), and less feelings of attachment to one's college ($r = -.23$, $p < .05$).

Roommate relationship characteristics. In addition to using the FAD, several questions were included to assess the closeness of students' roommate relationships, how often arguments/disagreements arise, and how these arguments/disagreements affect students' mental health and performance in school. Specifically, one question asked participants how their roommate relationship compared to other friendships and included the response options "more close," "about as close," "less close." Another question asked how often they disagreed with their roommate along the following scale: "never," "rarely," "sometimes," and "fairly often." Participants were prompted to indicate from whom they had sought advice about how to get along with their roommate or how to resolve disagreements with their roommate of the following options: a parent, a family member other than a parent, a high school friend, a college friend, residence life staff (e.g., their RA), other, and no one. Lastly, participants were asked whether disagreements with their roommate (or their roommate relationship in general) ever made them feel stressed, depressed, anxious, nervous or worried, or led them to consider transferring to a different college, along the following scale: "never," "sometimes," and "many times." Although these questions have not been used in previous studies, and thus their reliability and validity has not been empirically evaluated, their wording suggests that they have face validity.

Adjustment to college was assessed using the Student Adaptation to College Questionnaire (SACQ; Baker & Siryk, 1984). The SACQ consists of 67 items that assess

academic, social, and emotional adjustment, and school attachment in college students. A total adjustment score is calculated by averaging participants' responses on all items. Participants rate the extent to which each statement (e.g., "I have difficulty feeling at ease with others at college.") applies to them on a 9-point scale from "doesn't apply to me at all" to "applies very closely to me." High scores are indicative of better adjustment.

The SACQ demonstrates excellent internal reliability (α = .93; Baker & Siryk, 1984). The SACQ also demonstrates adequate criterion validity as evidenced by significant correlations between the SACQ and behaviors associated with the transition to college, such as freshmen GPA (r = .53), the use of campus counseling center (r = -.27), and attrition rate after one year of college (r = -.41; Baker & Siryk, 1999). A recent meta-analytic review of the SACQ confirmed the validity of the SACQ, and reaffirmed its widespread use for assessing students' adjustment to college (Credé & Niehorster, 2012). In the current study, the SACQ demonstrated excellent reliability (α = .92).

Negative emotional symptoms were measured by the Depression, Anxiety, Stress Scales – Short Form (DASS-SF; Lovibond & Lovibond, 1995). The DASS-SF is a 21-item self-report form designed to measure negative emotional states, including depression, anxiety and stress. Items ask participants to rate how often they experienced depressive symptoms, anxiety and stress over the past week. High total scores on the DASS-SF indicate more severe symptoms of these negative emotions.

The DASS-SF demonstrates excellent reliability in non-clinical samples (α =.94, .92, and .95 for each subscale; Antony, Bieling, Cox, Enns & Swinson, 1998). The DASS-SF total score also demonstrated excellent internal reliability in previous studies, α

= .90 (Erb & Short, 2012) and in the current study, α = .92. The conceptual and empirical latent structure of the DASS-SF was verified through confirmatory factor analysis (Antony et al., 1998), and the construct validity was confirmed in a large non-clinical sample (Henry & Crawford, 2005). Correlations between the DASS and other questionnaires and other widely-used clinical rating measures of anxiety, depression, and negative affect (such as the Beck Depression Inventory) demonstrates the convergent and discriminant validity of the DASS (Brown, Chorpita & Barlow, 1997; Lovibond & Lovibond, 1995).

PROCEDURE

Participants were recruited via an online research participation sign-up program called Sona Systems. In order to be eligible to register for the study, participants had to be at least 18 years old and living on campus in either a double (or quad if he/she had a primary roommate with whom they shared a bedroom). In addition, their roommate had to be willing to participate in the study as well. Participants who registered through Sona Systems were provided with 1.5 credits of research participation. (Undergraduates enrolled in a variety of both lower and upper level psychology classes, such as Introduction to Psychology, Research Methods, and Abnormal Psychology, were required to either earn a varying number of research participation credits each semester or attend research lectures.[1]) Roommates of participants who signed-up through Sona Systems

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[1] Note that participants did *not* need to be a psychology major in order to register via Sona Systems. Instead, participants simply needed to be enrolled in one of the many psychology courses which require research participation.

were offered either the option to receive 1.5 Sona Systems credits as well, or receive $5 in cash and one entry into each of two raffles for $50.

To participate in the study, participants came to an on-campus computer lab with their roommate at a designated time. Researchers instructed participants to complete online questionnaires on separate sides of the room, which lasted from 1 to 1.5 hours. Researchers monitored participants to protect the validity of the study by ensuring that participants were not talking with their roommate while completing the study, and that they were actively engaged and serious about their participation.

Seventy-four of the 104 pairs of roommates included in this study consisted of one roommate who was enrolled in a psychology course and registered via Sona Systems and one roommate who was not. Thirty pairs of roommates were both enrolled in a psychology course and both registered via Sona Systems. Data were collected from October 2012 to April 2013. The dates at which participants completed the research were relatively normally distributed across this range of time, with a peak number of participants (28 pairs) participating in December 2012.

3. RESULTS

Prior to conducting the planned analyses, we addressed the missing values within our data set. Missing values for all variables were determined to be missing completely at random (MCAR) by using Little's chi-square test (Little, 1988) ($x^2 = 9645.24$, $p = .43$). Missing values were imputed using Expectation-Maximization algorithm (Enders, 2001) in SPSS 20.

DESCRIPTIVE RESULTS

Roommate relationship sample characteristics. When asked how their roommate relationship compared to other friendships, 47% of participants indicated that they felt "more close" to their roommate than their other friends, 41% indicated that they felt "about as close," and 12% indicated that they felt "less close" to their roommate than their other friends. When asked how often they disagreed with their roommate, 69% indicated that they "rarely" disagreed, while 30% indicated that they "sometimes" disagreed and 2% indicated that they disagreed "fairly often." When asked about whether they have ever sought advice about how to get along with their roommate or how to resolve disagreements with their roommate, 32% had sought advice from one of their parents, 27% had sought advice from a high school friend, 34% had sought advice from a college friend, and 7% sought advice from their residence life staff (e.g., their RA). When

asked whether disagreements with their roommate (or their relationship with their roommate in general) ever made them feel stressed, 5% said "many times" and 29% said "sometimes." When asked whether disagreements with their roommate (or their relationship with their roommate in general) ever made them feel depressed, 1% said "many times" and 14% said "sometimes." When asked whether disagreements with their roommate (or their relationship with their roommate in general) ever made them feel anxious, nervous, or worried, 1% said "many times" and 20% said "sometimes." Lastly, 4 participants indicated that they considered transferring to a different college due to disagreements with their roommate.

Table 2 displays intraclass correlations of roommate A's and roommate B's scores on each of the study variables, along with the means, and standard deviations for the study variables. As can be seen in the Table 2, there were minimal differences between participants designated as roommate A and roommate B. Their designation of either "A" or "B" was based on the order in which each roommate finished the survey. The fact that there were minimal differences between the means and standard deviations of variables for roommates A and B was to be expected given that we treated each member of our same-sex roommate dyads as "indistinguishable."[2]

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[2] Because the dyads in this study consisted of either two females or two males, there is no role distinction between them. In comparison, "distinguishable dyads" are dyads in which an important factor distinguishes one member from another in the dyad, such as husbands and wives within couple dyads.

An examination of the intraclass correlations[3] among variables in the table also

reveals that, as expected, roommates' perceptions of dysfunction within the roommate

relationship were significantly correlated, as were their ratings of their adjustment to

college and negative emotional symptoms. These correlations suggest that roommates'

mental health and college adjustment variables tend to be related to each other, and

implies that these variables could be influencing one another. On the other hand,

roommates' ratings of their families of origin were not significantly correlated, which

suggests (as expected) that dysfunction within college students' families of origin is

independent of one another.

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[3] Interclass correlations (rather than zero-order correlations) were used when comparing
the two roommates' scores on the same variables in accordance with recommendations
by Kenny, Kashy, and Cook (2006).

Table 2.

Intraclass Correlations, Means, and Standard Deviations of Study Variables

	1	2	3	4	5	6	7	8
1. Family Functioning (FAD1) as rated by roommate A	--							
2. Family Functioning (FAD2) as rated by roommate B	.09	--						
3. Roommate Functioning (FAD-RR1) as rated by roommate A	--	--	--					
4. Roommate Functioning (FAD-RR2) as rated by roommate B		--	.60***	--				
5. Adjustment to College (SACQ1) as rated by roommate A			--	--	--			
6. Adjustment to College (SACQ2) as rated by roommate B				--	.40***	--		
7. Negative Emotional Symptoms (DASS1) as rated by roommate A					--	--	--	.
8. Negative Emotional Symptoms (DASS2) as rated by roommate B						--	.33**	--
M	21.60	21.50	19.39	18.40	294.53	301.23	32.52	31.82
SD	7.48	7.20	5.99	4.91	51.03	51.95	10.49	10.67

Note. FAD-RR = Family Assessment Device – Roommate Relationship; FAD = Family Assessment Device, SACQ = Student Adjustment to College Questionnaire, DASS = Depression, Anxiety, and Stress Scales,

* $p < .05$. ** $p < .01$. *** $p < .001$.

Table 3 displays the actor and partner zero-order correlations between the study variables, computed with the individual as the unit of analysis. It should be noted that these correlations may be inflated because they do not take into account interdependence between each pair of roommates. As can be seen in Table 3, the actor effect association between participants' family of origin dysfunction and their perception of roommate relationship dysfunction was marginally significant, indicating that there is small trend between these two variables. Participants' family of origin dysfunction and their perception of roommate relationship dysfunction were both significantly associated with worse adjustment to college and more negative emotional symptoms, suggesting that both

interpersonal systems have a moderate association with these two outcome measures. The two outcome measures (adjustment to college and negative emotional symptoms) also had a moderate association with one another.

As can be seen in Table 3, there was a significant partner association between participants' perception of roommate relationship dysfunction and their roommate's perception of the roommate relationship dysfunction. This was expected given that both variables measure the same construct (roommate relationship dysfunction). The partner correlations between participants' adjustment to college and their roommates' adjustment to college and negative emotional symptoms were both significant. Similarly, the partner correlations between participants' negative emotional symptoms and their roommates' negative emotional symptoms were significant.

Table 3.

Intercorrelations of Main Variables Using the Individual as the Unit of Analysis

	1	2	3	4
1. FAD	**.05**	.03	-.12	.10
2. FAD-RR	.13†	**.42***	-.15*	.09
3. SACQ	-.25***	-.34***	**.25****	-.18**
4. DASS	.46***	.28***	-.46***	**.20****

Note. FAD-RR = Family Assessment Device – Roommate Relationship; FAD = Family Assessment Device, SACQ = Student Adjustment to College Questionnaire, DASS = Depression, Anxiety, and Stress Scales. Actor effect correlations are shown below the diagonal, partner effect correlations are shown above the diagonal, and correlations between roommates on the same measures are shown on the diagonal in bold.

† $p < .06$. * $p < .05$. ** $p < .01$. *** $p < .001$.

To evaluate possible gender differences in these variables, mixed-model ANOVAs were conducted for all variables, with gender as a between-group variable and

roommate values on the same variable treated as a within-group variable (i.e., a repeated measure). The only variable for which there was a significant gender difference was roommate relationship dysfunction, $F(1, 102) = 13.14$, $p < .001$. Specifically, male roommate pairs reported more relationship dysfunction ($M_A = 21.90$, $SD_A = 5.73$; $M_B = 20.42$; $SD_B = 4.43$) than female roommate pairs ($M_A = 18.22$, $SD_A = 5.78$; $M_B = 17.46$, $SD_B = 4.86$). Therefore, we conducted all the analyses with and without controlling for gender. Given that there were minimal differences in the results when controlling for gender (i.e., all paths remained significant or remained nonsignificant), the results described below do not include gender as a control variable.

To evaluate possible differences based on grade level in college, mixed-model ANOVAs were conducted for all variables. None of these mixed-model ANOVAs were significant, indicating no significant differences between participants of different grade levels on any of the study variables. Additionally, t-tests indicated no significant differences on any of the study variables for roommates who were randomly assigned to live together versus those who chose to do voluntarily.

Next, t-tests were performed in order to compare the study variables with the same variables collected in a nearly identical pilot study conducted a year prior. The only differences between the pilot study and the current study was the pilot study was conducted online and did not require participants' roommates to participate, whereas the current study was conducted in computer labs on-campus and participants were required to bring their roommate (who also agreed to participate) with them. T-tests indicated that there were no significant differences in the level of negative emotional symptoms and the

family of origin dysfunction reported by the two samples. However, there were significant differences in the level of roommate relationship dysfunction between the two samples, $t(368) = -10.42$, $p < .001$, and the level of adjustment to college between the two samples $t(368) = 2.11$, $p < .05$. Specifically, the sample in the current study reported significantly less roommate relationship dysfunction ($M = 18.69$, $SD = 5.40$) and better overall adjustment to college ($M = 297.92$, $SD = 51.70$) compared to the pilot sample's reported roommate relationship dysfunction ($M = 25.64$, $SD = 7.40$) and adjustment to college ($M = 286.17$, $SD = 53.39$).

DYADIC ANALYSES

All of the APIM hypotheses were estimated using AMOS 5.0 (Arbuckle, 2003). Typically APIM has a fully saturated (just-identified) model, making it impossible to compute indexes of model fit (Kenny, Kashy & Cook, 2006). However, given that the dyads in this study were indistinguishable, the estimation of actor and partner effects in SEM requires that the actor and partner paths are set equal for both members of the dyad. Doing so yielded two degrees of freedom, which made it possible to calculate indexes of model fit. Based on recommendations for interpreting model fit indices (see review by Schreiber et al., 2006), all five of the hypothesized models had adequate fit (see Table 4).

Table 4.

Model fit indices for all hypotheses.

	x^2(df)	CFI	RMSEA
Hypothesis 1	2.19(2), $p = .33$	.99	.03
Hypothesis 2	1.22(2), $p = .54$	1.00	.00
Hypothesis 3	2.68(3), $p = .44$	1.00	.00
Hypothesis 4	7.91(7), $p = .34$	.98	.04
Hypothesis 5	3.58(7), $p = .83$	1.00	.00

Note. RMSEA = Root mean square error of approximation, CFI = Comparative Fit Index.

Hypothesis 1. The *actor effects* (see Figure 1) confirm our hypothesis that roommates' perceptions of dysfunction in their roommate relationship are significantly associated with their reported adjustment to college. Unexpectedly, however, *partner effects* did not confirm our hypothesis, and indicated that each roommate's view of dysfunction within their relationship was not significantly associated with the other roommate's adjustment to college, when the other roommate's view of dysfunction in their relationship was accounted for. The APIM *similarity correlations* (i.e., intraclass correlations) represent the degree of dyadic dependence in each variable. These similarity correlations were both significant, indicating significant similarity among roommates' views of dysfunction within their relationship (moderate effect size) and roommates' self-reports of their adjustment to college (small effect size).
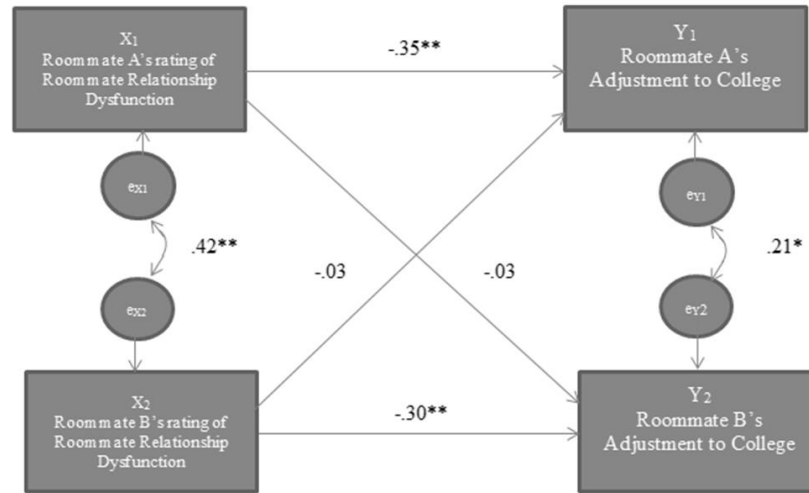
Figure 1. Actor-Partner Interdependence Model (APIM) for Hypothesis 1: Does each roommate's perception of dysfunction within the roommate relationship predict his/her own and his/her roommate's adjustment to college? * $p < .05$, ** $p < .01$, *** $p < .001$.

Hypothesis 2. The *actor effects* (see Figure 2) confirm our hypothesis that roommates' views of dysfunction in their roommate relationship are significantly associated with their reported negative emotional symptoms. As in hypothesis 1, however, *partner effects* did not confirm our hypothesis, and indicated that each roommate's view of dysfunction within their relationship was not significantly associated with the other roommate's negative emotional symptoms, when the other roommate's view of dysfunction in their relationship was accounted for. The APIM *similarity correlation* was significant in this model, indicating significant similarity among roommates' self-reported negative emotional symptoms (small effect size).
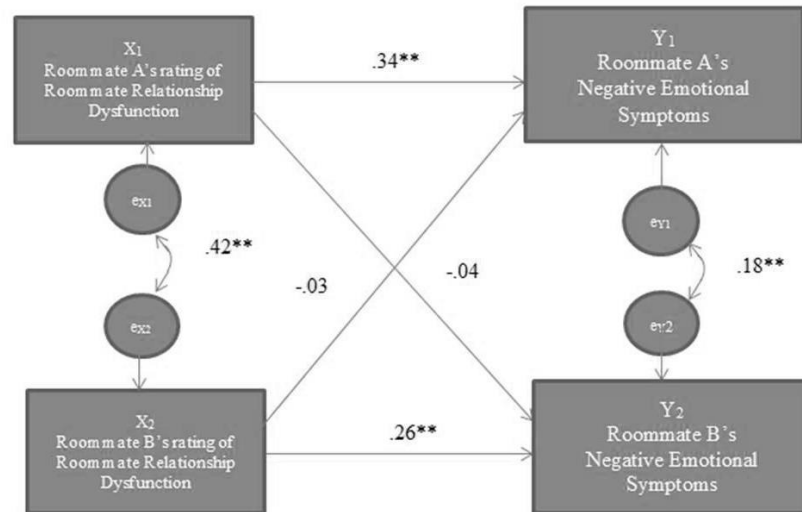
Figure 2. Actor-Partner Interdependence Model (APIM) for Hypothesis 2: Does each roommate's perception of dysfunction within the roommate relationship predict his/her own and his/her roommate's negative emotional symptoms? * $p < .05$, ** $p < .01$, *** $p < .001$.

Hypothesis 3. The *actor effects* (see Figure 3) did not confirm our hypothesis that roommates' views of dysfunction within their family of origin would be associated with their view of dysfunction within the roommate relationship. Likewise, *partner effects* did not confirm our hypothesis, and indicated that each roommate's view of dysfunction within their family of origin was not significantly associated with the other roommate's view of dysfunction within the roommate relationships, when the other roommate's view of dysfunction in their own family was accounted for.
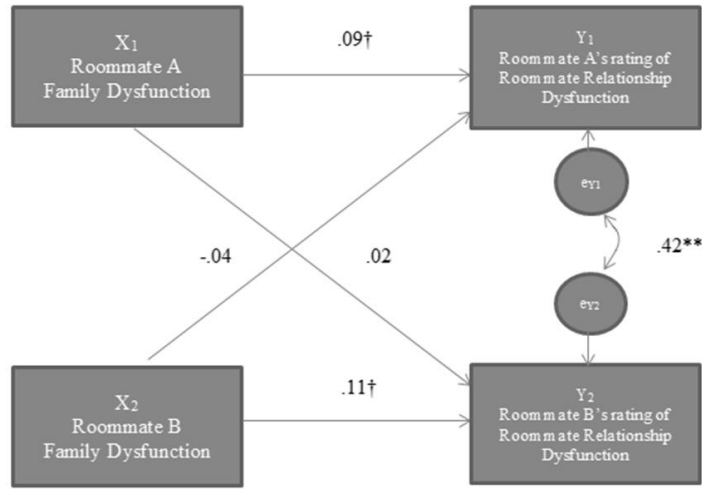
Hypothesis 4. To examine hypothesis 4, we conducted a bootstrapped path analysis using bias-corrected, 95% confidence interval for the standardized effects and 5,000 bootstrap samples, as recommended by Ledermann, Macho, and Kenny (2012). First, we examined the total effects of family of origin dysfunction on adjustment to college. These effects are the summation of the direct and indirect effects specified in the model. The total effects indicated that there was a significant actor effect of family of origin dysfunction on adjustment to college ($\lambda = -.25$, $p < .001$); however, partner effects ($\lambda = -.11$, $p = .14$) were not significant. To evaluate the proportion of the total actor effect of family of origin dysfunction on adjustment to college that was direct and indirect (via roommate relationship dysfunction), we next examined the standardized direct and indirect effects in the model. The direct effect was significant ($\lambda = -.22$, $p < .001$), but the

indirect effect was nonsignificant ($\lambda = -.03$, $p = .14$). This indicated that the mediational component of hypothesis 4 was not supported.

Of note, in this model, there was also a significant actor effect of roommate relationship dysfunction on adjustment to college, but no significant partner effect (see Figure 4). Finally, there was no significant actor or partner effect of family of origin dysfunction on roommate relationship dysfunction.

Figure 4. Actor-Partner Interdependence Mediation Model (APIMeM) for Hypothesis 4: Does the functioning of the roommate relationship mediate the association between current dysfunction within families of origin and adjustment to college? * $p < .05$, ** $p < .01$, *** $p < .001$, ± $p = .08$.

Hypothesis 5. Lastly, to examine hypothesis 5, we followed the same mediation analysis as in hypothesis 4, but with negative emotional symptoms as the outcome

variable. First, we examined the total effects of family of origin dysfunction on negative

emotional symptoms (i.e., the summation of the direct and indirect effects specified in the

model). The total effects indicated that there was a significant actor effect of family of

origin dysfunction on negative emotional symptoms ($\lambda = .46$, $p < .001$); however, partner

effects ($\lambda = .07$, $p = .34$) were not significant. To evaluate the proportion of the total actor

effect of family of origin dysfunction on negative emotional symptoms that was direct

and indirect (via roommate relationship dysfunction), we next examined the standardized

direct and indirect effects in the model. The direct effect was significant ($\lambda = .44$, $p <$

$.001$), but the indirect effect was nonsignificant ($\lambda = .03$, $p = .12$). This indicated that the

mediational component of hypothesis 5 was not supported.

Of note, in this model, there was also a significant actor effect of roommate

relationship dysfunction on negative emotional symptoms, but no significant partner

effect (see Figure 5). Finally, there was no significant actor or partner effect of family of

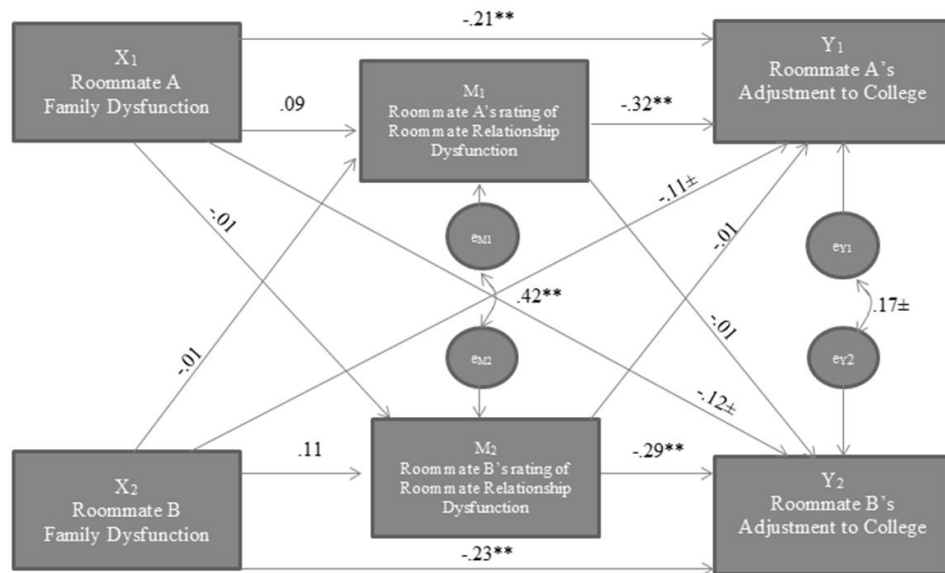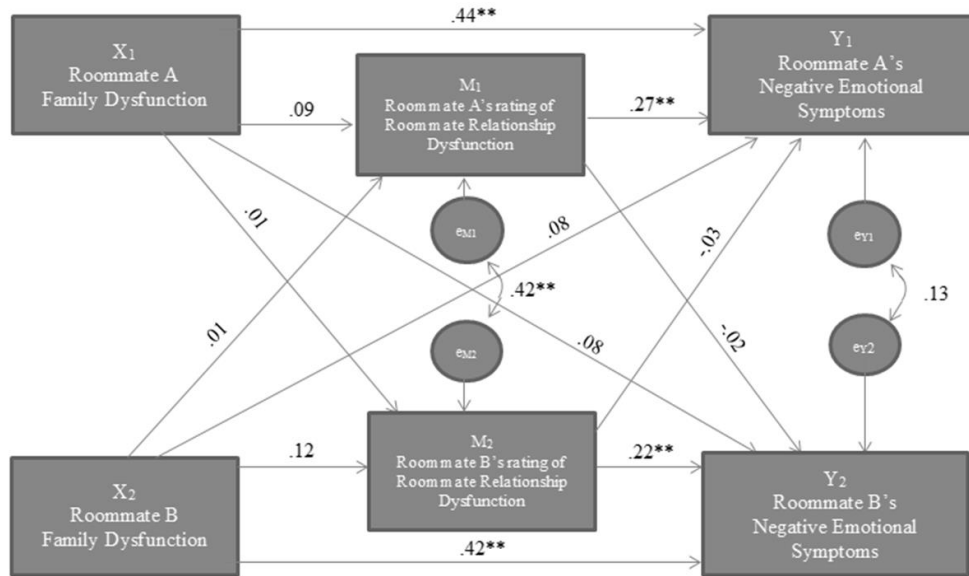origin dysfunction on roommate relationship dysfunction.

Figure 5. Actor-Partner Interdependence Mediation Model (APIMeM) for Hypothesis 5: Does the functioning of the roommate relationship mediate the association between current dysfunction within families of origin and negative emotional symptoms? $* p < .05, ** p < .01, *** p < .001$.

5. DISCUSSION

The current study examined outcomes and predictors of roommate relationship dysfunction among 104 college roommate pairs. Results provided important information that builds upon prior studies and can help us draw some meaningful conclusions about how roommate relationships affect college students.

First, the results indicated that roommate relationships are indeed a meaningful interpersonal system for college students. For example, about half of students described their roommate relationship as being a closer relationship than their other friendships. Since no previous studies had begun to examine how roommate relationships compare to other college friendships, this study adds to our understanding of the salience of roommate relationships. Additionally, results of several questions about the impact of roommate relationships on mental health and college adjustment outcomes are striking. About one third of students indicated that they sometimes argued with their roommates and that these arguments led them to feel stressed. Even more concerning, 15% indicated that these relationships led them to feel depressed, and a small, but alarming number (about 3%) of participants even indicated that they had considered transferring to a different college because of their roommate. Thus, given that these results suggest that roommate relationship difficulties are common and relevant to mental health and college adjustment, and given the scarcity of studies on this topic in the past several decades, this

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study provides additional evidence of the need for increased research on college student roommate relationships.

Next, this study was unique in its approach to studying roommate relationships by collecting data from both roommates and using an interdependent perspective. The fact that roommates had similar, but not exactly the same, views of the level of dysfunction within their relationship supports the decision to collect data from both roommates, rather than just one roommate, in order to more accurately measure relationship dysfunction. Despite having theoretical support for an interdependent research design based on prior studies, the empirical results of the current study were mixed in their support for using an APIM. In support of this design, the significance of similarity correlations suggests that it is appropriate to analyze data from roommates dyadically.[4] Although one of the partner zero-order correlations was significant (the association between roommate relationship dysfunction and adjustment to college), the lack of partner effects in the models of the current study were contrary to our hypotheses and do not support an APIM. The limitations of the current study (discussed later) should be considered before drawing firm conclusions about the lack of partner effects however.

The findings of current study were congruent with results of previous studies by suggesting that students' perception of roommate relationship dysfunction is associated with their own adjustment to college and negative emotional symptoms. Since the most recent published studies examining similar associations with roommate relationships

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[4] It should be noted that these similarity correlations were significant despite the fact that the power of interclass correlation tests are less than the power of typical Pearson correlation tests (Kenny, Kashy & Cook, 2006).

were in the 1980s, these findings are an important update for the literature. The results

confirm that despite the many interpersonal systems college students are involved in

(e.g., family of origin, classmate groups, extracurricular organizations, high school

friends, etc.), the roommate relationship is a specific interpersonal system that factors

into students' mental health and ability to adjust well to college. The fact that Student

Affairs decisions affect many aspects of college roommate relationships (e.g., roommate

matching assignments) provides motivation for research to better illuminate our

understanding roommate relationships in order to inform Student Affairs decisions.

Contrary to our hypotheses, results of this study did not suggest an association

between roommates' views of dysfunction within their family of origin and their view of

dysfunction within their roommate relationship. Although previous studies have shown

that family of origin functioning impacts interpersonal functioning (e.g., Johnson, Gans,

Kerr & LaValle, 2010; Larkin, Frazer & Wheat, 2011; Wise & King, 2008), this was the

first study to examine how family of origin functioning would be related to roommate

relationships specifically. Results of the current study do not support our

conceptualization of roommate relationship dynamics originating from family of origin

dynamics. However, these results do not invalidate the conceptualization because of the

several limitations of the current study (e.g., cross sectional nature of the study) discussed

later.

Along these lines, college roommate relationship dysfunction did not mediate the

association of family of origin dysfunction with adjustment to college and with negative

emotional symptoms. This finding was contrary to our hypotheses and the proposed

conceptualization of the origins of roommate relationship dynamics. Instead, results supported an additive model, in that both family of origin dysfunction and roommate relationship dysfunction were significantly and independently associated with mental health and college adjustment outcomes. This suggests that there are other explanations for the association between family of origin dynamics and outcomes regarding mental health and college adjustment. In addition, results suggest the relationships between family of origin, roommate relationships, and outcomes are more complicated that the original proposed conceptualization, and other potential mediators and moderators should be considered in future research.

UNIQUENESS AND LIMITATIONS OF THE CURRENT STUDY

When interpreting these results and considering implications for future research, clinical, and practice applications, several unique aspects and methodological limitations of the current study should be considered.

Sample characteristics. Several characteristics of the current study's sample may have influenced the results. First, due to the recruitment method via Sona Systems, participants had to ensure that their roommates were willing to participate, and these roommates had to agree to essentially 'do their roommate a favor' by participating (though they were also incentivized with $5 and entries into two $50 raffles). Thus, the recruitment method for the current sample likely favored healthy functioning roommate pairs. Indeed, analyses comparing the current study and the pilot study indicated that requiring participants' roommates to participate resulted in a sample with less roommate relationship dysfunction and better adjustment to college. Therefore, when interpreting

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the lack of significant results in hypothesis 3 (which tested the association between family of origin dysfunction and roommate relationship dysfunction) in particular, we should keep in mind that these results apply to a sample of relatively well-functioning roommate pairs. Perhaps students in the current sample have resiliency factors not accounted for in the current study (e.g., emotional intelligence, healthy interpersonal skills learned outside the family of origin environment) that overshadow the negative effects of potential dysfunction in their families of origin, whereas a sample of poorly functioning roommate relationships may be more susceptible to family of origin dysfunction.

The difficulty recruiting roommate pairs in a way that does not require any elements of cooperation between roommates is a challenge that future researchers may benefit from considering. Another recent study (Haeffel & Hames, 2013) of roommate pairs also examined data from both roommates in the dyads, and used a similar recruitment strategy as the current study. Thus, future research may benefit from developing recruitment methods with less bias (e.g., including the research in dorm programming with equal incentives for both roommates) and/or intentionally targeting certain samples of roommates (e.g., recruiting roommate pairs who request conflict resolution assistance).

Second, although the current sample included considerable ethnic and racial diversity, there were more female participants than male participants, and freshmen (compared to other grade levels) made up about half of the sample. Although women reported better functioning roommate relationships than men, controlling for gender did

not change any of the significance levels of the paths. However, it is unknown if having more men in the sample might have altered the results to some degree, given that there were too few men to have adequate power to fully determine such gender effects. Grade level and roommate assignment (voluntary vs. assigned) were not controlled for in the analyses because none of the study variables significantly differed by grade level. Thus, although the gender, grade levels of participants, and roommate assignment were not ideally distributed, these analyses support the conclusion that these sample characteristics did not result in major sample bias.

Lastly, the recruiting method required at least one roommate within each pair to be enrolled in a psychology course. It is possible that students enrolled in a psychology course are more insightful, or have better interpersonal skills, than students who are not enrolled in any psychology courses. No research has been conducted comparing the roommate relationships of students enrolled in a psychology course with those of students not enrolled in any psychology courses. Therefore, we cannot be sure that this aspect of participant recruitment biased study results. However, we should also be careful about generalizing these results to all college students, given that the sample was drawn from a specific subset of the total college student population.

Study design. Several aspects of the research study design may have influenced the study's findings. First, given that data must be longitudinal to draw causal conclusions in 'true' mediation, one limitation of the current design for testing hypotheses 4 and 5 is the use of concurrent data. This did not allow an examination of directionality in the associations. However, the overall functioning of families can be

considered a relatively stable variable, as evidenced by the .71 test-retest reliability of the General Functioning scale of Family Assessment Device over a 1-week period (Ridenour, Daley, & Reich, 1999). Additionally, the precedent for using the General Functioning scale of the Family Assessment Device as a predictor variable in mediational analyses using concurrent data (e.g., Ballash, Pemble, Usui & Buckley, 2006) lends credibility to the current study's research design. Finally, several highly regarded methodologists have supported the use of cross-sectional studies to shed light on mediational processes while bearing in mind the limitations of such an approach (e.g., MacKinnon, 2008; Preacher & Hayes, 2008). Still, longitudinal designs would be necessary in order to determine directionality of associations of roommate relationship dysfunction with negative emotional symptoms and college adjustment.

In addition to prohibiting causal conclusions, the cross-section nature of the data may have biased the results of the current study in another meaningful way. Technically, the current study's systemic conceptualization of roommate relationships proposed that dynamics from one's family of origin *during childhood* influences students' interpersonal dynamics within their roommate relationship *once in college*. For example, students from emotionally distant families are likely to repeat this emotionally distant style within their roommate relationship once in college. However, in the current sample, participants reported about their family of origin function in the present day. Given that current family of origin functioning may be different than family of origin functioning prior to college, the assessment of family of origin functioning did not allow us to examine the exact conceptualization model originally proposed.

Next, it is important to consider that all of the variables in the current study were measured using self-report questionnaires taken on the computer during the same time period. Given that shared methods variance runs the risk of artificially inflating correlations between variables (Lindell & Whitney, 2001), it is possible that common method variance may partially account for the strength of actor effects found in the current study and the subsequent lack of partner effects. Also compounding the difficulty finding significant partner paths is the limited power to detect small effects in APIM designs in general (Kenny, Kashy & Cook, 2006). Therefore, the combination of shared method variance within actor effects, and relatively little power in tests of nonindependence when the nonindependence is small in size, may have significantly disadvantaged the chance of finding partner effects in the current study.

ADDITIONAL RESEARCH, CLINICAL, AND STUDENT AFFAIRS APPLICATIONS

The current study strongly demonstrates that college roommate relationship dysfunction is related to students' perceptions of poor adjustment to college and mental health problems. Thus, the overall implications of the study are that it points the importance of roommate relationships within college student life and justifies future studies teasing apart various aspects of the roommate relationship in finer detail.

This study provides an economic incentive for Student Affairs professionals to better understand how to help roommate relationships function well. In the current study, 3% of participants reported that their roommate relationship dysfunction led them to consider transferring schools *actually*. Given that there are about 6,000 students living on

campus at the university where this research was conducted, that would amount to 180

students potentially transferring. Even if these 180 students were all only paying in-state

tuition ($9,908 per year, as opposed to the out-of-state tuition fee of $28,592), the

university would lose $1,783,440 *annually*, in tuition fees alone. Therefore, even from a

simple economic perspective, the current study justifies the need for more research on

college student relationships.

Thus, in addition to the aforementioned future research recommendations (i.e.,

using samples with a wider range of the level of roommate relationship dysfunction;

longitudinal rather than cross-sectional data collection), it is important to discuss how

future studies could build upon the current study's results. These future studies, in turn,

are likely to prove highly useful Student Affairs settings.

Retention as outcome. Although adjustment to college and negative emotional

symptoms have both been shown to predict college student retention (e.g., Credé, &

Niehorster, 2012; DeBerard, Spielmans & Julka, 2004), it may be useful for retention to

be targeted more specifically as an outcome measure in future studies about roommate

relationships. The multitude of publications about college student retention, including

many books (e.g., Seidman, 2005) and even an entire academic journal (e.g., the *Journal

of College Student Retention: Research, Theory & Practice*), are testaments to its

importance within the college student literature and to the concern that Student Affairs

staff have about attrition rates. Beyond controlling for covariates, researchers could

utilize theory to guide examinations of how retention outcomes are predicted by variables

related to roommate relationships, such as roommate's attachment styles, how long

students knew their roommate prior to living together, whether they chose to live together voluntarily or were randomly assigned, or how far they each lived from their families of origin.

A better understanding of how roommate relationships fit into the larger realms of social functioning, and ultimately, retention, could help inform Student Affairs practice. For example, results could inform decisions about how roommates are assigned and how roommate conflicts are addressed, with the goal of increasing the likelihood that roommate relationships would function well and serve as resiliency factors for student retention. Moreover, 3% of participants in the current study indicated that they had considered transferring to a different college due to disagreements with their roommate. Given that the current study had a sample bias toward well-functioning roommate relationships, this statistic is even more alarming since it is likely to be an underestimate of the actual number of students living on campus who might have endorsed this question. Thus, the current study provides further evidence of the importance of future research on how roommate relationships affect college student retention.

Match/mismatch patterns between roommates' individual differences and families of origin. Future studies examining individual differences between roommates could provide a greater understanding of match/mismatch patterns that influence the functioning of roommate relationships. For example, the compatibility of roommates' personality traits, attachment styles, behavior patterns (e.g., sleep vs. waking hours), and communication styles may be associated with optimal or detrimental outcomes. A few studies in the 1990s have explored this topic in terms of personality characteristics such

as conscientiousness and need for autonomy (Heckert et al., 1999), communication patterns (Martin & Anderson, 1995), and race similarity/dissimilarity (Phelps et al., 1998). However, more research along these lines would help universities pair roommates together in ways that optimized their chances for maintaining well-functioning relationships. Additionally, studying such issues from a dyadic perspective that can simultaneously investigate actor effects, partner effects, and the effects of discrepancies would broaden the scope of these initial research studies.

In a similar vein, future research should explore how match/mismatch differences between roommates' families of origin impact their relationship. Rather than examining whether global family of origin dysfunction is associated with dysfunctional roommate relationships (as we did in the current study), it would be useful to see whether match/mismatches between certain styles within families are more predictive of relationship dysfunction. For example, roommates whose family of origins are dysfunctional in similar ways (e.g., more emotionally distant) may actually have a better functioning relationship than roommates in which one individual's family of origin is well-functioning and one is highly dysfunctional. Student Affairs staff could use results of this compatibility research examining the nuances in family of origin environments to optimally match college roommates.

A more empirically-based understanding of how match/mismatch patterns among individual differences between roommates and roommates' families of origin could also inform clinicians' (or RAs') treatment/intervention for individuals with roommate relationship distress. Improving the roommate relationship may involve helping the

roommates understand how each of their family of origin environments influences their interpersonal expectations of others, especially in the context of their relationship with one another. A more empathetic stance toward one another and a willingness to act differently in the roommate relationship than they had in their families of origin may follow. Specifically, clinicians could utilize family systems techniques such as interventive interviewing (Tomm, 1987) or reflexive questions (Tomm, 1988), or techniques from integrative behavioral couple therapy (IBCT), such as empathetic joining (Dimidjian, Martell & Christenson, 2002).

CONCLUSION

The current study is one of the first efforts in the last two decades to provide an in-depth examination of how roommate relationships affect college students, and where interpersonal dynamics within these roommate relationships originate. This study presents the first ever comprehensive, empirically-testable conceptualization of college roommate relationships. The conceptualization builds upon prior studies and advocates for a systemic understanding of how these interpersonal relationships affect important outcomes. Additionally, the current study's utilization of the actor-partner interdependence model represents a significant methodological advancement in the literature.

Despite not showing support for some of the original hypotheses, the significant association between roommate dysfunction and both adjustment to college and negative emotional symptoms, as well as the nonindependence between roommate levels of these outcome variables, provide an initial foundation for future studies on this topic. Results

also point to the potential for roommate dysfunction to impact retention, which has costly

financial implications. Future research that builds upon this research can help advance

our understanding of these important relationships in college students' lives.

APPENDICES

Appendix A. Demographic Items

DEM1. Please indicate your age: _____

DEM2. Please indicate your gender:

    (1) Male

    (2) Female

    (3) Prefer not to indicate male/female

DEM3 Which of the following racial groups best describes you?

    (1) African-American (2) Asian-American (3) Caucasian/White

    (4) Hispanic   (5) Mulitracial   (6) Native American

    (7) Pacific Islander   (8 88) Other: _____

DEM4 Which of the following ethnic group best describes you?

    (1) Hispanic

    (2) Non-hispanic

DEM5 Please indicate your academic grade level:

    (1) Freshman

    (2) Sophomore

    (3) Junior

(4) Senior

(5) Graduate Student

<u>DEM6</u> Do you currently live on campus?

(1) Yes

(2) No

<u>DEM7</u> How many roommates do you currently live with?

(1) One other roommate (i.e. a double)

(2) Two other roommates (i.e. a triple)

(3) Three other roommates

(4) Four or more other roommates

<u>DEM8</u> Which of the following best describes you and your roommates?

(1) We chose/requested to live together voluntarily.

(2) We were assigned to live with one another.

<u>DEM9</u> How many months have you known your roommate? _____ (If you have more

than one roommate, indicate the shortest number of months you have known any of your

roommates.) 1 year = 12 months, 2 years = 24 months, 3 years = 36 months, 4 years = 48

months

<u>DEM10</u> How many months have you lived with your current roommates? (If you have

more than one roommate, how many months have *all* of your current roommates lived

with you.)

<u>DEM11</u> On average, how many days per week do you see your roommate(s)? _____

DEM12 Which of the following best describes the adults in your family of origin?

("Family of origin" refers to your biological family and/or the family you grew up with.)

 (1) mother and father, married

 (2) mother and father, separated or divorced, neither remarried

 (3) mother and father, divorced, one parent remarried

 (4) mother and father, divorced, both currently remarried

 (5) Single parent household

 (6) Grandparents

 (7) Other

 DEM12a (If 7 – "Other") Please describe your relationship to the adults in your

 family or origin ____

 DEM12b (If 2, 3, or 4) How old were you when your parents separated or

divorced? _____

 DEM12c (If 2, 3, or 4) After your parents separated or divorced, who did you

primarily live with? ____

DEM13 What order were you among your siblings?

 (1) No other siblings

 (2) Youngest

 (3) Middle child

 (4) Oldest

DEM14 How many siblings were in your family of origin (excluding you)? ____

DEM15 What is the (combined) household annual income of your family of origin?

(1) Under $20,000   (2) $20,000 - $50,000   (3) $50,000 - $75,000

(4) $75,000 - $100,000   (5) $100,000 - $150,000 (6) $150,000 - $200,000

(7) over $200,000

Family Assessment Device (FAD; Epstein, Baldwin & Bishop, 1983; Miller, Epstein, Bishop & Keitner, 1985) – General Functioning Scale

This questionnaire contains a number of statements about families. Read each statement carefully, and decide how well it currently describes your family of origin.

(*Note: "Family of origin" refers to your biological or adopted family with whom you spent the most time during your childhood.*)

Try not to spend too much time thinking about each statement, but respond as quickly and as honestly as you can. If you have difficulty, answer with your first reaction.

Response options:

   4 - **Strongly agree** (the statement describes your family very accurately)

   3 - **Agree** (the statement describes your family for the most part)

   2 - **Disagree** (the statement does not describe your family for the most part)

   1 - **Strongly disagree** (the statement does not describe your family at all)

FAD5 In times of crisis we can turn to each other for support. (*reverse code*)

FAD8 We cannot talk to each other about the sadness we feel.

FAD13 Individuals are accepted for who they are. *(reverse code)*

FAD16 We avoid discussing our fears and concerns.

FAD20 We can express feelings to each other. *(reverse code)*

FAD22 There are lots of bad feelings in the family.

FAD25 We feel accepted for who we are. *(reverse code)*

FAD30 Making decisions is a problem for our family.

FAD34 We are able to make decisions about how to solve problems. *(reverse code)*

FAD37 We don't get along well together.

FAD41 We confide in each other. *(reverse code)*

Family Assessment Device (FAD; Epstein, Baldwin & Bishop, 1983; Miller, Epstein, Bishop & Keitner, 1985) – General Functioning Scale

This questionnaire contains a number of statements about roommate relationships. Read each statement carefully, and decide how well it currently describes your relationship with your roommate.

Try not to spend too much time thinking about each statement, but respond as quickly and as honestly as you can. If you have difficulty, answer with your first reaction. Response options:

4 - **Strongly agree** (the statement describes my roommate and me very accurately)

3 - **Agree** (the statement describes your my roommate and me for the most part)

2 - **Disagree** (the statement does not describe my roommate and me for the most part)

1 - **Strongly disagree** (the statement does not describe my roommate and me at all)

FAD5 In times of crisis we can turn to each other for support. (*reverse code)*

FAD8 We cannot talk to each other about the sadness we feel.

FAD13 We accept each other who we are. *(reverse code)*

FAD16 We avoid discussing our fears and concerns.

FAD20 We can express feelings to each other. *(reverse code)*

FAD22 There are lots of bad feelings between us.

FAD25 We feel accepted for who we are. *(reverse code)*

FAD30 Making decisions is a problem for my roommate and me.

FAD34 We are able to make decisions about how to solve problems. *(reverse code)*

FAD37 We don't get along well together.

FAD41 We confide in each other. *(reverse code)*

The Student Adaptation to College Questionnaire (SACQ; Baker & Siryk, 1984)

Please rate the extent to which each statement applies to you on a scale from 1 (doesn't

apply to me at all) to 9 (applies very closely to me). (*R* = reverse code)

Academic Adjustment Scale

Cluster 1: Motivation

SA_M1 I am definite about my reasons for being in college.

SA_M2 I have well-defined academic goals.

SA_M3 I consider a college degree important.

SA_M4 I doubt the value of college degree. (*R*)

SA_M5 I enjoy academic work.

SA_M6 Most of my interests are not related to course work. (*R*)

Cluster 2: Application

SA_A1 I keep up-to-date with academic work.

SA_A2 I do not work as hard as I should. (*R*)

SA_A3 I am not motivated to study. (*R*)

SA_A4 I attend classes regularly.

Cluster 3:Peformance

SA_P1 I do find academic work difficult.

SA_P2 I do not function well during exams. (*R*)

SA_P3 I am satisfied with academic performance.

SA_P4 I do not feel smart enough for course work. (*R*)

SA_P5 I do not use study time efficiently. (*R*)

SA_P6 I enjoy writing papers for courses.

SA_P7 I have trouble concentrating when studying. (*R*)

SA_P8 I do not do well academically, considering effort. (*R*)

SA_P9 I have trouble getting started on homework. (*R*)

Cluster 4: Academic Environment

SA_E1 I am satisfied with variety of courses.

SA_E2 I am satisfied with quality of courses.

SA_E3 I am satisfied with the program of courses.

SA_E4 I am satisfied with professors.

SA_E5 I am satisfied with the academic situation.

Social Adjustment Subscale

Cluster 1: General

SA_G1 I fit in well with the college environment.

SA_G2 I am involved with social activities in college.

SA_G3 I am adjusting well to college.

SA_G4 I have several close social ties.

SA_G5 I have adequate social skills.

SA_G6 I am satisfied with my social participation.

SA_G7 I am satisfied with my social life.

Cluster 2: Other People

SA_O1 I have meet people and made friends.

SA_O2 I have informal contact with my professors.

SA_O3 I get along well with my roommates.

SA_O4 I have difficulty feeling at ease with others at college. (*R*)

SA_O5 I do not mix well with the opposite sex. (*R*)

SA_O6 I feel different from others in undesirable ways. (*R*)

SA_O7 I have good friends to talk about problems with.

Cluster 3: Nostalgia

SA_N1 I am lonesome for home. (*R*)

SA_N2 I feel lonely a lot. (*R*)

SA_N3 I would rather be home. (*R*)

Cluster 4: Social Environment

SA_N4 I am pleased about decision to attend this college.

SA_N5 I enjoy living in a dormitory.

SA_N6 I am satisfied with my extracurricular activities.

Attachment Subscale

SA_T1 I am pleased with my decision to go to college.

SA_T2 I think a lot about dropping out of college permanently. (*R*)

SA_T3 I am thinking about taking time off from college. (*R*)

SA_T4 I am pleased about attending this college.

SA_T5 I would prefer to be at another college. (*R*)

SA_T6 I expect to finish bachelor's degree.

SA_T7 I am thinking about transferring to another college. (*R*)

Depression, Anxiety, Stress Scales (DASS; Lovibond & Lovibond, 1995)

Please read each statement and indicate how much the statement applied to you over the

past week.

1 Did not apply to me at all

2 Applied to me to some degree, or some of the time

3 Applied to me to a considerable degree, or a good part of time

4 Applied to me very much, or most of the time

DAS1 I found myself getting upset by quite trivial things

DAS 2 I was aware of dryness of my mouth

DAS 3 I couldn't seem to experience any positive feeling at all

DAS 4 I experienced breathing difficulty (e.g., excessively rapid breathing,

breathlessness in the absence of physical exertion)

DAS 5 I just couldn't seem to get going

DAS 6 I tended to over-react to situations

DAS 7 I had a feeling of shakiness (e.g., legs going to give way)

DAS 8 I found it difficult to relax

DAS 9 I found myself in situations that made me so anxious I was most relieved when they ended

DAS 10 I felt that I had nothing to look forward to

DAS 11 I found myself getting upset rather easily

DAS 12 I felt that I was using a lot of nervous energy

DAS 13 I felt sad and depressed

DAS 14 I found myself getting impatient when I was delayed in any way (e.g., elevators, traffic lights, being kept waiting)

DAS 15 I had a feeling of faintness

DAS 16 I felt that I had lost interest in just about everything

DAS 17 I felt I wasn't worth much as a person

DAS 18 I felt that I was rather touchy

DAS 19 I perspired noticeably (e.g., hands sweaty) in the absence of high temperatures or physical exertion

DAS 20 I felt scared without any good reason

DAS 21 I felt that life wasn't worthwhile

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CURRICULUM VITAE

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