

DISCREPANCIES IN PERCEIVED FRIENDSHIP INTIMACY AS A PREDICTOR OF
ADOLESCENT ALCOHOL USE

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A dissertation submitted to the faculty of the University of North Carolina at Chapel Hill in
partial fulfillment of the requirements for the degree of Doctor of Philosophy in the
Department of Psychology.

Chapel Hill
2006

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ABSTRACT

GABRIELA LIVAS STEIN: Discrepancies in Perceived Friendship Intimacy as a Predictor of Adolescent Alcohol Use
(Under the direction of Andrea Hussong)

Adolescent friendships have traditionally been defined as involving a reciprocal intimate bond, but little research has examined the implications of the lack of affection reciprocity for adolescent positive adjustment. Further, past research suggests that self- and peer-reported intimacy are only modestly correlated, indicating meaningful variability in affection reciprocity within adolescent friendships. Friendships that lack affection reciprocity may be conflict-ridden and imbalanced, leading to adolescent maladaptive outcomes including alcohol use and negative affect. The current study examined the effects of affectionately discrepant friendships in a sample of 94 adolescents. Results indicate that affective discrepancies friendships are psychologically meaningful and within adolescent friendships can be differentiated from (non-discrepant) high intimacy friendships. The lack of affection reciprocity places adolescent at risk for imbalanced friendships and negative affect, although these effects differ for by gender. Moreover, post-hoc analyses suggest that these friendships may be at greater risk for dissolution over time. Lastly, the results of the current study indicate that friendship quality may be captured more fully as a dyadic construct by taking into account both reporters of the friendship. Implications and future directions are discussed.

ACKNOWLEDGMENTS

I would like to thank Dr. Andrea Hussong who played an instrumental role in my development into a research psychologist. Without her dedicated mentoring, this project would not have been realized. In addition, I would like to extend my gratitude to my fellow labmates and friends who provided me not only with continued support, but more importantly with a stimulating intellectual environment that continually challenged me. I would also like to thank my dissertation committee members who provided guidance and support. This whole endeavor would not have been possible without my parents, Alma and Eduardo Livas, who continually encouraged me to fulfill my dreams. Similarly, I wish to thank my sister Alejandra Livas whose daily phone calls kept me going throughout graduate school. Most importantly, I would like to thank my husband David Stein who continually inspires me to self-actualize and who has provided me with the love and support to let me do just that.

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CHAPTER 1

Introduction

Adolescent friendships are commonly defined as mutual relationships where two individuals who like each other receive support and intimacy. Such friendships are known to impact individual behavior not simply through their absence or presence, but when present, through their quality (Hartup, 1999). However, friendship quality is rarely studied as a dyadic construct. Research evaluating adolescent friendships has largely relied on single reporter methods known to suffer from limitations including self-report biases. Moreover, studies of marital and parent-child relationships suggest that the use of single reporters of dyadic relationships may not fully capture the construct of interest because they turn an inherently dyadic process into a solely individual one (e.g., Kashy & Snyder, 1995). Consequently, although Hartup and Stevens (1997) note that most friendships are characterized by affection reciprocity, the extent to which adolescents and their friends differ on how they perceive the intimacy in their friendship remains largely untested. These differences in perceptions among friends index variability in the affection reciprocity of friendships and they may be psychologically meaningful, such that relationships in which friends' perceptions of friendship intimacy differ may be problematic and conflict-ridden. Thus, these differences in perceived friendship intimacy may themselves be separate markers of friendship functioning. Despite their potential importance and relevance to understanding

friendship quality as a dyadic construct, the ramifications of a lack of affection reciprocity in adolescent friendships remain virtually unexamined (see Bagwell, Bender, Andreassi, Kinoshita, Montarello & Muller, 2005 for an exception). To address this issue, the current study explores whether and how discrepancies in friendship intimacy predict one index of adolescent functioning, namely alcohol use.

Friendship Quality and Adolescent Outcomes

Close friendships become increasingly important as children become adolescents (Hartup & Stevens, 1997) and these friendships can be characterized by positive and negative qualities (Berndt, 2002). Positive qualities of adolescent friendships include affection, companionship, self-disclosure, and social support whereas conflict and dominance are examples of negative qualities (Berndt, 2004). As adolescents mature, certain aspects of friendship intimacy, such as self-disclosure and intimacy, become more central to friendships (Furman & Burhmester, 1985) and thus are essential to our understanding of adolescent friendships. Theoretically, high levels of intimacy, loyalty, and self-disclosure should predict superior psychosocial outcomes by providing adolescents with social support, especially in times of increased stress (Berndt, 2002).

Research supports this hypothesis for indices of adjustment, as friendship intimacy is related to greater self-esteem, school adjustment, and social competence (for reviews see Berndt, 2004; Hartup & Stevens, 1997; Guifford-Smith & Brownwell, 2003). Results across studies have been somewhat inconsistent, however, in terms of the relationship between friendship intimacy and maladaptive outcomes. For example, some studies find no relationship between friendship intimacy and internalizing problems (Jenkins, Goodness, & Buhrmester, 2002; La Greca & Harrison, 2005; Williams,

Connolly, and Segal, 2001; Way & Chen, 2000) and others suggest a negative relationship (Burhmester, 1990; Gaspar-de-Matos, Barrett, Dadds, & Shortt, 2003; La Greca & Harrison; 2005; La Greca & Lopez, 1998; Nangle, Erdley, Newman, Mason, & Carpenter 2003; Rubin, Dwyer, Booth-LaForce, Kim, Burgess & Rose-Krasnor, 2004; Stewart, Byrne, Lee, Ho, Kennard, Hughes & Emslie, 2003). A similar pattern of results emerges from the literature examining friendship quality and externalizing behavior. The majority of studies report that self-reported friendship intimacy negatively relates to externalizing behavior (Cillessen, Jiang, West, & Laszkowski 2005; Dishion, Andrews, & Crosby, 1995; Gropeter & Crick, 1996), but a few studies suggest no relationship (Bagwell & Coie, 2004; Berndt, Hawkins, & Jiao, 1999) or even a positive one (Laird, Pettit, Dodge, & Bates, 1999; Windle, 1994). Across substance use studies, high levels of friendship intimacy have been related to substance use (Hussong, 2000a; Repenski & Zook, 2005; Urberg, Luo, Pilgrim, & Degirmencioglu, 2003; Windle, 1994). Yet, one study found that friendship quality was not significantly associated with substance use (Engels & ter Bogt, 2001).

In all of these studies, the effects of friendship intimacy have been based on the participating adolescent's perceptions of his/her friendship. Because such self-reports fail to capture the dyadic nature of friendship quality, they may provide a poor indicator of the true level of intimacy within these friendships. The level of true intimacy in friendships may be dependent on the level of affection reciprocity. Affection reciprocity is the extent to which intimacy, an aspect of positive friendship quality involving self-disclosure, loyalty, and trust, is mutual within a friendship. Thus, these studies have not considered the potential psychological importance of affection reciprocity between

friends. Overlooking affection reciprocity as a predictor of psychological adjustment may be the reason for the inconsistent results of previous studies.

Because there may be variability in the perception of friendship intimacy, relying on a single reporter of dyadic friendship quality may not provide a complete understanding of the association between friendship quality and outcomes. Rather, the relationship between self-reported friendship quality and adolescent adjustment may depend on the level of friendship quality reported by the friend. Self-reported friendship intimacy may only serve a protective function in the context of a friendship where the other friend perceives similar levels of friendship intimacy. Importantly, self-reported friendship intimacy may not confer such benefits in the context of a friendship where the other partner does not perceive the same level of intimacy. Thus, affection reciprocity may be conceptualized as an interaction between self-reported and peer-reported intimacy, and to the extent that adolescents and their friends disagree on the quality of their relationships (i.e. intimacy poorly reciprocated), adolescents may experience greater risk for substance use and other maladaptive outcomes.

In summary, previous research examining friendship quality suggests that self-reported friendship intimacy may be related both positively and negatively to substance use and internalizing symptoms in adolescence. However, none of these studies have examined the effects of peer-reported intimacy and whether it acts as a moderator of the relationship between self-reported intimacy and maladaptive outcomes.

Reciprocity and Discrepancies

Two sources of evidence indicate variability within the amount of perceived intimacy within friendship dyads. First, using sociometric assessments, researchers have

established that certain adolescents have unreciprocated friendships, where one adolescent nominates another as a friend but the friend does not reciprocate the nomination (e.g., Bot, Engles, Knibbe, & Meeus, 2006). Therefore, clearly, adolescents differ in the extent to which dyad “members” even recognize or value their relationship as a friendship. The lack of reciprocal nominations is one indicator that adolescents within the dyads differentially perceive their level of closeness and intimacy. Second, self-and peer-reported friendship quality are only modestly correlated in previous studies (e.g., Bagwell & Coie, 2004; Buhrmester, 1990; Parker & Asher, 1993; Poulin, Dishion, & Haas, 1999), indicating that adolescents and their friends do not always agree on the level of positive qualities within their friendship. Thus, some adolescents report stronger feelings of affection, more self-disclosure, and more loyalty in a friendship than the other friend.

Therefore, previous research has supported the notion that variability exists in affection reciprocity in adolescent friendship. However, little attention has been paid to the psychological meaning of this variability and whether the lack of reciprocity is associated with maladaptive outcomes. Affectionately discrepant friendships may place adolescents at risk for poor outcomes because they may signal poor relationship functioning. Specifically, friendships without affection reciprocity may be more conflict-ridden and imbalanced. In these friendships, the adolescent who perceives greater levels of intimacy might expect his/her friend to spend more time with him/her and provide more social support than this friend (who perceives less intimacy in the friendship) is willing to provide (Berndt, 1989; Hartup & Stevens, 1997). Unfortunately, the friend who perceives less intimacy may reject the adolescent’s efforts to gain companionship

and support from him/her, refusing to spend time with the adolescent or providing him/her with little social support.

This mismatch in expectations and behaviors may signal two risk factors for adolescent adjustment. First, this mismatch may lead to conflict in the friendship. The adolescent who perceives greater intimacy may be constantly disappointed and express this disappointment to his/her friend. The adolescent who perceives less intimacy may be frustrated by these expectations placed on him/her by the other adolescent and may express it as well. Second, this mismatch may reflect an imbalance in the relationship as one friend has greater control over the amount of time spent together as well as how this time is spent. The adolescent who perceives greater intimacy may want to spend more time together, but the adolescent who perceives less intimacy may decide on the frequency of contact and the activities they do together. In turn, these negative friendship qualities (conflict and control imbalance) result in neither of the adolescents in these discrepant dyads benefiting emotionally and socially from the friendship. The failure of previous research to consider such discrepancies and to move beyond self-reports of intimacy within a friendship may in part explain inconsistent findings concerning friendship intimacy and adolescent outcomes.

Few studies have examined whether discrepancies between self-and peer-reported friendship intimacy predict psychosocial functioning, and no studies have examined alcohol use as an outcome. The limited existing research shows that children who demonstrate psychological problems do exhibit discrepant perceptions of intimacy in their friendships. For example, depressed adolescents (Brennden, Vitaro, Turgeon, et al., 2002), rejected children (Brennden, Little, & Krappmann, 2000), and aggressive

adolescents (Brennden, Vitaro, Turgeon, Poulin, & Warner, 2004) all show evidence of significant discrepancies between self-and peer-reports of friendship quality, although the pattern of the discrepancies differ over these groups. Depressed youth, compared to their non-depressed peers, report relatively less intimacy as compared to their friends (Brennden et al., 2002), whereas aggressive and rejected youth report greater intimacy than their friends (Brennden et al., 2004).

In addition, two recent studies show that discrepancies in friendship quality predict outcomes in normative youth. Burk and Laursen (2005) grouped adolescents into six categories depending on their discrepancies of negative friendship quality. These groups included a non-discrepant high conflict group and a discrepant group demonstrating extreme discrepancies in their report of conflict. Adolescents in the extreme discrepant group demonstrated similar levels of externalizing symptoms as those in which both adolescents reported high levels of conflict, and both these groups reported more externalizing symptoms than adolescents who were concordant on middle and low levels of conflict. In another recent study, older adolescents demonstrating discrepancies in friendship intimacy reported greater depression and less satisfaction in their friendships than older adolescents without such discrepancies (Bagwell et al., 2005). These studies confirm that discrepancies in friendship quality predict psychosocial outcomes in adolescents, supporting the notion that affectionately discrepant bonds are psychologically meaningful.

Although no studies have examined the relation between affectionately discrepant friendships and substance use, a few studies have examined the effects of unreciprocated friendships on adolescent substance use. For example, Aloise-Young, Graham and

Hansen (1994) found that adolescents were only influenced by their friends' tobacco use if they had unreciprocated friendships. Along the same lines, reciprocity of friendship moderated the relationship between peer influence and binge drinking such that unreciprocated peers exerted more influence on an adolescent's risk for drinking than did reciprocated ones (Jaccard, Blanton, & Dodge, 2005). Despite the fact that unreciprocated friendships may be different than those friendships without affection reciprocity, these studies suggest there may be a link between discrepant friendships and substance use, particularly when peers engage in substance use.

In sum, even though little research has examined affectionately discrepant friendships, discrepancies in friendship quality have been related to maladaptive outcomes in adolescents. Notably, these effects of discrepancies in friendship intimacy are evident while controlling for self-reported friendship intimacy, indicating that misperceptions in friendship intimacy do in fact pose an added risk above and beyond self-perception of friendship intimacy. Although this work is suggestive of a relation between discrepant perceptions of intimacy within friendship dyads and greater risk for substance use, no studies have tested this prediction.

Mechanisms

Discrepant perceptions of intimacy may lead to negative adolescent outcomes through a variety of mechanisms, four of which are tested in the current study in the prediction of adolescent substance use. First, discrepant perceptions of intimacy may directly impact risk for substance use in youth because they reflect social skills deficits, such as poor perspective taking skills, where neither adolescent in the dyad perceives how the other construes the friendship. Such deficits may relate to greater social

isolation and less integration with mainstream youth, which in turn increases risk for substance use. Indeed, previous studies of social networks indicate that those adolescents who are more isolated from the peer network are at greater risk for substance use (e.g., Ennett & Bauman, 1994). Consistent with the notion that social skill deficits underlie discrepant perceptions of friendship, rejected, depressed, and aggressive children are less socially skilled than their peers, and these same youth have been shown to demonstrate discrepancies in friendship intimacy (Brennden et al., 2000; Brennden et al., 2002; Brennden et al., 2004) and to be at risk for substance use (e.g., Hymel, Rubin, Rowden, & LeMare, 1990; Fergusson & Woodward, 2002; Prinstein & La Greca, 2004; Woodward & Fergusson, 1999). Further documenting the lack of social skills of these adolescents, adolescents with internalizing and externalizing problems have been specifically shown to have difficulty with perspective taking (Schonert-Reichl & Beaudoin, 1998). In sum, discrepant perceptions of intimacy are hypothesized to put adolescents at risk for substance use by indicating poor social skills and social isolation.

In addition to poor social skills, discrepant perceptions of intimacy may also reflect poor friendship functioning, suggesting two additional mechanisms of risk that underlie the relationship between discrepant perceptions of intimacy and alcohol use. In a second mechanism, greater conflict engendered by discrepant perceptions of intimacy may leave adolescents with little social support and greater social stress. In turn, adolescents may be motivated by such social stressors to use substances as a means to cope. Past research suggests that conflict in adolescent friendships predicts substance use (Hussong, 2000a; Windle, 1994). This relation between conflict and substance use may be greater when adolescents' friends use substances because the motivation to cope

through substance use resulting from this conflict is most likely to be met with easy access to, motivation for, and reinforcement of alcohol use in such a peer group (Hussong & Hicks, 2003). Thus, conflict may mediate the relation between discrepant perceptions of intimacy and substance use both directly (as a main effect) and interactively (as moderated by peer substance use).

Third, friendships with discrepant perceptions of intimacy may be more likely to be imbalanced in terms of friendship control, such that in these friendships one adolescent is more likely to be dominant and the other submissive. Unlike adolescents in friendships with affection reciprocity, adolescents in affectionately discrepant friendships may be differentially engaged and invested in the friendship leading to this imbalance in control. The imbalance in friendship control is expected to create risk for substance use for the submissive adolescent in the dyad. Submissive adolescents may be at risk for using alcohol as a way to obtain their (dominant) friend's approval and to strengthen the affective bond. Consistent with this mechanism, social expectancies of substance use (i.e., where adolescents believed that substance use helped them "look cool," make friends, and have fun at parties) fully mediates the relationship between social skills deficits and substance use (Griffin, Epstein, Botvin, & Spoth, 2001). When the dominant friend uses substances, submissive adolescents may also be more susceptible to peer influences that act to increase risk for substance use. In fact, submissive adolescents may be attempting to close the imbalance in their friendship through substance use. In a similar vein, research with unreciprocated friendships also suggests that adolescents conform to the substance use behavior of peers with whom they want to develop friendships (Aloise-Young et al., 1994; Jaccard et al., 2005). Moreover, previous

research indicates that susceptibility to peer influence can be a stronger predictor of heavy alcohol use longitudinally than perceptions of friends' use (Griffin et al., 2001). Thus, like conflict, imbalance in friendship control resulting from discrepant perceptions of intimacy may increase risk for substance use directly, because submissive adolescents use substances to gain peer approval, or through their interaction with an alcohol-using peer context, because these same adolescents are more susceptible to the influences of an alcohol-using friend.

Two final mechanisms linking discrepant perceptions of intimacy and adolescent substance use are tested via the mediator of negative affect. Negative affect related to discrepant perceptions of intimacy is posited for adolescents with either a positive or a negative bias, though the dynamics underlying the risk for negative affect differ. Adolescents who demonstrate a positive bias in friendship intimacy (i.e., an adolescent who perceives higher levels of friendship intimacy than their friend) may experience this negative affect secondary to experiencing the continual rejection of their bids for a closer friendship. Although these adolescents feel close to their friends, their friends do not reciprocate these emotions or their bids for a close friendship and hence may even reject the adolescents' attempts to self-disclose or spend time together. In time, repeated social rejection could lead to feelings of depression and anxiety. Although research examining peer rejection and depressive symptoms has been somewhat inconsistent, some studies suggest that peer rejection plays a role in the development of negative affect (e.g., Prinstein & Aikins, 2004).

In addition, adolescents with a negative bias in friendship intimacy (i.e., an adolescent who perceives lower levels of friendship intimacy than their friend) may also

experience greater negative affect because they perceive their relationship ties as more negative. Greater reports of negative friendship quality are associated with higher levels of negative affect, including social anxiety and depression (Buhrmester, 1990; La Greca & Lopez, 1997). However, adolescents who accurately perceive low friendship quality may differ from those who demonstrate a negative bias in friendship quality. Unlike their peers who accurately perceive low-levels of friendship quality, adolescents with a negative bias are actually liked by their peers, thus providing them with a peer group which provides access to and reinforcement for substance use.

Peer rejection, whether constituted by actual experiences or mere perceptions, may increase risk for negative affect in both members of friendship dyads characterized by discrepant perceptions of intimacy. In turn, greater levels of negative affect may increase risk for substance use via two mechanisms. The first is direct; the self-medication hypothesis indicates that adolescents seek to alleviate their negative affect through substance use. Supporting this mechanism for adolescent populations, various researchers find a significant relationship between substance use and either depression or anxiety (e.g., Christie, Burke, Regier, Rae, et al., 1998; Colder & Chassin, 1993; Hussong & Chassin, 1994; Kandel, Johnson, Bird, Canino et al., 1997; Kaplow, Curran, Angold, & Costello, 2001; Swanson, Linskey, et al., 1992; Way, Stauber, Nakkula, & London, 1994). Although overall support for self-medication in adolescence is weak, previous studies have established that an association with a deviant peer group moderates the relationship between depressive symptoms and substance use, suggesting that self-medication is more likely to occur in a peer context that is supportive of substance use

(Hussong, Feagans Gould, & Hersh, 2006; Shoal & Giancola, 2003; Simmons, Whitbeck, Conger, & Melby, 1991).

The second mechanism is posited by Kaplan's self-derogation model which predicts that adolescents who exhibit negative affect resulting from peer rejection will seek out other peer groups to gain social acceptance; due to deficits driving their peer rejection, they are more likely to gain acceptance in more deviant peer groups and in turn experience greater risk for substance use (Kaplan & Damphousse, 1997). Thus, adolescents with low levels of social competence are rejected by mainstream youth and select a deviant peer group where they feel they can succeed socially. Consistent with the self-derogation hypothesis, adolescents who demonstrate a positive bias in friendship quality are more likely to have been rejected by their peers and behave aggressively (Brennden et al., 2002), and children who are rejected in childhood and who demonstrate aggressive behavior are more likely to have a deviant peer group in adolescence (e.g., Fergusson, Woodward, & Horwood, 1999). Thus, adolescents with a positive bias may be more likely to associate with deviant peers, placing them at added risk for substance use.

In sum, these mechanisms may explain the relation between discrepant perceptions of intimacy and substance use in adolescence. These mechanisms are indexed by the social skills deficits indicated by these discrepancies, social stress associated with conflict in these relationships, the effects of peer influence and desires for approval associated with imbalance in perceived friendship control, and the effects of self-derogation and self-medication mechanisms associated with the negative affect and peer rejection experienced within these relationships. Moreover, each of these

mechanisms may be more likely to occur in the context of a substance-using peer group, which provides motivation for, access to and reinforcement of substance using behaviors (Urberg, Goldstein, and Toro, 2005). To test these mechanisms, the current study examined the direct and indirect effects of discrepant perceptions of intimacy on adolescent substance use, testing the mediational roles of conflict, perceived friendship control, and negative affect. In addition, the moderating role of peer substance use within each of these mediational pathways was also examined.

Gender as a Moderator

Gender may also be an important moderator of the relationship between discrepancies in friendship intimacy and maladaptive outcomes. Girls tend to report higher levels of loyalty, self-disclosure, and affection than do boys (Hussong, 2000c), and they also place greater importance on friendship intimacy when compared to boys (Hartup, 1993). Not surprisingly, they are more negatively affected than boys by friendship intimacy difficulties. In fact, a few studies suggest that poor friendship intimacy is linked to negative affect in girls but not in boys (Le Greca & Lopez, 1998; Rubin et al., 2004). Given that girls are more sensitive to relationship difficulties and value intimacy to a greater degree, discrepancies in friendship intimacy may be more detrimental for girls in terms of risk for negative affect, conflict, perceived power imbalance and substance use.

Current Study

To examine the possibility that discrepancies in friendship intimacy place adolescents at risk for alcohol use, the current study sought to integrate the aforementioned mechanisms into one theoretical model that was examined through five

hypotheses (See Figure 1). Hypothesis 1 posited that discrepancies in friendship intimacy would predict greater alcohol use directly due to the social skills deficits represented by the discrepancies. Hypothesis 2 posited that these discrepancies in friendship intimacy would have psychologically meaningful impact on friendships and predict greater friendship conflict, less friendship control, and greater negative affect. These negative friendship-related outcomes are thought to result from a mismatch of expectations between the two adolescent friends. Hypothesis 3 posited that each of these effects of discrepancies would be related to adolescent alcohol use as moderated by peer use. The greater risk for alcohol use may result from: 1) the conflict in these friendships that creates social stress; 2) the imbalance that makes adolescents susceptible to peer influence and the desire of approval from their friends; and, 3) the negative affect that may lead to self-medication and self-derogation. These mechanisms are hypothesized to be more likely to occur with a substance-using peer who would provide access to and reinforcement for use. Hypothesis 4 posited that negative affect, conflict, and perceived friendship control would independently mediate the relationship between discrepancies in friendship intimacy and alcohol use. The previously discussed theoretical links between discrepancies, friendship-related outcomes, and risk for alcohol use support the proposed mediational model. Hypothesis 5 examined whether gender moderated the relationship between discrepancies and the various outcome variables. It was hypothesized that discrepancies in friendship intimacy would be more strongly related to substance use, negative affect, conflict, and perceived friendship control for girls than for boys.

These hypotheses will be examined in a sample of adolescents in the transition to high school. The transition to high school may serve as an opportune time to examine the

relationship between friendships and substance use. First, this transition brings increases in stressors (Isakson & Jarvis, 1999) and increases in substance use (Monitoring the Future, 2005), so that adolescents in affectionately discrepant friendships may be at heightened risk for negative outcomes due to the added stress and increased access to substances. Second, Berndt (2004) argues that friendship quality is especially protective in times of stress. In addition, friendship quality has been found to be protective in the transition to middle school (Berndt, Hawkins, & Jaio, 1999). Because adolescents in affectionately discrepant friendships are thought not to benefit emotionally from their friendships, these friendships may not serve this protective role, but instead may serve as an additional stressor. Therefore, discrepancies in friendship intimacy may be especially important in the transition to high school.

CHAPTER 2

Methods

Study Overview

The current study uses data collected through the High School Transition Study (HSTS), a multi-stage, longitudinal study of adolescents, their parents and their friends (Hussong, 2000b). The HSTS includes four phases of data collection (See Figure 2). In Phase I, 399 of 436 8th grade students in participating schools completed classroom administered surveys assessing a broad array of factors, including risk indicators for substance use in high school (i.e., initiation of alcohol use themselves or by their friends). For Phase II, participants were recruited during a time-limited period from the Phase I sample according to their rank-ordering of risk status (i.e., from high to low). (Because this stage required completion during the summer between 8th and 9th grade, we limited recruitment efforts to an eight-week period.) We attempted to contact 198 Phase I participants, with 81 agreeing to participate. Primary reasons for non-participation were inability to contact (n=33), ineligibility (n=20, language barrier, moving, did not pass grade), limited availability (n=17), and privacy concerns (n=11). Of 145 eligible, contacted families, 56% participated in Phase II. In this phase, the target adolescents nominated a friend to participate with them, and 63 of the 81 participants had a friend also participate in the study.

In Phase III, we conducted school-based assessments in 9th grade at two of three county high schools with 351 out of 434 enrolled students participating. Because 8th grade schools did not include all feeder schools for 9th grade schools (i.e., one 8th grade school attended the non-participating high school, one non-participating 8th grade school attended a participating high school), our Phase III sample included 273 of those participating in the Phase I sample. In Phase IV, we conducted follow-up interviews with 56 participants from our Phase II sample (69% participation rate). Because the current study only uses data from Phase II, only that phase is discussed in detail below.

Participants

Although there were 63 friendship pairs who participated in Phase II, some friendship dyads were dropped from the analyses due to missing data on the variables of interest (n=4). Because some of the 63 friendships contained the same adolescent twice (i.e., an adolescent was both a target and a friend to another target), one of the dyads containing the same adolescent was dropped randomly (n=12) so that each adolescent would only be represented in the data set once. Thus, a total of 47 unique dyads (n=94 adolescents) were included in the final sample. The majority of the sample was female (55%) and Caucasian (59%), with 22% identifying as African-American, 1.4% Asian American or Pacific Islander, 1.4% American Indian, and 17% Biracial or other. Six of the dyads contained cross-sex friendship pairs, with the remainder containing 23 girl dyads and 18 boy dyads. The mean age was 14 years old (with a range of 11-16¹), and 77% had a parent who graduated from college or had some technical school and 20% had only graduated from high school.

¹ Due to the friend nomination procedures that allowed the target adolescent to nominate any friend, not all of the friends of the targets were rising 9th graders thus the large age range.

Design and Procedure

Phase I participants attended seven middle schools in a local school district. All enrolled students and their parents were mailed a packet containing information about the study and a note card that parents could return if they did not want their child to participate in the study. A similar packet was also sent home from school with the students. Only 3% of parents did not allow their children to be invited to participate in the study. Informed consent was obtained from the adolescents at their school, with only 6 students refusing to participate. Data collection in 8th grade occurred during one classroom period where two research assistants explained the procedures of the study, obtained consent, demonstrated how to complete the friendship nomination procedure, and administered the survey. Participants were given a key chain for their participation.

For Phase II, target adolescents were interviewed in their homes or at university facilities at two time points that were three weeks apart. Graduate and undergraduate students conducted the 2-hour interviews. Adolescents and their families received \$15 each for their participation in this interview. Verbal consent was obtained on the phone from both the parent and adolescent prior to the initial visit, and the parents provided written consent at the initial visit. During the initial visit, target adolescents were assessed on a number of variables including a 3-month report of substance use and several parenting and family variables. At the visit, target adolescents were asked to nominate five of their best friends to participate in a final visit three weeks later and to provide consent for the research staff to contact their friends. Beginning with those most

highly ranked, nominated friends were then recruited to participate in the study until one agreed and was able to participate. Again, verbal consent was obtained over the phone from the friend's parent and the friend prior to the visit, and written consent was obtained at the start of the final visit. The adolescents and their friends were paid \$15 for their participation in this interview. The final visit included similar self-report measures of adolescent's substance use, psychosocial functioning, and the nature and quality of their best friendship. Best friends also provided information on the nature and quality of their friendships as well as their own substance use in the last three months. A certificate of confidentiality was obtained from NIH prior to beginning the study to ensure the confidentiality of all the data.

Measures

The majority of the measures in the current study utilized only self-reports from both adolescents in the dyad as predictor and outcome variables (i.e., alcohol use, conflict, perceived friendship control, negative affect). The only exception to this was friendship intimacy. Both self-and peer-reported intimacy were used to examine affection reciprocity, and both were predictors for each adolescents in the dyad.

Friendship intimacy. Both adolescents in the dyad reported on their relationship intimacy with nine items from the Network of Relationships Inventory (Furman & Buhrmester, 1985) and two items suggested by Barrera, Chassin, and Rogosch (1993). These items assessed the amount of self-disclosure, loyalty, and affection respondents perceived in their relationship with their friends. Participants rated these dimensions on a 5-point scale ranging from (1) little to none to (5) the most possible. The responses were averaged for each respondent. In previous studies, the reliabilities for the sub-scales

ranged from .81-.93 (Hussong, 2000a), and in this sample, reliability was strong ($\alpha = .92$). In the current analyses, this variable yielded two predictor variables for each adolescent: self-reported intimacy (actor intimacy) and peer-reported intimacy (partner intimacy).

Characteristics of the relationship. Only the target adolescent reported on the length of the friendship and frequency of contact using two items written by the project staff. The adolescent rated these items on a 5-point scale. Because only the target adolescent reported on these items, both members of the dyad received the same scores on these items.

Relationship conflict. Adolescents reported on the frequency of relationship conflict. Conflict was assessed with 3 items from the Network of Relationships Inventory (Furman & Buhrmester, 1985) with a similar scale as used for the intimacy items. Furman and Buhrmester showed high internal consistency for this sub-scale (average $\alpha = .80$, current sample $\alpha = .87$). The responses were averaged for each respondent. This variable was only used as self-reported conflict².

Friendship control. Adolescents reported on who they felt controlled different aspects of the friendship. Control of the friendship was assessed with 3 items from a balance sub-scale of the Friendship Qualities Scale developed by Buhrmester, Hoza, and Newcomb (1994). The 5-point response scale ranged from (1) She/he almost always does to (5) I almost always do. The scale demonstrated adequate reliability in the current sample ($\alpha = .79$). The responses were averaged for each respondent. This variable was only used as self-reported control of the friendship.

² Conflict was operationalized as actor perceived conflict, but perhaps the mean level of actor and partner conflict is a better indicator of the dyad's functioning. To test this possibility, all of the analyses were conducted using mean level conflict instead of perceived conflict, which did not change the results. Thus, it was appropriate to operationalize conflict as self-perceived conflict.

Alcohol Use. Three items adapted from Chassin, Rogosch and Barrera (1991) were used to assess the frequency of overall alcohol use, frequency of heavy alcohol use, and frequency of drunkenness in the past three months for both adolescents and their friends. These frequency items were rated by adolescents on an 8-point scale ranging from (1) not at all to (8) everyday. Items were averaged to form a scale for alcohol use involvement. The reliability for this scale was adequate ($\alpha = 0.70$). Because the responses demonstrated a high level of non-normality and a negative skew, the scale was dichotomized to reflect use or no use. Because both the adolescent and their friends self-reported on their use, this variable reflected both self-reported alcohol use and peer reports of friend alcohol use. Self-reported use was only an outcome variable, whereas peer-reported use was a predictor and moderating variable.

Negative Affect. This construct assessed the frequency of anxiety and depression symptoms endorsed by the target adolescent and their friends. Anxiety symptoms were derived from the Revised Children's Manifest Anxiety Scale (Reynolds & Richmond, 1978). The 10-item scale asks participants to indicate whether statements assessing levels of anxiety in the last three months were true or not true. The authors report adequate reliability for the overall scale ($\alpha = .88$), and for this sample, reliability was adequate ($\alpha = .87$). Thirteen-items from the Short Mood Feelings Questionnaire – Child assessed depressive symptoms in the past three months (Angold, Costello, Messer, Pickles, Winder & Silver, 1995). Adolescents indicated whether or not the feelings were true of them on a three-point scale with (0) indicating true, (1) sometimes, and (2) not true. High reliability has been reported in previous research ($\alpha = .85$), and in this sample, reliability was also strong ($\alpha = .90$). Because anxiety and depression were highly

correlated ($r=.69$), a composite of both the anxiety and depression scales was made to assess negative affect.

CHAPTER 3

Results

Descriptive Statistics

Table 1 reports the correlations between the predictor and outcome variables as well as the means and standard deviations for each variable. Consistent with past literature, most friendships were close, with little conflict and equality in friendship control. The majority (55%) of adolescents reported being friends for more than four years, with only 10% reporting being friends for less than one year. Friends also had a great amount of contact, with 58% of the sample reporting contact at least three times a week in this summer interview. Predictor variables, other than actor and partner intimacy, were not significantly correlated indicating that multicollinearity was not a problem for subsequent analyses. Actor-and partner-reported intimacy were only moderately correlated ($r=.35$, $p<.05$), and thus, there was variability in affection reciprocity. In addition, friends spent significantly less time together in friendships of shorter duration ($r=-.27$, $p<.05$). As evident in t-tests, girls reported significantly higher actor intimacy, internalizing symptoms, and conflict ($p<.05$) than did boys. There were no gender differences in friend-perceived intimacy and friendship control. The lack of significant gender differences in partner-perceived intimacy likely resulted from the fact that there were cross-sex friendships within the sample. Overall, the relationship between intimacy and other variables replicates past research, supporting the representativeness of

the sample. In terms of the remaining outcome variables, 29% of the adolescents reported alcohol use in the last three months, which is similar to the 30-day prevalence rate of 19% reported by 8th graders in a national sample (Johnston et al., 2005). For the most part, adolescents reported low levels of negative affect.

The current study used separate mechanisms to recruit target adolescents and their friends. Target adolescents were selected for participation in the study due to elevated risk for substance use, and they, in turn, nominated friends to participate with them in the study. In fact, when compared to Phase I adolescents, target adolescents in this current sample demonstrated greater anxiety, depressive symptoms, and alcohol use ($p < .05$). However, they were not significantly different in terms of gender, race, or age. Because of these observed differences, t-tests were used to explore whether target adolescents were significantly different from their nominated friends on actor intimacy, partner intimacy, negative affect, conflict, friendship control or alcohol use. There were no significant differences on the any of these variables of interest¹. Thus, they were considered exchangeable members of the dyad.

Analytic Approach

The hypotheses were examined using the Actor-Partner Interdependence Model (APIM; Kashy & Kenny, 2000), as applied with an HLM framework (Campbell & Kashy, 2002). The APIM model was developed to analyze dyadic data, allowing researchers to examine the effects of both members of the dyad on outcome variables while controlling for dyadic dependence and influences in the data. The APIM allows for

¹ Another set of analyses explored whether target adolescents differed from their friends concerning discrepancies in self-and peer-reported intimacy. Therefore, the three-way interactions between target status, actor intimacy, and partner intimacy were explored predicting negative affect, conflict, perceived friend control and alcohol use. None of these interactions were statistically significant. Thus, targets and their friends did not differ with respect to the effects of affectionately discrepant friendships.

the estimation of actor effects (i.e., self-perceived), partner effects (i.e., friend-perceived), and their interaction. Actor effects are those where an individual's own score on an independent variable affects his/her own score on an outcome variable, whereas partner effects are those where the score on an independent variable for one member of the dyad affects the other member's outcome variable. Thus, one's own score on an independent variable may affect both one's own outcome variable (actor effect) and the friend's outcome variables (partner effect). An interaction between actor and partner effects allows for an examination of whether actor effects are moderated by partner effects. This interaction term assess the discrepancies between actor and partners reported effects. This model then permits targets and friends in the current study to serve as actors in the prediction of their own outcomes and as partners in the prediction of their friend's outcomes.

In the current study such actor and partner effects were modeled in an HLM framework. As applied to the current study, the HLM framework represents Level 1 variables as those specific to the individuals and Level 2 variables as those specific to the dyad (i.e., where both members of the dyad have the same score). Thus, actor and partner effects are modeled on Level 1, but actor and partner interactions are modeled on Level 2 (given that both the actor and partner have the same score on the interaction term).

The following APIM model demonstrates the test of one of the hypotheses:

Level 1:

$$\text{Negative Affect} = B_0 + B_1 * \text{Intimacy-Actor} + B_2 * \text{Intimacy-Partner} + B_3 * \text{Individual Control-Variables} + r_{ij}$$

Level 2:

$$B_0 = \gamma_{00} + \gamma_{01} * \text{Actor-Partner-Interaction} + \gamma_{02} * \text{Dyad-Control-Variables} + u_{0j}$$

$$B_1 = \gamma_{10}$$

$$B_2 = \gamma_{20}$$

$$B_3 = \gamma_{30}$$

In the previous model, γ_{10} and γ_{20} are the actor and partner effects of intimacy on the actor's negative affect, respectively, and γ_{10} represents the effect of the interaction of actor-partner intimacy, which captures the discrepancies in perceived intimacy. The effects of Level 1 and Level 2 are net of one another given the reduced form of these equations, which substitute the Level 2 parameter estimates into the Level 1 equations. As estimated in this model, these parameter estimates are unstandardized regression parameters and are interpreted as such. The r_{ij} represents the residual of an individual from the dyad, and u_0 represents the residual of the dyad from the group. The variance parameters for the individual and dyadic residuals (σ^2, τ_{00}) together represent the total unexplained variance for the model. In the output, τ_{00} is the random intercept parameter, which indicates the amount of variance in the outcome variable associated with the dyad, whereas σ^2 is the amount of variance in the outcome variable occurring at the individual level. An intraclass correlation (ICC) can be computed from these two variance components, which gives an indication of the amount of dyadic dependence in the data.

Before running the proposed models, possible control variables were examined for each outcome variable across the hypotheses (i.e., alcohol use, negative affect, conflict, and friendship control). The possible control variables were gender, race, age,

and parent education at the individual level and length of friendship and frequency of contact at the dyadic level. Only those that were significant at the trend level were retained in further analyses ($p < .10$) in each of the models that included that outcome variable. Actor and partner intimacy were standardized prior to running the analyses to ease interpretation of the interactions.

Proc Mixed in the SAS software was used for the prediction of the continuous outcomes (i.e., negative affect and conflict), using restricted likelihood estimation procedure and the Kenward-Roger method to calculate degrees of freedom (which is recommended for use with small sample sizes). Proc Mixed in the SAS software was also used for the prediction of friendship control using a restricted likelihood estimation procedure, but as recommended by Campbell and Kashy (2002), the Satterthwaite approximation was used to calculate degrees of freedom. HLM 6.0 (Raudenbush, Bryk, Cheong, Fai, & Congden, 2004) was employed to examine the dichotomous outcomes (i.e., alcohol use), using the La-Place estimation procedure as recommended by Raudenbush and Bryk (2001) for dichotomous outcomes.

Hypothesis 1

Hypothesis 1 examined whether greater discrepancies in friendship intimacy predicted a higher probability of engaging in alcohol use. Since alcohol use is a dichotomous outcome, HLM 6.0 was used to conduct the analyses using a logit function and an assumed Bernoulli distribution. Prior to testing the hypothesis, alcohol use was examined in an unconditional model to estimate the degree of dyadic dependence in the data. Because these do not provide an estimate of individual variability in the outcome variable, σ^2 was estimated as $\pi^2 / 3$ to calculate the Intraclass Correlation (ICC) (Bauer,

personal communication). Using this methodology, the ICC was .10, indicating that 10% of the variance in alcohol use is associated with the dyad. For this reason, all the hypotheses were tested in HLM to model this dyadic dependence.

A second model included age, gender, parent education, race, length of friendship and frequency of contact as potential control variables predicting alcohol use. Results showed that age ($B=1.2$, $p=.02$) and length of friendships ($B=-.61$, $p=.07$) were significant or marginally significant covariates, with older adolescents having an increased probability of recent alcohol use and those in longer friendships also demonstrating a trend for increased probability of use. Only these variables were retained as covariates in the final model. Thus, the final model included age, length of friendship, actor intimacy, partner intimacy, and the interaction between actor and partner intimacy predicting alcohol use (See Table 2). Actor intimacy ($B=-.11$, $p=.75$), partner intimacy ($B=-.06$, $p=.87$), and their interaction ($B=.14$, $p=.64$) were all non-significant predictors in the final model. Thus, Hypothesis 1 was not supported.

Hypothesis 2

Hypothesis 2 examined whether discrepancies in friendship intimacy were associated with greater negative affect, friendship conflict, or friendship control (see Table 2 for summary of results). A series of models examined these hypotheses separately by outcome. First, separate unconditional models were conducted for each outcome to assess dyadic dependence. For these continuous outcomes, Proc Mixed was used to estimate the models.

In the analysis of negative affect, the random intercept parameter ($\tau_{00}=.18$, $p=.08$) in the unconditional model indicated that dyads differ from one another in their levels of

negative affect, with 21% of the variance in negative affect occurring at the dyadic level. Thus, an adolescent's level of negative affect was correlated .21 with that of his/her friend. Next, gender, age, parent education, race, length of friendship, and frequency of contact were examined as potential covariates predicting negative affect. The results showed that more frequent contact ($B=.30, p=.00$) predicted greater levels of negative affect, and girls also reported greater negative affect than boys ($B=-.76, p=.00$). In addition, there was a trend for those in longer friendships to report more symptoms ($B=.18, p=.07$). The covariate model resulted in an ICC of .06, and, when compared to the unconditional model, the covariate model explained 15% of the variance at the dyadic level. There was no difference in σ^2 suggesting that the covariates explained no variance at the individual level.

The final model included gender, length of friendship, frequency of contact, actor intimacy, partner intimacy, and the interaction between actor and partner intimacy predicting negative affect. In this final model, actor intimacy ($B=-.05, p=.63$) and the interaction term ($B=.13, p=.15$) were not significant. However, partner intimacy was a marginally significant predictor ($B=.18, p=.06$), suggesting that higher levels of partner-reported intimacy were associated with higher levels of negative affect. When comparing the variance parameters with the unconditional model, the final model ICC of .06 and σ^2 of .64 suggested that the model did not explain any additional dyadic and only 4% of additional individual variability. Thus, Hypothesis 2 was not supported for the outcome of negative affect.

In the analysis of conflict, the significant random intercept parameter ($\tau_{00}=.20, p=.00$) of the unconditional model suggested that dyads differ in their levels of perceived

conflict and 40% of the variance in conflict is at the dyadic level. Next, gender, age, parent education, race, length of friendship, and frequency of contact were examined as potential covariates predicting conflict. Only age ($B=.22$, $p=.02$) and gender ($B=-.40$, $p=.02$) were significant covariates, where older adolescents and girls reported more conflict in their friendships. The covariate model resulted in an ICC of .31, and, when compared to the unconditional model, the covariate model explained 9% of the variance at the dyadic level. There was no difference in σ^2 suggesting that the covariates explained no variance at the individual level. In the final model, actor intimacy ($B=-.09$, $p=.26$), partner intimacy ($B=-.10$, $p=.17$), and their interaction ($B=-.04$, $p=.68$) were all non-significant predictors. When comparing the variance parameters with the unconditional model, the final model ICC of .40 and σ^2 of .28 suggested that the model did not explain any additional dyadic or individual variance. Thus, Hypothesis 2 was not supported for conflict.

In the analysis of perceived friendship control², the unconditional model resulted in an ICC of -.18, which suggested that control was negatively correlated between members of a dyad. Next, gender, age, parent education, race, length of friendship, and frequency of contact were examined as potential covariates predicting friendship control. In the covariate model, only parental education ($B=.11$, $p=.05$) and age ($B=.26$, $p=.00$) were significantly related to friendship control, such that older adolescents and those

² Due to the scaling of the friendship control, a slightly different model was employed to examine the prediction of this outcome. In a dyad, an adolescent's score of 1 on the scale (i.e., my friend controls the friendship) and the friend's score of 5 of the scale (i.e., I control the friendship) would be negatively correlated, and thus the dyadic dependence would need to account for a negative correlation. However, the τ_{00} parameter that accounts for dyadic dependence is a variance component and hence cannot be negative. Therefore, in order to account for this negative correlation of the outcome variables, a compound symmetric structure was modeled for the residuals at Level 1. Compound symmetry allows for an estimation of σ^2 , but it also models the correlation between the residuals of the members of the dyad thus accounting for the inverse dyadic dependence in the data (Campbell & Kashy, 2002).

from more educated parents perceived greater control in the friendship. There was a reduction in σ^2 from the first unconditional model of .06, suggesting that the covariates accounted for 6% of the variance associated with the individual level. The ICC was also reduced ($r=-.12$) when compared to the unconditional model, indicating that the model explained 4% of the variance associated with the dyad. Next, the final model was estimated which included age, parent education, actor intimacy, partner intimacy, and their interaction as predictors; the interaction was significant ($B=-.14$, $p=.00$). The interaction was probed following procedures outlined by Curran and Bauer (2004); simple slopes were plotted at one standard deviation above and below the mean (see Figure 3). Only the slope at one standard deviation above the mean for partner intimacy was significant ($B=-.21$, $p=.03$). The negative slope suggests that with greater friend agreement on their level of intimacy within the friendship, the adolescents perceived their friends as having control of the friendship. On the other hand, adolescents demonstrating a negative bias (i.e. perceiving low levels of friendship quality in a friendship where the other friend perceives high levels of intimacy) were likely to perceive greater control of the friendship. An examination of the endpoints suggests that adolescents in non-discrepant high intimacy friendships differ in the perception of control from adolescents in both affectionately discrepant friendships and those in non-discrepant low intimacy friendships. Adolescents in non-discrepant high intimacy friendships perceive their friends as having control of the friendship, whereas the adolescents in the other groups do not differ from one another in their perception of control. This final model did not explain any additional variance at the individual level ($\sigma^2=.40$), but the ICC increased ($r=-.23$) suggesting that the model explained differences between the members of the

dyad leading to residuals being more highly correlated. Hypothesis 2 was supported for friendship control.

Hypothesis 3

Hypothesis 3 examined whether negative affect, conflict, and perceived friendship control predicted greater alcohol use, and whether this relationship was moderated by peer use. Two separate models were conducted for each predictor. The first model examined the main effect of each of these variables separately predicting alcohol use; these models did not include the main effect of peer use. The second model included the main effect of peer use and the interaction between the each variable and peer use predicting alcohol use (see Table 3 for summary of results). Given that alcohol use was a dichotomous variable, HLM 6.0 was used to estimate the models and the same covariates were retained from the previous analysis with alcohol use as an outcome (i.e., age and length of friendship). None of these models were significant such that there were no main effects of negative affect, conflict, or control predicting the probability of recent alcohol use. Moreover, the interactions between these predictors and peer use did not significantly predict higher probabilities of drinking in any of these models. Overall, Hypothesis 3 was not supported for negative affect, conflict, or control, and peer use was not a significant moderator of any of these relationships.

Hypothesis 4

Hypothesis 4 posited that discrepancies in friendship intimacy predicted alcohol use through negative affect, conflict, and control. However, because the previous results showed that discrepancies in friendship intimacy did not predict alcohol use, mediation was not supported and this model was not further explored.

Hypothesis 5

Hypothesis 5 examined whether gender moderated the relationship between discrepancies in friendship intimacy and each of the four outcomes, namely, negative affect, conflict, friendship control, and alcohol use. This hypothesis was examined through four different models separately predicting each of the four outcome variables from a three-way interaction involving gender, actor intimacy and partner intimacy. Proc Mixed in SAS was used to estimate the models for negative affect, conflict and control. HLM 6.0 was used to estimate the models for alcohol use. The same covariates that were previously found to be significant were again included for each outcome.

In the analysis of negative affect, the HLM model encountered estimation problems when a random intercept was included. Given that the covariates explained the majority of the dyadic variability in this outcome, the random intercept was trimmed from the model and the model was re-estimated. The results of this trimmed model showed a significant three-way interaction between gender, actor intimacy, and partner intimacy ($B = -.66, p = .00$). The σ^2 was reduced from the previous models (.67 to .62) suggesting that the interaction explained 5% of the variance in negative affect.

The simple slopes for the three-way interaction were probed to examine which effects were statistically significant, following Curran and Bauer (2004). Specifically, the relation between actor intimacy and negative affect was probed at one standard deviation above the mean, at the mean, and one standard deviation below the mean of partner intimacy. Results suggested that the relationship between discrepancies in friendship intimacy and negative affect differs for girls and boys (see Figures 4 and 5). At high levels of partner intimacy, negative affect increased as actor intimacy increased.

Consequently, girls in non-discrepant high intimacy friendships reported higher levels of negative affect than girls who demonstrated a negative bias in their friendship quality. Conversely, at low levels of partner intimacy, negative affect decreased as actor intimacy increased. Thus, girls in non-discrepant low intimacy friendships reported higher levels of negative affect than girls who demonstrated a positive bias in their friendship quality. Therefore, affectionately non-discrepant friendships with both high and low intimacy were associated with higher risk of negative affect, as compared to affectionately discrepant friendships. For boys, at high levels of partner intimacy, negative affect decreased as actor intimacy increased. Consequently, the boys who demonstrated a negative bias were at higher risk for negative affect.

In the analysis of conflict, the three-way interaction of gender, actor intimacy, and partner intimacy was not significant ($B=.03$, $p=.89$). The three-way interaction was also not a significant predictor of alcohol use ($B=-.85$, $p=.41$) or friendship control ($B=-.65$, $p=.36$). Thus, Hypothesis 5 was partially supported for the outcome of negative affect, but not for conflict, friendship control, or alcohol use.

Sensitivity Analyses

Given that several of the hypotheses were not supported, a series of sensitivity analyses examined the stability of the current findings. These analyses examined whether the findings were due to a) tests of interactions that were underpowered, b) the inclusion of cross-sex dyads who may differ meaningfully from same-sex dyads who form the majority of the current sample, and c) the moderating effects of friendship characteristics on the relationship between discrepancies in friendship intimacy and the outcomes of interest (i.e., alcohol use, negative affect, conflict, and friendship control).

An alternative to interactions. Given the limited power available to detect interactions in the current study, sensitivity analyses tested whether findings for these hypotheses changed with an alternative approach with greater power. Given the complicated APIM analyses, power was not specifically tested. Instead of examining discrepancies through an interaction term, discrepancies were operationalized as group differences. Dyads were placed into groups through three steps. First, dyads whose members demonstrated at least one standard deviation difference from one another in intimacy were categorized in the “affectionately discrepant” group (N= 21 dyads). Second, to distinguish the remaining non-discrepant dyads who demonstrated high and low levels of intimacy, an average intimacy score was obtained for each dyad (i.e., within each dyad members’ scores were averaged). Third, if the average score was above the mean-level of intimacy reported across all of the adolescents, the dyad was placed in the “non-discrepant high intimacy” group (N=13 dyads) where both friends reported high levels of intimacy. If the average score was below that mean, the dyad was placed in “non-discrepant low intimacy” (N=13 dyads) where both friends reported low levels of intimacy. Mean comparisons across these three groups on the outcome variables of interest across hypotheses are reported in Table 4.

Sensitivity analyses were then conducted similarly to those reported above for each hypothesis. However, the main effects for actor and partner intimacy at Level 1 were dropped, and the interaction of actor and partner intimacy at Level 2 was replaced by two dummy coded variables that compared each of the two non-discrepant groups with the affectionately discrepant group. A planned comparison was also used to examine the difference between the two non-discrepant groups. (The models examining

the mean differences across groups retained the covariates indicated in the previous analyses for each outcome.)

Only two findings slightly differed from the initial analyses. First, negative affect differed significantly across groups, such that adolescents in the non-discrepant high intimacy group demonstrated higher levels of negative affect than the affectionately discrepant group ($p=.05$) and the non-discrepant low intimacy group ($p=.00$). This differed from the initial analyses in that the interaction of actor and partner intimacy did not predict greater negative affect. However, given that 81% of the non-discrepant high intimacy group were girls, these results are consistent with those reported for the significant three-way interaction between gender and discrepancies predicting negative affect, where girls in non-discrepant high intimacy friendships reported greater negative affect. Second, the groups did not differ in friendship control, despite that in the initial analyses the interaction of actor and partner intimacy predicted friendship control. However, an examination of the group means suggests a similar pattern of effects to that found in the primary interaction-based analyses such that the non-discrepant high intimacy group reported their friends as more in control than the two other groups.³ In sum, using a different analytic strategy, the results do not change significantly, indicating that the null findings were not simply due to lack of power to detect interaction effects.

³Given that the mean of the two endpoints of the friend control scale is not equivalent to the middle score, a group's mean of 3 may represent two different things: (1) a majority of adolescents in the group view equal control of the friendship with all endorsing 3 or (2) a majority of the adolescents view unequal control of the friendships with all endorsing the endpoints of the scale (i.e., 1 or 5). Both of these situations would result in a mean score of 3 for the group, but are arguably qualitatively different. Thus, the scale was dichotomized to reflect whether the adolescent perceived equal control or imbalance in control (i.e., perceived either self or friend was in control). An examination of the percentages shows that 33% of the affectionately discrepant adolescents perceived an imbalance whereas only 12% of those in a non-discrepant friendship perceived imbalance ($p=.11$).

Cross-sex dyads. Another explanation for the null findings may be that the model works differently for same-sex and cross-sex dyads. Previous research suggests that cross-sex friendships differ from same-sex friendships in that girls report more intimacy than boys do in their friendships even in cross-sex friendships (Kuttler, La Greca, & Prinstein, 2001). Post-hoc analyses thus probed whether the inclusion of cross-sex dyads may have confounded the results as there are inherent discrepancies in these relationships due to gender differences in reporting intimacy. Indeed, of the six cross-sex dyads in the sample, four of them were placed in the affectionately discrepant group, with each of the remaining two placed in the non-discrepant high intimacy group and non-discrepant low intimacy group, respectively. For those in the affectionately discrepant group, all four girls reported higher levels of intimacy than all four boys, consistent with the conclusion that cross-sex dyads may be inherently different than same-sex dyads regarding discrepancies.

To address this issue, all of the models were re-estimated omitting the cross-sex dyads (n=41 dyads retained). By and large, there were no significant differences in the substantive conclusions with one exception. Regarding the analysis predicting friendship control, the three-way interaction of gender, actor intimacy, and partner intimacy that was not significant in the previous analyses that included the cross-sex dyads was now significant. The interaction was probed at one standard deviation above the mean and below the mean of partner intimacy for each gender. For girls, there was a significant negative relationship between actor intimacy and friendship control at high levels of partner intimacy ($B=-.30$, $p=.02$) and a marginally significant positive relationship between these variables at low levels of partner intimacy ($B=.25$, $p=.06$). As Figure 6

shows, girls with both a positive and negative bias in intimacy reported higher levels of perceived control whereas girls in non-discrepant friendships perceived their friends as more in control. None of the simple slopes were significant for boys. Thus, when omitting the cross-sex dyads, the interaction of actor and partner intimacy predicting friendship control only appears to be relevant for girls and not boys.

Although the friendship control results changed by omitting the cross-sex dyads, all of the other results remained the same. Therefore, there is limited support for the notion that cross-sex dyads are different than same-sex dyads in relation to their levels of intimacy. However, these differences only impacted the findings concerning friendship control, and do not explain the lack of significant results more generally.

Type of friendship. Finally, the null findings may be due to the fact that the effect of discrepancies in close friendships may differ based on the dimensions of friendship (i.e., frequency of contact or length of friendship). To test this possibility, another set of analyses examined whether length of friendship or frequency of contact acted as a moderator of the relationship between discrepancies in friendship intimacy and the outcomes of interest (i.e., alcohol use, negative affect, conflict, friendship control). Result of these analyses showed that none of these interactions were significant. Thus, differences in the length of the relationship and frequency of contact in the dyads did not explain the null findings.

In summary, the sensitivity analyses suggest that the preponderance of null findings may not necessarily be due to the use of underpowered techniques for the primary analyses, the inclusion of cross-sex dyads, and characteristics of the friendship.

Post-Hoc Analyses

Three additional post-hoc analyses were conducted to compliment the current results. First, in order to clarify whether discrepancies in friendship intimacy better capture the dyadic nature of friendship intimacy, the models were re-estimated using only self-reported friendship intimacy. Next, given the unusual scaling of the friendship control variable, a series of models examined whether a dichotomization of the scale changed the substantive findings. Lastly, in order to better understand the ramifications of affectionately discrepant friendships, the effects of affectionately discrepant friendships were examined longitudinally via the examination of participation rates at Phase IV.

Intimacy as a dyadic construct. A series of analyses examined whether the addition of partner-reported intimacy effects in the APIM model added significantly to the prediction of the outcomes beyond actor effects alone. Given the significant results of the interaction models for negative affect and friendship control, a series of HLM analyses examined the effects of actor-reported intimacy alone in addition to partner-reported intimacy predicting these outcomes. Actor intimacy alone did not predict negative affect ($B = -.07, p = .49$) and without the interaction term in the model, neither actor intimacy ($B = -.10, p = .31$) nor partner intimacy ($B = .14, p = .13$) predicted negative affect. However, in the primary analyses, discrepancies in friendship intimacy only predicted negative affect in a three-way interaction with gender. Thus, in order to examine the utility of discrepancies predicting negative affect in comparison to self-report, a two-way interaction with actor intimacy and gender was also included in a separate model, which was not significant ($B = -.07, p = .72$). Regarding the estimation of

friendship intimacy predicting friendship control, actor intimacy alone did not predict friendship control ($B=-.04$, $p=.52$) and without the interaction term in the model, neither actor intimacy ($B=-.03$, $p=.68$) nor partner intimacy ($B=-.02$, $p=.76$) predicted friendship control. Consequently, friendship intimacy should be assessed dyadically to understand its relationship with adolescent outcomes.

Perceived friendship control. The perceived control variable was not a traditional continuous variable in that it does not assess the magnitude of control but rather who has the control in the friendship with the midpoint reflecting equality. However, the distinct meaning of the midpoint is lost in any of the analyses including perceived control as an outcome or predictor. Thus, the variable was dichotomized to reflect either equality or an imbalance in control, and the models including it as a predictor and outcome variable were re-estimated in HLM 6.0. First, an unconditional model was estimated and the random intercept was .06, leading to an ICC estimate of .01 using the chi-square estimation of σ^2 . This suggests that as dichotomous variable, friendship control has a small amount of variability at the dyadic level. None of the covariates were significant, and thus none were retained for further analysis. In the analysis of discrepancies predicting perceived friendship control, actor intimacy ($B=-.02$, $p=.95$), partner intimacy ($B=-.29$, $p=.22$), and the interaction between actor intimacy and partner intimacy ($B=-.05$, $p=.87$) were all non-significant predictors.

In the analysis of balance predicting alcohol use, the main effect of balance was significant ($B=1.67$, $p=.02$), indicating that the more imbalance in the friendship the higher likelihood of drinking. The odds ratio of 5.32 suggested that adolescents who perceived imbalance in their friendships are 5 times more likely to drink alcohol than

those in a balanced relationship.⁴ Therefore, the results differed across the dichotomous and continuous models, such that discrepancies in friendship intimacy did not predict imbalance but imbalance did predict greater likelihood of alcohol use, which is an opposite pattern from the previous results.

Longitudinal ramifications of affectionately discrepant friendships. To better understand whether highly discrepant perceptions of intimacy demarcate friendships that are meaningfully distinct, post-hoc analyses tested one indicator of longevity of these friendships. Because a sub-set of target adolescents completed a followed-up interview a year later (n=35), longitudinal data were available to examine whether target adolescents (1) participated again with the same friend, (2) participated again with a different friend, or (3) did not participate in the friend interview at follow-up. Using groups formed in the sensitivity analyses to describe these discrepancies, adolescents classified as non-discrepant high intimacy, non-discrepant low intimacy, and affectionately discrepant were compared on these three statuses of longitudinal participation (See Figure 7). Target adolescents in the non-discrepant high intimacy group were more likely to return with the same friend (80%) than adolescents in either the non-discrepant low intimacy group (33%) or affectionately discrepant group (38%). Thus, it appears that affectionately discrepant friendships may differ significantly from non-discrepant high intimacy friendships in terms of the longevity of the friendship.

⁴ A model including the interaction term between balance and peer use would not converge. Because both peer use and balance were dichotomous variables, the interaction between the two resulted in only 6 adolescents who had imbalance and an alcohol-using friend. This low cell count is likely the reason for non-convergence and further testing of this hypothesis was not attempted.

CHAPTER 4

Discussion

The current study examined whether discrepancies between self- and peer-reported friendship intimacy predicted higher levels of alcohol use, and whether these effects were mediated by greater negative affect, friendship conflict, and friendship control (imbalance) in the context of a substance-using friend. Although these hypotheses were largely unsupported, this study does provide some initial support for the potential importance of studying affectionately discrepant friendships. The initial results and some post-hoc analyses offer three observations that are consistent with previous literature and suggest interesting directions for future research. First, consistent with hypotheses, discrepancies in friendship intimacy predicted a greater imbalance in friendship control. Second, for boys, a negative bias in friendship intimacy placed them at risk for negative affect. Third, there appeared to be longitudinal ramifications of affectionately discrepant friendships. Specifically, target adolescents in affectionately discrepant dyads participated in the second wave of data collection with their wave one friend at a much lower rate than target adolescents in non-discrepant high intimacy friendships. Furthermore, the current study highlights the importance of assessing friendship quality as a dyadic construct, through both reporters of the friendship, in order to examine its effects on adolescents' outcomes.

Friendship control

As hypothesized, discrepancies in friendship intimacy were related to perceived friendship control such that adolescents who demonstrated a negative bias in friendship quality reported being in control of their friendship. Post-hoc analyses suggested that this relationship appears to be especially true for girls. Accordingly, girls in non-discrepant friendships perceived their friend as in control of the friendships, but girls in affectionately discrepant dyads reported greater control of their friendship. In other words, both girls in affectionately discrepant dyads perceived being in control of the friendship. This finding may reflect the fact that neither dyad member is accurately perceiving the relationship. As suggested previously, adolescents who demonstrate both positive and negative biases in friendship intimacy may have poor social skills, including difficulty with perspective taking; thus, perhaps, these social skills deficits give rise to an inaccurate perception of control of the friendship. Conversely, both girls in non-discrepant dyads perceive their friend as in control of their friendship. Instead of reflecting poor social skills, this phenomenon may reflect an appropriate relinquishing of some control in a friendship. A friendship where both see the other in control may be more harmonious than one where both friends feel in control. Furthermore, as hypothesized, the discrepancies in friendship intimacy predicted imbalance in friendship control for girls but not for boys. Perhaps because girls place greater importance in their friendships than do boys, the lack of affection reciprocity in these relationships lead to more negative outcomes.

Negative affect

Findings concerning negative affect also highlight the importance of affectionately discrepant friendships. A negative bias in friendship quality was related at trend level for

greater risk for negative affect in boys. In fact, boys demonstrating a negative bias in friendship intimacy showed higher levels of negative affect when compared both to boys demonstrating a positive bias and those in non-discrepant friendships (characterized by either high or low intimacy). This finding suggests that these discrepancies are problematic for adolescent boys, such that in an affectionately discrepant friendship, the perception of low levels of intimacy could fuel feelings of inadequacy. This may differ from friendships where both boys perceive low levels of friendship quality because perhaps both of these boys are aware of the lack of intimacy in their friendship. However, in friendships with affective discrepancies, boys perceiving low intimacy may wish to have a closer relationship with the other friend who perceives high intimacy, but feels unable to do so which in turn leads to negative affect.

Contrary to hypotheses, boys, and not girls, demonstrated greater risk for negative affect in affectionately discrepant friendships. Perhaps because boys' friendships are characterized by less intimacy (i.e., affection and self-disclosure), discrepancies between the two adolescents may be more salient, and in turn, more detrimental. Consistent with this notion, a recent meta-analysis found that friendship intimacy buffered boys, but not girls, against depressive symptoms, which the authors argue is due to the fact that boys may benefit more from high intimacy friendships because of the relative low levels of intimacy in their friendships (Demir & Oberleitner, 2006).

Because the current study is cross-sectional, the direction of the effect between a negative bias and negative affect is unclear. Perhaps rather than a consequence of an affectionately discrepant friendship, the negative affect symptoms lead boys to erroneously conclude that their friendships are less intimate than their friends' report, thus these boys

may demonstrate a depressogenic bias (Gladstone & Kaslow, 1995). This would be consistent with previous research showing that adolescents who are depressed demonstrate such a bias (Brenngden et al., 2002). Future research is necessary to examine whether these discrepancies reflect negative affect or lead to negative affect as hypothesized, yet it is also possible that both mechanisms are at play.

Longitudinal ramifications

One last post-hoc analysis further suggests that friendships without affection reciprocity differ from those with affection reciprocity. In the one year follow-up interview with this sample, only 38% of target adolescents with affectionately discrepant friendships participated in the study with the same friend, whereas 80% of the target adolescents in non-discrepant high intimacy friendships returned with the same friend. This finding implies that discrepant friendships had either ended or, perhaps similarly, that wave one friends were unwilling to participate with them again. If the proposed mechanisms are correct, adolescents in affectionately discrepant friendships may attempt to obtain affection reciprocity by behaving in a way they believe will garner their friends' approval. Consequently, if these attempts are met with rejection and affection reciprocity is not established, the friendship would dissolve. This may be especially true at the high school transition. With the introduction of new peers, adolescents in affectionately discrepant friendships may be more likely to seek new friends with whom they may engage in affectionately reciprocated relationships. In support of this possibility, 46% of target adolescents in affectionately discrepant friendships returned to the study for the follow-up interview with a different friend. Thus, this study finds some preliminary support that

affectionately discrepant friendships differ in their longevity compared to affectionately reciprocated ones.

Assessing friendship intimacy at the dyadic level

Two findings demonstrate an impact of affective discrepancies in the absence of an actor effect on adolescent outcomes, such that effects were only evident when friendship intimacy was defined on the dyadic rather than the individual level. First, the current study found no relationship between actor-rated intimacy and friendship control, such that the effects of actor intimacy on friendship control were only apparent when partner intimacy was considered in tandem. In the only study that has examined the relationship between friendship intimacy and control, the authors found no relationship between the two (Updegraff, Helms, McHale, Crouter, Thayer, & Sales, 2004). However, in light of the current results, the lack of a relationship between intimacy and control may have resulted from only examining self-reported intimacy and not taking into account the affection reciprocity present in the friendship.

Second, although the primary purpose of this study was to examine affective discrepancies, the current study also found that girls in non-discrepant high intimacy friendships demonstrated the highest levels of negative affect, an effect that was not observed when only examining actor intimacy. Although contrary to expectations, the findings that non-discrepant high intimacy friendships were associated with high levels of negative affect is consistent with Rose's notion of co-rumination (1999). Specifically, it is possible that girls in these affectionately reciprocated intimate friendships reinforce one another's negative affect symptoms through excessive self-disclosure, focus on negative emotions, and negative attributions. Further, girls' depressogenic attributional style and depressive symptoms are

predicted by their reciprocated best-friend's level of depression (Stevens & Prinstein, 2005), providing additional evidence that girls' intimate relationships may pose as a risk factor for negative affect in girls. Apart from co-rumination and peer contagion, other relational factors may also be at play in increasing girls' risk for negative affect. For example, it could be that extremely high levels of intimacy reflect enmeshment or other maladaptive interpersonal processes. It is important to note that the sample in this study was at elevated risk for substance use, and perhaps non-discrepant high intimacy friendships between girls would not be as detrimental in a more normative sample. Nonetheless, the findings of this study suggest that girls' intimate relationships need to be better understood as they relate to negative affect.

Moreover, the previous finding highlights the importance of using dyadic reports of friendship intimacy. Although some past research examining self-reported intimacy predicting depression in girls has found that intimacy serves as a protective factor (Buhmester, 1990; Rubin et al., 2004), other studies document no relationship between intimacy and depression (Demir & Urberg, 2004; Hussong, 2000a; La Greca & Harrison, 2005). Notably, this is the first study to establish that both friends' reports of intimacy are important, and that when taking both into account, non-discrepant high intimacy friendships predict greater negative affect in girls. Perhaps, the inconsistent findings in the literature have resulted from the lack of inclusion of both reporters in the friendship, given that the effect of friendship intimacy on negative affect was not observed when only examining self-reported intimacy.

In sum, across all of the findings of the current study discussed above, the results suggest that friendship intimacy should be conceptualized and assessed as a dyadic construct.

In accordance with past theoretical work, friendship intimacy appears to be best captured dyadically as a predictor of both individual and dyadic outcomes. When examined dyadically, friendship intimacy was related to friendship control, negative affect, and the longevity of friendships. However, none of these relationships were evident when only examining self-reported intimacy. Thus, future work should further examine friendship quality dyadically.

Alcohol use

Although this study provides some limited, initial support for the importance of affectionately discrepant friendships, it did not find support for these relationships as risk factors for greater alcohol use. Several reasons may explain the lack of support for these hypotheses. First, the lack of results may be due to the younger age of the sample, such that the social mechanisms of use may be more important for older adolescents. As alcohol use becomes more normative, older adolescents may view alcohol use as a way to establish and maintain friendships, whereas for younger adolescents, when alcohol use is less normative, it may not confer the same social benefits. In line with this argument, previous studies documenting the relationship between friendship intimacy and substance use involved samples of older adolescents (from sophomores in high school to college students) (Hussong, 2000a; Hussong & Hicks, 2003; Urberg et al., 2003; Windle, 1994).

Second, the social mechanisms leading to alcohol use (e.g., to obtain peer approval or establish a stronger friendship) may be more relevant to heavier levels of alcohol use. Because adolescents in the current sample did not report significant variability in alcohol use, the variable had to be dichotomized to reflect use or no use. Increased variability of use would allow for an examination of whether friendship functioning, specifically affectionately

discrepant friendships, predict greater alcohol use. Again, studies examining these relationships previously did not dichotomize substance use (Hussong, 2000a; Hussong & Hicks, 2003; Urberg et al., 2003; Windle, 1994).

Along the same lines, adolescents may engage in alcohol use for a variety of reasons, and social motives for alcohol use may moderate the relationship between affective discrepancies and alcohol use. Discrepancies may lead to greater alcohol use only for those adolescents who view alcohol as a means to obtain social acceptance and status. Thus, adolescents looking to obtain affection reciprocity in an affectionately discrepant friendships may only be more likely to drink alcohol if they believe by doing so they can improve their relationship. Future work should determine whether social motives in conjunction with discrepant friendships place adolescents at risk for greater use.

Although there was no support for the hypotheses regarding alcohol use, there were two findings in relation to alcohol use that are worthy of further discussion. First, peer alcohol use was not significantly related to an adolescent's alcohol use. Because adolescents tend to project their own use when they report on their peers' use, the current study examined the peer's self-reported use (Urberg, 1999). Hence, the lack of a strong relationship between these variables was not surprising given that past research finds that the relationship between adolescent alcohol use and their peers' use is weaker when using peer's report of their own use (Bauman & Fisher, 1986). However, it highlights the importance of assessing peer substance use through self-report, as past research may have overestimated the effect of peer use on an adolescent's substance use level due to this projection.

Second, when examined dichotomously, an imbalance in friendship control predicted higher levels of alcohol use. Consistent with the proposed theoretical model, adolescents

who report higher levels of imbalance in their friendships demonstrated higher probabilities of alcohol use. Adolescents may be susceptible to peer influence when they perceive imbalance in their friendship such that they may engage in alcohol use as a way to maintain their friendships or to please their friend. Similarly, in these imbalanced friendships, friends may be more likely to exert active peer pressure, which has been found to predict substance use (Graham, Marks, & Hansen, 1991). Unfortunately, the model including peer use as a moderator of balance and alcohol use relationship could not be tested because of the limited variability in both dichotomous predictors, but it remains plausible that adolescents in an unbalanced friendship use alcohol in an attempt to further strengthen that friendship. Although some previous work has examined friendship control as a predictor of substance use in the context of other friendship qualities (e.g., Hussong, Hicks, Levy, & Curran, 2003), this study extends the previous work by examining friendship balance as a sole predictor of alcohol use.

Strengths and limitations

Although the current study had several limitations, it also had several strengths. First, the majority of past research examining the relationship between friendship quality, or discrepancies in friendship quality, and adolescent outcomes has not statistically modeled the dependence inherent in dyadic data at the outcome level. Studies that include two members of the dyad may erroneously find significant effects due to inflated standard errors that result from ignoring dependence in the data. Second, other studies have excluded dyads from the analyses (e.g., only using peers as reporters of the friendship quality but not including their outcome scores), in order to avoid dependence in the data. Although this approach eliminates the problem of inflated standard errors, these researchers are excluding important

information in their models. For example, the current study found dyadic dependence in all the outcomes, suggesting that excluding both friends' reports may omit some important effects. While some studies have attempted to address friendship discrepancies by regressing self-reports of friendship quality on friends' reports to form a discrepancy score, this technique is problematic in two ways. First, these studies do not incorporate the friends' outcome data as discussed above. Second, by using such discrepancy scores and not including the main effects of both self-reported and peer-reported friendship quality, it is not possible to control for such effects. Thus, this approach equates friendships where two people report a poor friendship with those where both report a good friendship. Given these arguments, the current study extends previous work by modeling dyadic dependence and using interactions to examine friendship discrepancies.

Although the current study suggests affection reciprocity may be psychologically meaningful and that the assessment of friendship intimacy should be at the dyadic level, limitations to the current study should also be noted. First, the small sample size may have underpowered some of the analyses, especially those involving the three-way interactions. Second, the recruitment of the members of the dyads may have not been optimal for the current study. Not all of the target adolescents participated with their best friend due to a variety of factors. For example, the first-ranked friend may have been unable to attend a home visit or his/her parent did not consent, leading to the recruitment of friends lower on the list. However, the recruitment of the friend necessitated some level of reciprocity in the relationship since they had to agree to participate in the study with their friend. Moreover, the targets were recruited for being at elevated risk for substance use, which differed from the manner of the friends' recruitment who were recruited merely as friends regardless of their

level of risk for substance use. However, a variety of analyses found that targets did not differ from their friends in relation to the current hypotheses.

Third, the risk nature of the current sample may have influenced the current findings. However, this may not be the case because the majority of research examining discrepancies in friendship quality has been with samples of adolescents demonstrating problem behavior (e.g., Brendgen et al., 2004). In addition, studies finding a positive relationship between friendship quality and maladaptive outcomes have been conducted with clinical samples (e.g., Poulin et al., 2000).

Fourth, in relation to the lack of findings concerning conflict, it could be that the way conflict was conceptualized in the current resulted in the null findings. The current study only measured the frequency of friendship conflict, disregarding conflict resolution. Past research suggests that the amount of conflict is not necessarily indicative of poor friendship quality, but instead the resolution of the conflict is more important to the health of friendship (Laursen, Hartup, & Koplas, 1996). Friendships that resolve their conflicts in a mutually satisfactory manner are thought to be of higher quality than those that do not find a resolution or find an imbalanced one. Perhaps discrepancies in friendship quality do not lead to more conflict, but instead to an inability to resolve the conflict in an equitable manner. Future research should further explore this notion.

Lastly, another limitation of the current study is the measurement of friendship control given the unusual scaling of this measure (with its midpoint being qualitatively distinct as indicating equality in friendship control). In fact, results differed whether the variable was treated continuously or dichotomously. For example, affectionately discrepant friendships were a significant predictor of friendship control as a continuous variable but not

dichotomously. Conversely, friendship control predicted a greater probability of alcohol use when dichotomous but not when treated continuously. However, it is important to note that dichotomization of this variable is meaningfully different since it equates two endpoints (i.e., perceiving self as in control and perceiving your friend as in control) which may explain these inconsistent results. The current study also did not directly assess dominance/submissiveness in the dyad or behavioral aspects of friendship control. Nevertheless, friendship control is an emerging literature and the current study suggests that this construct may be important to study further in the context of affectionately discrepant friendships and alcohol use. Thus, future work should further explore the mechanisms through which friendship balance influences maladaptive adolescent outcomes.

Implications

There are several interesting clinical implications of the current study. First, it might be important for clinicians to assess affectionately discrepant friendships with their adolescent clients. This study suggests that adolescents do not always agree with their friends in terms of the level of intimacy in the relationship, and clinicians may need multiple reporters (i.e., parents, teachers, siblings) to get a more thorough assessment of an adolescent's friendships. Second, because this study found that non-discrepant high intimacy friendships increase risk for negative affect in girls, it raises the question whether for certain girls their friendships may produce risk. Although clinicians are aware that helping their clients disengage from deviant peer groups is important, clinicians should also attend to how an adolescent's friends may exacerbate negative affect. Hence, clinicians might help depressed girls become engaged in different social networks, or alternatively, change how their clients and friends interact (e.g., stop co-ruminating).

Future directions

This study found some initial support for the notion that discrepant affective friendships may be detrimental for adolescents. However, future research might examine whether the lack of affection reciprocity may be more detrimental in best friendships than in other types of friendships. Adolescents may place greater importance on more central friendships leading to higher expectations for intimacy than those of less central friendships. Accordingly, in affectionately discrepant best-friendships, adolescents may demonstrate greater distress than in affectionately discrepant friendships that are less important to the adolescent. Thus, future work should examine whether the centrality of a friendship changes the effects of these affective discrepancies.

Likewise, adolescents may place greater importance on their friendships if they have poor family functioning, and discrepancies may influence outcomes only in the context of poor parental relationships. Indeed, past research suggests that adolescents demonstrate negative outcomes in poor quality friendships only when they also have a poor parental relationship (e.g., Rubin et al., 2004). Future work should further explore this notion.

Moreover, future research might examine the development and longitudinal effects of affectionately discrepant friendships. The current study only assessed friendships at one time point, and it is likely that friendships fluctuate in their levels of affection reciprocity. Specifically, research may attempt to understand when affective discrepancies lead to friendship dissolution and when they may lead to affection reciprocity. Previous work examining the effects of unreciprocated friendships finds the effects on negative adolescent outcomes longitudinally and not cross-sectionally (Bot, Engels, Knibbe & Meeus, 2006), suggesting that the effects of these friendships may occur over time. The negative individual

outcomes may be due to the stresses associated with termination of an important friendship or to having changed a behavior to achieve reciprocity.

Summary

Although there was limited support for the hypotheses, the current study underscores the importance of using both reporters of a friendship when examining discrepancies in friendship intimacy and its effects on adolescents' outcomes. The study extended past work examining friendship intimacy and adolescent outcomes by using an HLM framework and interactions to test discrepancies in friendship quality. The results offer some initial support for the fact that affectionately discrepant friendships are psychologically meaningful, and that they can be distinguished from friendships with affection reciprocity. As hypothesized, affectionately discrepant friendships demonstrate greater imbalance in friendship control, yet this was only the case for girls. On the other hand, affective discrepancies placed boys at risk for negative affect. Regardless of gender, target adolescents in affectionately discrepant friendships were less likely to return to the second wave of the study with their same friend than target adolescents in non-discrepant high intimacy friendships. Thus, although the effects differed by gender, overall, affective discrepancies are problematic for both boys and girls. This study also has methodical implications regarding the assessment of friendship intimacy. Indeed, it was only in the dyadic assessment of friendship intimacy that the current results were evident, suggesting that both reporters more fully capture the construct. In summary, the results of the study indicate that affection reciprocity may be an important construct worthy of future study, and methodologically, both reporters of friendship intimacy, in addition to the differences between them, are necessary to understand the impact of friendship intimacy on adolescent outcomes.

APPENDIX
TABLES AND FIGURES

Table 1: Correlation table and descriptive statistics

| | Actor Intimacy | Partner Intimacy | Perceived Balance | Negative Affect | Perceived Conflict | Age | Parental Education | Length of friendship | Amount of contact |
|----------------------|-------------------|-------------------|-------------------|-------------------|--------------------|-------|--------------------|----------------------|-------------------|
| Actor Intimacy | ----- | | | | | | | | |
| Partner Intimacy | 0.35* | ----- | | | | | | | |
| Perceived Balance | -0.11 | -0.01 | ----- | | | | | | |
| Negative Affect | 0.13 | 0.24* | -0.10 | ----- | | | | | |
| Perceived Conflict | -0.002 | 0.17 [#] | 0.08 | 0.17 [#] | ----- | | | | |
| Age | -0.14 | 0.09 | 0.32* | -0.03 | 0.22* | ----- | | | |
| Parental Education | -0.05 | 0.04 | 0.21* | -0.04 | -0.09 | 0.01 | ----- | | |
| Length of friendship | 0.05 | 0.05 | 0.008 | 0.04 | 0.098 | 0.06 | 0.03 | ----- | |
| Amount of contact | 0.18 [#] | 0.18 [#] | -0.05 | 0.20 [#] | 0.063 | -0.04 | -0.07 | -0.27* | ----- |
| Mean | 3.50 | 3.50 | 3.06 | 0.00 | 1.97 | 13.99 | 2.61 | 3.19 | 3.72 |
| SD | 0.85 | 0.85 | 0.63 | 0.92 | 0.71 | 0.74 | 1.17 | 1.06 | 1.10 |

Note: Perceive balance on a continuous scale. Negative affect is a composite of two standardized scores.

*p<.05, [#]p<.10

Table 2: Interaction of actor intimacy, partner intimacy, and their interaction predicting alcohol use, negative affect, perceived conflict, and perceived balance

| Predictors | Unstandardized Betas for Outcomes | | | |
|---|-----------------------------------|------------------|--------------------|-------------------|
| | Alcohol Use | Negative Affect | Perceived Conflict | Perceived Control |
| Level 1 | | | | |
| Age | 1.2* | -- | .18 [#] | .25* |
| Gender | -- | -.69* | -.41* | -- |
| Parental education | -- | -- | -- | .14* |
| Actor intimacy | -.11 | -.05 | -.09 | -.06 |
| Partner intimacy | -.06 | .18 [#] | .10 | -.06 |
| Level 2 | | | | |
| Length of friendship | -.53 | .14 | -- | -- |
| Frequency of contact | -- | .27* | -- | -- |
| Actor*Partner intimacy | .14 | .13 | -.03 | -.14* |
| τ_{00} | .30 | .04 | .19 | -.08 |
| σ^2 | -- | .64 | .28 | .40 |
| ICC | .08 | .06 | .40 | -.23 |
| Reduction in Sigma Squared from unconditional model | -- | .15 | .00 | .06 |
| Change in ICC from unconditional model | .02 | .04 | .03 | .05 ^a |

Note: Because the models contained different covariates, the models did not include all of the predictors (as denoted by --). For the dichotomous outcome, σ^2 values are not estimated (as denoted by --). ^aThis was an increase in ICC not a reduction whereas for the rest of the models they estimated a reduction in ICC.

*p<.05, [#]p<.10

Table 3: Mediator variables predicting alcohol use moderated by peer use

| Predictors | Alcohol Use Unstandardized Beta |
|----------------------------|------------------------------------|
| Model 1 | |
| Age | 1.09* |
| Length of friendship | -.47 [#] |
| Negative affect | .31 |
| Peer use | .49 |
| Negative affect*Peer use | -.61 |
| Model 2 | |
| Age | 1.03* |
| Length of friendship | -.45 [#] |
| Perceived conflict | -.01 |
| Peer use | .34 |
| Perceive conflict*Peer use | .08 |
| Model 3 | |
| Age | .93* |
| Length of friendship | -.44 [#] |
| Perceived control | .53 |
| Peer use | -.23 |
| Perceive control*Peer use | .20 |

Note: These estimates are for the final model including the main effect and interaction term.

*p<.05. [#]p<.10

Table 4: Mean levels and percentages of outcome and demographic variables by grouping dyads into three groups according to levels of actor and partner intimacy

| | Groups | | |
|------------------------------------|------------------------------|-----------------------------|------------|
| | High intimacy non-discrepant | Low intimacy non-discrepant | Discrepant |
| Negative affect | 0.60 | -0.44 | -0.10 |
| Perceived conflict | 1.96 | 1.86 | 2.04 |
| Perceived friend control | 2.94 | 3.14 | 3.10 |
| % reporting alcohol use | 27% | 35% | 26% |
| % reporting imbalance ^a | 12% | 23% | 33% |
| % boys | 19% | 50% | 57% |
| % cross-sex dyads | 8% | 8% | 19% |

Note: ^a The perceived control variable was dichotomized to reflect whether the adolescent perceived equal control or imbalance in control (i.e., either self or friend in control).

Figure 1: Theoretical Model

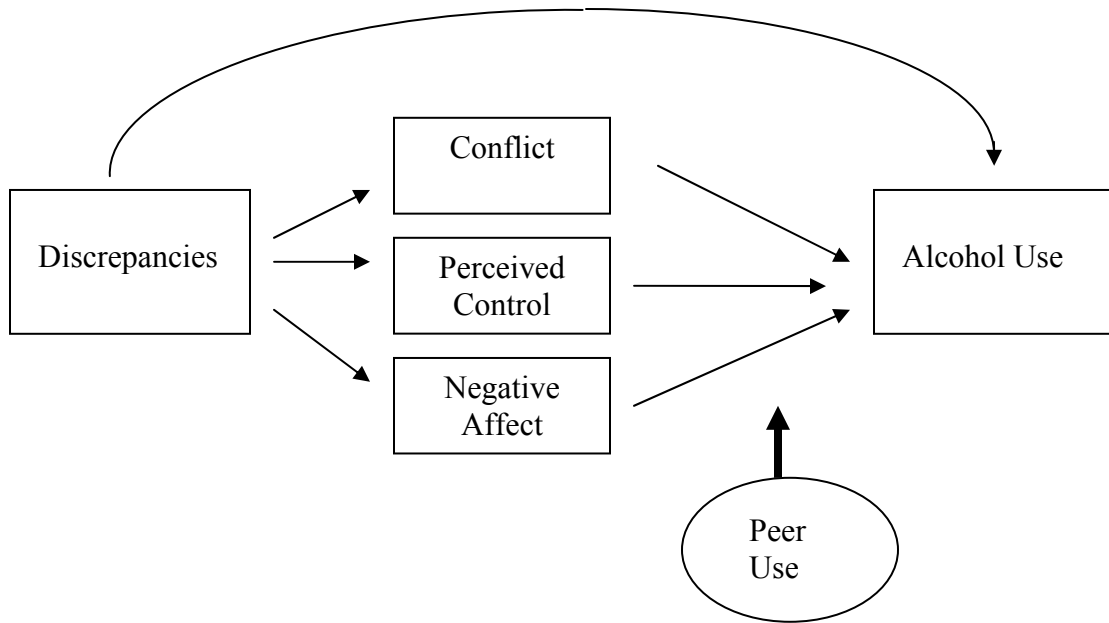


Figure 2: The High School Transition Study: Design Overview

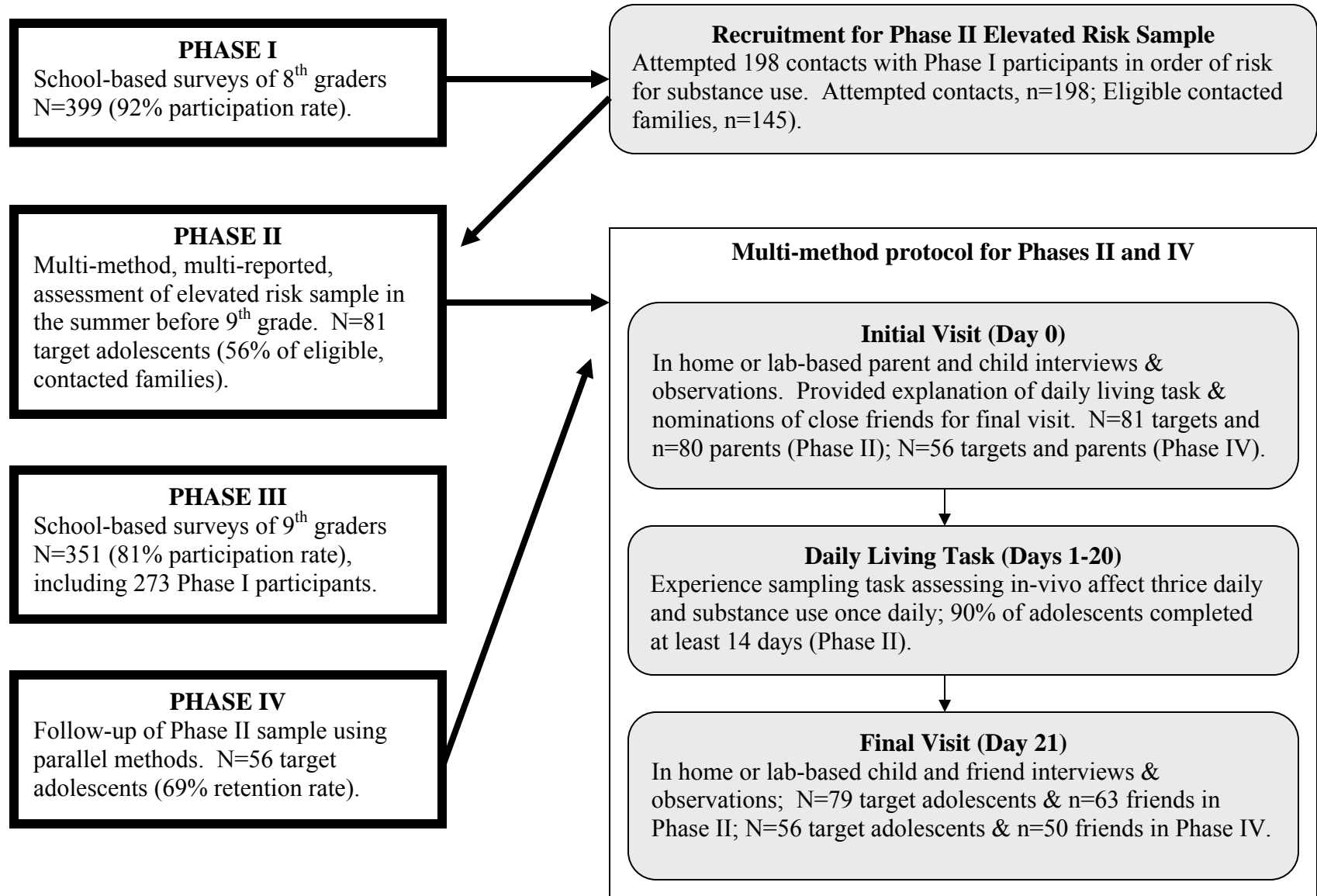


Figure 3: Interaction of actor and partner intimacy predicting friendship perceived control

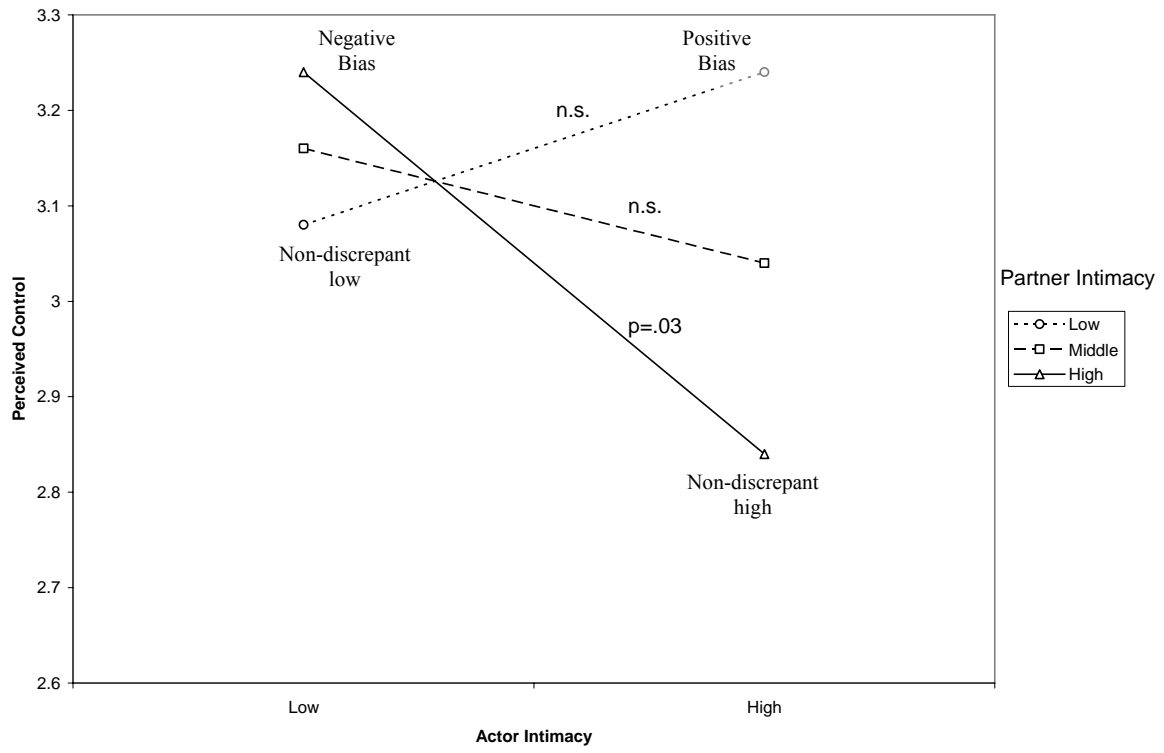


Figure 4: Girls simple slope plot of 3-way interaction of actor intimacy, partner intimacy and gender predicting negative affect

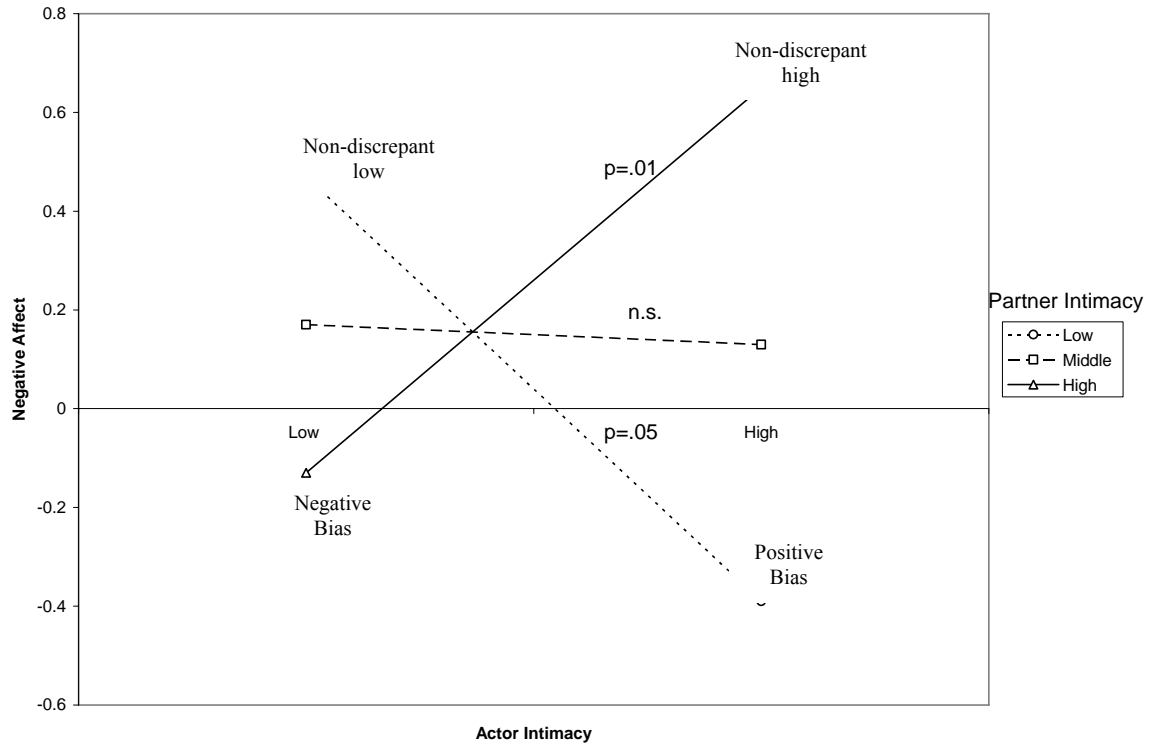


Figure 5: Boys simple slope plot of 3-way interaction of actor intimacy, partner intimacy and gender predicting negative affect

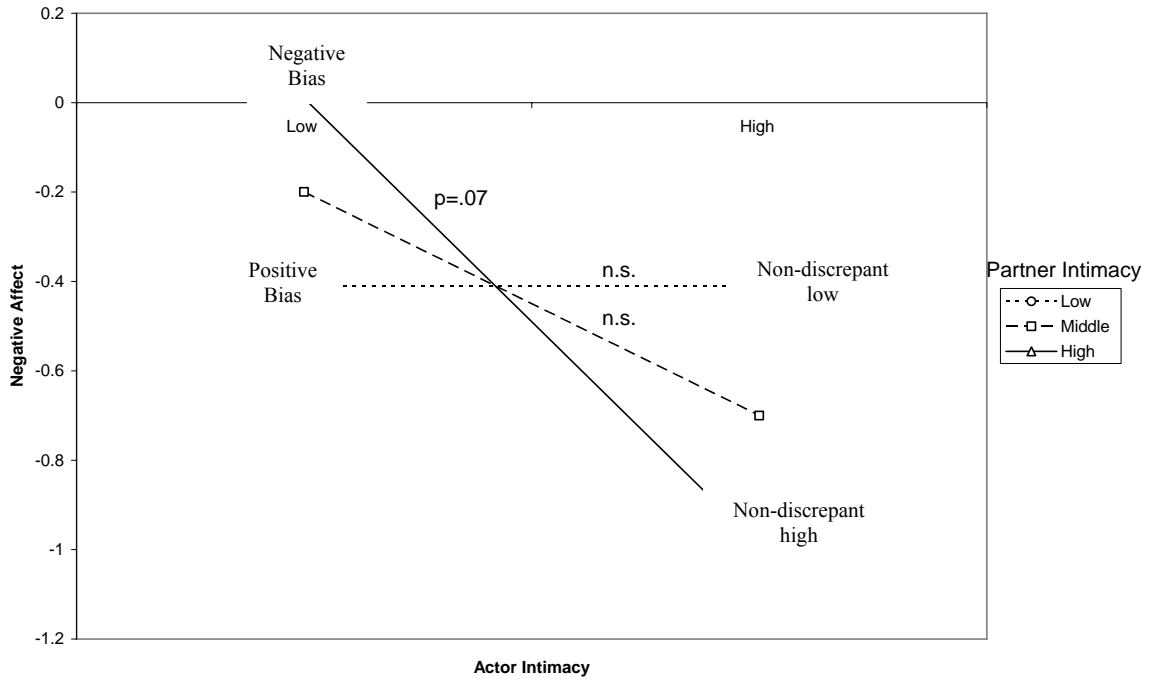


Figure 6: Sensitivity Analyses – Probe of three-way interaction of actor intimacy, partner intimacy, and gender predicting friendship control omitting cross-sex dyads

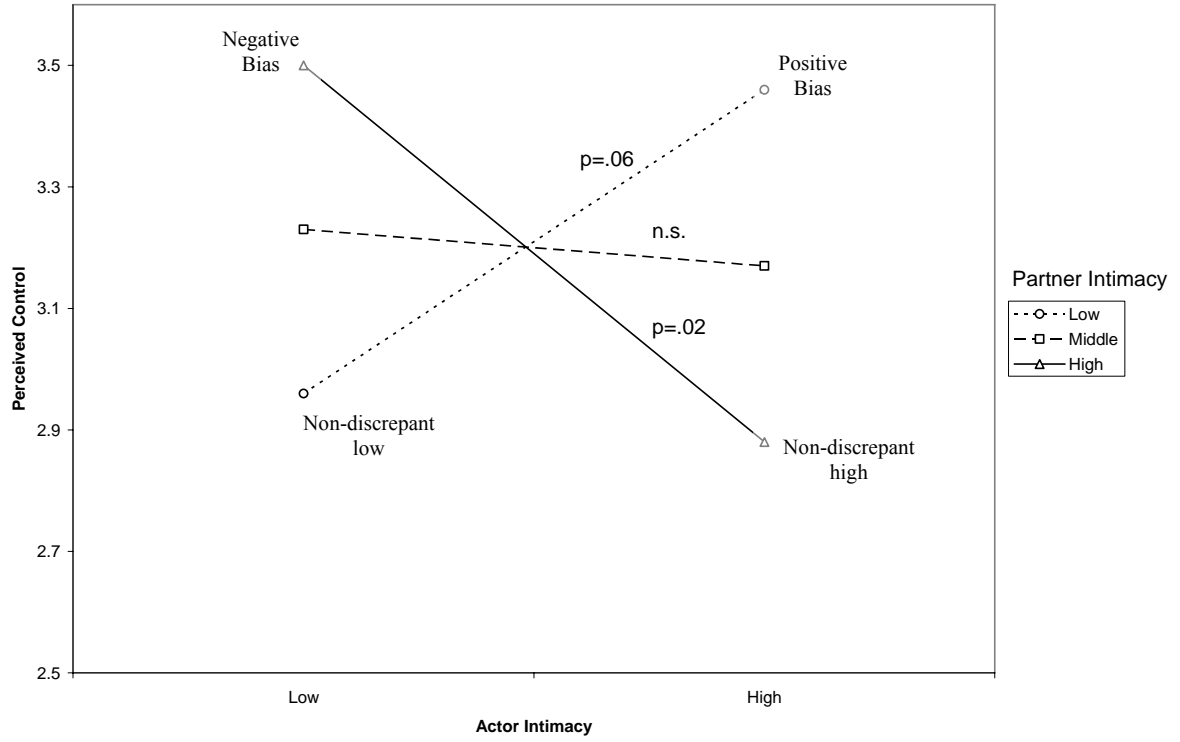
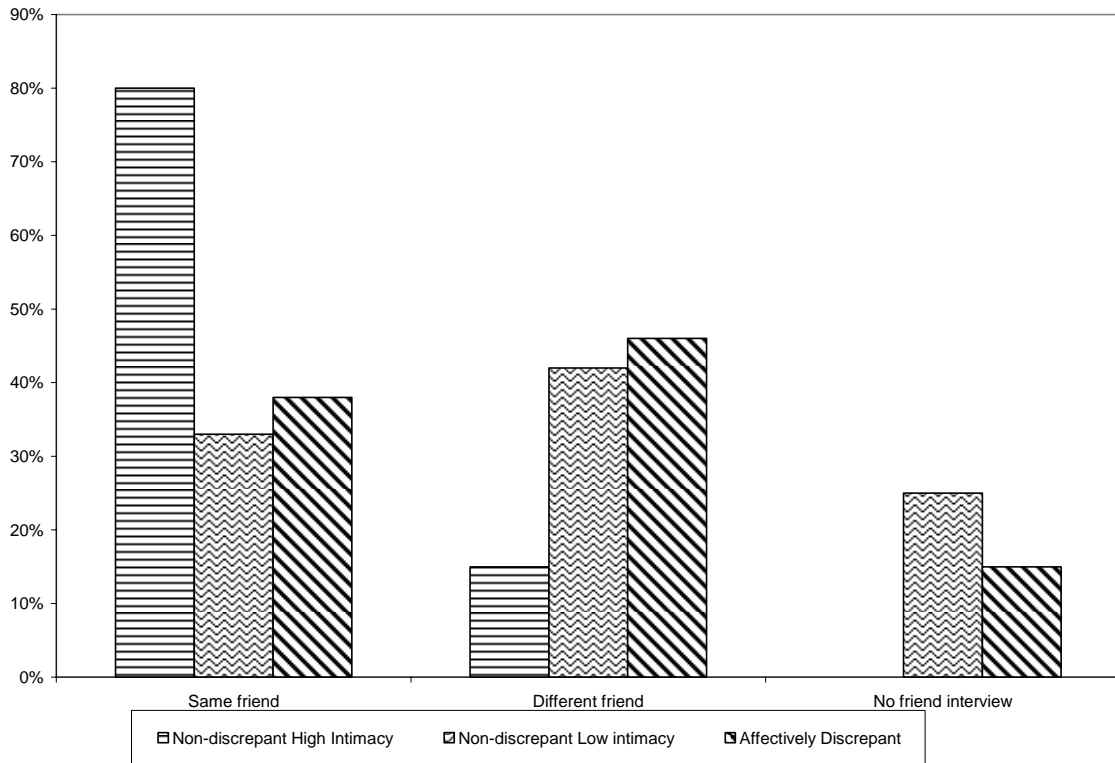


Figure 7: Post Hoc Analyses – Longitudinal participation by target adolescents



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