

Gender, Loneliness, and Friendship Satisfaction in Early Adulthood:  
The Role of Friendship Features and Friendship Expectations

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2013

ABSTRACT

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## ABSTRACT

Three studies focus on an intriguing paradox in the associations between gender, friendship quality, and loneliness, and examine whether gender differences in friendship expectations help explain why the paradox occurs. Study 1 ( $n = 1761$  college undergraduates) documents the three elements of this paradox: (1) females reported higher levels of various positive features in their friendships than did males; (2) higher levels of positive friendship features were associated with lower levels of loneliness; and (3) males and females reported similar levels of loneliness. Consistent with this paradox, when friendship features were statistically controlled, a statistical suppression effect was found such that females reported *higher* levels of loneliness than did males.

Study 2 ( $n = 1008$  young adults aged 18 to 29) replicated each of the findings from Study 1 using a revised and expanded measure that reliably assessed a broader set of distinct friendship features. In addition to measuring friendship features and loneliness, Study 2 also examined friendship satisfaction, and here too a striking suppression effect emerged. Specifically, although females reported slightly higher levels of friendship satisfaction than did males, females reported *lower* levels of friendship satisfaction than did males when friendship features were statistically controlled. Another noteworthy finding was that several friendship features were more strongly related to friendship satisfaction for females than they were for males, suggesting that females may be more “sensitive” to subtle variations in friendship features than are males.

Study 3 ( $n = 419$  young adults aged 18 to 29) further replicated the suppression effects observed in Studies 1 and 2, and was designed to learn whether gender differences in friendship expectations would help explain the paradox and suppression effects. Two different facets of friendship expectations were hypothesized and assessed with newly developed, highly reliable measures of each facet. The first facet, referred to as “feature-specific friendship expectations,” focused on the degree to which individuals expect a best friendship to be characterized by each of the friendship features that were assessed in Study 2. The second facet, referred to as “feature-specific friendship standards,” focused on identifying where individuals “set the bar” in deciding whether or not a friend’s actions have fulfilled expectations in various friendship feature domains.

Gender differences were found for both facets of friendship expectations with females generally having higher expectations for their friends than did males. The two facets were only moderately correlated, and related in distinct ways to other variables of interest. Findings indicated that higher levels of feature-specific friendship expectations were generally associated with more positive functioning in the social domain (i.e., higher levels of positive friendship features and friendship satisfaction), whereas higher levels of feature-specific friendship standards were associated with potentially more problematic functioning (i.e., more negative responses to ambiguous violations of friendship expectations).

Study 3 also tested the hypothesis that discrepancies between feature-specific friendship expectations and the quality of a person’s best friendship on each of the same

features are associated with loneliness and also with friendship satisfaction. Polynomial regression analysis, rather than the traditional difference score approach, was used to test this hypothesis. The discrepancy hypothesis was not supported with regard to either loneliness or friendship satisfaction; possible explanations for this finding are discussed.

Together, findings from the three studies provide evidence of the replicability of the observed paradox, identify friendship quality as a suppressor variable on gender differences in loneliness and friendship satisfaction, and provide evidence for the existence of two distinct facets of friendship expectations. Results from this dissertation suggest important directions for future research designed to better understand the linkages among gender, social cognition, and social experience in contributing to emotional well-being for young adults.

## DEDICATION

To my family.

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## CHAPTER 1

### **Introduction**

Human beings have fundamental needs for connectedness to other people (Baumeister & Leary, 1995). When these needs are satisfied, humans experience general positive adjustment, adaptive motivation, and physical and emotional well-being. When these needs are thwarted, however, negative affective, motivational, and health outcomes can result (e.g., Baumeister & Leary, 1995; Maslow, 1943; Ryan & Deci, 2002; Weiss, 1973). One such outcome is loneliness, “a sad or aching sense of isolation” (Parkhurst & Hopmeyer, 1999), hypothesized to result from perceived deficiencies in the quantity or quality of one’s social relationships (e.g., Cutrona, 1982; Peplau & Perlman, 1982; Weiss, 1973). Although moments of loneliness are hypothesized to be normative and to serve an adaptive function (signaling that something is wrong in our social environment that needs to be corrected; see, for example, MacDonald & Leary, 2005), problems can arise when feelings of loneliness become chronic and/or severe. Using various measures of loneliness and social isolation (see below for a discussion of assessment issues in loneliness research), researchers have found that loneliness is linked to a variety of mental and physical health problems, including depression (Fontaine et al., 2009), poorer quality sleep (Cacioppo et al., 2002), and poorer immune functioning (Pressman et al., 2005).

Research consistently suggests that people who are doing well in their social relationships (e.g., people who have friends, who are well-accepted by others, and who



are not victimized by peers) are less lonely (for reviews see Asher & Paquette, 2003; Ernst & Cacioppo, 1999; Heinrich & Gullone, 2006; Weeks & Asher, 2012). Social needs theorists argue that loneliness arises from the lack of specific relationship provisions that are required to meet social needs for intimacy, attachment, and social integration (Sullivan, 1953; Weiss, 1973). Relationship provisions are the benefits derived from relationships with others, and include provisions related to psychological intimacy (e.g., affection, warmth, security, emotional support) as well as provisions related to social integration (e.g., enjoyable activities, social identity, being needed for one's skills; Shaver & Buhrmester, 1983; Weiss, 1974). Weiss (1973) suggested that different forms of loneliness may arise from unfulfilled needs for intimacy and unfulfilled needs for social integration, but he also hypothesized a common core of loneliness experience characterized by painful feelings of disconnection.

In an elaboration of the social needs perspective on loneliness known as the cognitive perspective, researchers have emphasized the way individuals think about and evaluate their relationships (and not just the objectively-rated features of those relationships) as key factors in predicting loneliness (e.g., Kupersmidt, Sigda, Sedikides, & Voegler, 1999; Perlman & Peplau, 1982). Within the cognitive perspective there have been several lines of inquiry, with researchers examining the role of attributions (e.g., Renshaw & Brown, 1993), social goals (e.g., Jarvinen & Nicholls, 1996), and relationship beliefs (e.g., Lavalley & Parker, 2009) in contributing to loneliness for youth. One major contribution of the cognitive perspective is that it explicitly allows for two

people with similar objectively-measurable social situations to experience different levels of loneliness. For example, one person may feel lonely having no one to go to dinner with on a Tuesday night, whereas another person may value and enjoy quiet weeknights alone and thus would not feel lonely eating dinner at home alone on a Tuesday night.

A key variant of the cognitive perspective is the cognitive discrepancy perspective, which is of particular relevance to this dissertation. This perspective emphasizes discrepancies between desired and perceived levels of social connectedness as a key cause of loneliness (see, for example, Archibald, Bartholomew, & Marx, 1995; Kupersmidt et al., 1999; Russell, Cutrona, McRae, & Gomez, 2012). These discrepancies can occur at the quantitative level (e.g., having fewer friends than one would like) or at the qualitative level (e.g., having less intimate friendships than one would like); the key contention of this perspective is that it is *perceived discrepancies*, rather than any objectively-measurable social deficits, that are the primary cause of loneliness.

Social provisions can be received from a variety of people and relationship contexts, and one important source of social provisions is friendship. Friendship has been identified as a relationship of considerable significance across the lifespan (Hartup & Stevens, 1997), and is characterized by mutual liking, voluntary interdependence, and a shared history between partners (e.g., Asher, Parker, & Walker, 1996). Researchers have focused on examining the receipt of social provisions within close or best

friendships, as well as describing different processes that occur within the friendship relationship (see, for example, Asher et al., 1996; Berndt, 1982; Buhrmester, 1996; Furman, 1996). Friendship provisions are the benefits that individuals derive from friendship (e.g., companionship and recreation, help and guidance, validation and caring, reliable alliance), and friendship processes are forms of exchange or interaction between friends (e.g., self-disclosure, ease of conflict resolution, level of conflict, relative power) that can affect the development and quality of the relationship (see Ladd & Kochenderfer, 1996, for a discussion of the distinction between friendship provisions and friendship processes). These different features of friendship (i.e., provisions and processes) have often been subsumed under the heading of “friendship quality”—a more global construct that includes provisions (such as companionship and recreation, help and guidance, validation and caring, and reliable alliance) and processes (such as self-disclosure, ease of conflict resolution, level of conflict, and relative power) important in friendship (e.g., Bagwell & Schmidt, 2011; Berndt, 1996; Bukowski, Hoza, & Boivin, 1994; Furman & Buhrmester, 1985; Parker & Asher, 1993). Throughout the current dissertation, the terms “friendship features” and “friendship quality” will be used as an umbrella term to refer to both friendship provisions and friendship processes.

Research has shown that youth whose friendships are characterized by positive friendship features, as well as whose friendships are relatively low in conflict, report lower levels of loneliness (e.g., Aikins, Bierman, & Parker, 2005; Hoza, Bukowski, & Beery, 2000; Kingery & Erdley, 2007), even when controlling for overall level of peer

acceptance (e.g., Parker & Asher, 1993). Although there is support for the hypothesis that the receipt of important provisions from social relationships (including friendship) is linked to loneliness, there appears to be a paradox when the role of gender is considered. Even though researchers have consistently documented gender differences in the friendship provisions and processes that are conceptualized as *causes* of loneliness, they have not typically found corresponding gender differences in feelings of loneliness. That is, although females report having friendships that are richer in various provisions and processes (e.g., Rose & Rudolph, 2006), males and females tend to report equal levels of loneliness (e.g., Rubenstein & Shaver, 1980). Taken together, these findings suggest an intriguing paradox in which females' friendships, despite appearing relatively rich in many friendship features, do not correspond to lower levels of loneliness as might be expected (for related discussions see, MacEvoy & Asher, 2012; Rose & Asher, 2013).

### **Overview of the Three Studies**

This dissertation presents a sequence of three studies addressed to this hypothesized paradox. Study 1 is designed to learn whether the hypothesized paradox exists—whether mean-level gender differences in friendship features actually coexist with mean-level gender similarities in feelings of loneliness in college students when a highly-focused measure of loneliness is used. Although previous studies have examined gender differences in friendship features and gender differences in loneliness in the same study (e.g., Kingery & Erdley, 2007; Nangle, Erdley, Newman, Mason, & Carpenter, 2003; Parker & Asher, 1993), the authors of those studies did not draw attention to the

paradoxical nature of the findings. In addition, previous studies have employed loneliness assessments that contain item content that overlaps with the assessment of friendship features, making it difficult to draw conclusions about whether observed gender differences or similarities in loneliness are “reliable,” or whether they are the result of overlapping item content (see later discussion of this problem on pp. 16–19). Therefore, the goal of Study 1 is to document the hypothesized paradox in a large sample of undergraduate students at a residential college using a highly-focused assessment of loneliness that does not contain item content that overlaps with the assessment of friendship features. In addition, Study 1 tests for the possibility that a gender difference in loneliness might emerge once friendship features are taken into account (i.e., a statistical suppression effect of friendship features in the link between gender and loneliness).

Study 2 is designed to replicate and extend the findings from Study 1 in a broader, independent sample of young adults (ages 18 to 29) both inside and outside of a college context. Another contribution of Study 2 is in the area of measurement development, developing and testing the psychometric properties of a substantially revised and expanded assessment of friendship features for young adults. In addition, Study 2 adapts the highly-focused loneliness assessment used in Study 1 for use with a general adult population. Using these expanded and adapted assessments, Study 2 examines whether the paradox and suppression effect examined in Study 1 replicates in a broader independent sample. Study 2 further extends Study 1 by considering, in addition to

loneliness, a second, more proximal outcome—friendship satisfaction. Study 2 tests for gender differences in friendship satisfaction as well as loneliness, examining whether the hypothesized paradox of significant gender differences in friendship features accompanied by nonsignificant gender differences in friendship-related outcomes will extend to friendship satisfaction. Study 2 also tests for the possibility of a suppression effect in the link between gender, friendship features, and friendship satisfaction.

Study 3 is designed to test a potential explanation for the paradox and suppression effects examined in Studies 1 and 2. Drawing from cognitive discrepancy perspectives on loneliness, Study 3 examines the possibility that gender differences in the expectations that individuals hold for their friends explain the paradoxical pattern of findings hypothesized to emerge with regard to gender, friendship features, friendship satisfaction, and loneliness. Study 3 examines two distinct facets of friendship expectations, assessing both feature-specific friendship expectations and the standards that individuals use to evaluate whether or not a friend has fulfilled a given expectation (labeled feature-specific friendship standards or “bar-setting”). Feature-specific friendship expectations examine the degree to which individuals expect a friend to provide specific provisions or processes within a friendship (e.g., how much do you expect a friend to be helpful? How much do you expect a friend to be forgiving?). Feature-specific friendship standards, or “bar-setting,” examine where individuals “set the bar” in deciding whether or not a friend has fulfilled a given expectation (e.g., what exactly does a friend need to do to be perceived as being sufficiently helpful or sufficiently forgiving?). In addition, Study 3

employs a hypothetical situations methodology to examine a potential process through which friendship expectations come to influence friendship satisfaction and loneliness. Specifically, it is hypothesized that friendship expectations predict how someone interprets their friend's behaviors in specific situations, and these expectation-based evaluations in turn predict emotional responses and friendship satisfaction.

Prior to presenting the findings from these three studies, this introductory chapter provides (a) an overview of existing assessments of friendship features, (b) a review of the literature on gender and friendship in children, adolescents, and young adults, and (c) a review of assessment issues in previous research on loneliness and how they relate to gender differences in loneliness.

Following this introductory chapter, each of the three studies is presented in turn. The presentation of each study begins with an introduction reviewing literature pertinent to that specific study and concludes with a study-specific discussion. A brief conclusion follows the presentation and discussion of findings from Study 3.

### **The Assessment of Friendship Features**

Since the mid-1980s, a number of different assessments of friendship features have been developed for use with children, adolescents, and young adults. All involve asking research participants to describe what their friendship is like with regard to particular features of friendship. Although there is diversity in the number and domains of friendship features assessed, these measures share certain common elements, including the assessment of features such as companionship, emotional support, and conflict (for

reviews see Bagwell & Schmidt, 2011; Furman, 1996). There has been much discussion in the field over whether the emphasis should be on examining individual features of friendship, or whether researchers should take a less differentiated view, examining “positive features” and “negative features” more holistically (see Bagwell & Schmidt, 2011; Berndt, 1996; Furman, 1996). Factor analyses conducted with various friendship features assessments have shown that both types of factor structures “work” in the sense that factor analyses (usually exploratory) have yielded multiple-factor solutions supporting the existence of individual subscales (e.g., Furman & Buhrmester, 1985; Parker & Asher, 1993; Sharabany, 1994; for an example with confirmatory factor analysis see Bukowski et al., 1994), and re-analyses of data specifying two-factor solutions have found that two-factor “positive” and “negative” friendship features solutions are also plausible (Furman, 1996).

A key question when evaluating the utility of more nuanced versus more holistic views of friendship features is the degree to which there is evidence of discriminant validity between various friendship features subscales. Some evidence for discriminant validity at the level of individual features has emerged in previous research with children. For example, researchers have found gender differences in some “positive” features of friendship (e.g., validation and caring, help, intimate exchange, security) but not in others (e.g., companionship; Bukowski et al., 1994; Parker & Asher, 1993). In addition, Schmidt and Bagwell (2007) have found that some friendship features (i.e., help and security) provide a buffer against the development of depressive and anxiety symptoms,



whereas other positive aspects of friendship (e.g., friendship closeness) may actually be associated with increases in such symptoms. Parker and Asher (1993), with third-through fifth-grade children, found that the magnitude of association between individual friendship features and loneliness differed across features, with companionship and recreation being most strongly linked to loneliness and intimate exchange/self-disclosure being less strongly linked to loneliness. Taken together, these findings suggest the utility of taking a more nuanced view of individual friendship features.

On a related note, examining friendship features at the individual subscale level allows for a more precise analysis of the different friendship features that are important to youth at different points in development. Research with the Intimate Friendship Scale (Sharabany, 1974), for example, has shown age-related changes in some individual friendship features across time but not in others. Specifically, Sharabany (1994) reported that older children report higher levels of “frankness and spontaneity” (i.e., disclosure about positive and negative aspects of oneself and honest feedback about behavior) and “sensitivity and knowing” (i.e., perceived knowledge about and sensitivity toward a friend) within their friendships than do younger children, whereas younger children report higher levels of exclusiveness (i.e., preference for the company of the friend over others) than do older children. As Bagwell and Schmidt (2011) aptly point out, there may be differences in the extent to which different friendship features are salient for individuals at different points in development, and perhaps more importantly, differences in the degree to which individual friendship features are linked to adjustment. For

example, companionship and recreation, a central feature of friendship, may be important in friendship adjustment across the lifespan. Emotional support and mutual self-disclosure, on the other hand, may become increasingly important as individuals move into adolescence and beyond, when needs for intimacy and personal validation become more central (e.g., Parkhurst & Hopmeyer, 1999; Sullivan, 1953; Weiss, 1973).

The focus of the current dissertation will be on examining friendship features at the individual subscale level, although composite measures of positive friendship features will also be used in some analyses.

### **Gender and Friendship**

Consistent evidence exists concerning the association between gender and the social provisions and processes of friendship. For both children and adults, females tend to have friendships that are comparatively “richer” than the friendships of males. In a meta-analysis focused on the link between gender and peer-relationship adjustment in children and adolescents, Rose and Rudolph (2006) found consistent gender differences favoring females in many widely-studied friendship provisions including help, affection, nurturance, trust, security, validation, and acceptance. In addition, they also found evidence for reliable gender differences favoring females in the friendship process of self-disclosure. Although less extensive, research examining the link between gender and friendship features in adults paints a picture of adult females’ friendships as similarly richer than males’ friendships in positive relationship features such as help, reliable

alliance, nurturance, and self-disclosure (e.g., Caldwell & Peplau, 1982; Duck & Wright, 1993; Fehr, 2004; Mendelson & Aboud, 1999; Sapadin, 1988).

Despite many areas of gender difference in the processes and provisions of friendship, there are also some areas of gender similarity. With regard to level of conflict, researchers have found that males and females generally report similar levels of conflict within their friendships (e.g., Rose & Rudolph, 2006). The friendship feature of companionship and recreation (the degree to which friends engage in enjoyable activities together), however, shows evidence of a potential age-related shift in gender similarities versus differences from childhood to early adulthood. Research with children consistently shows that males and females report similar levels of companionship and recreation within their friendships (e.g., Bukowski et al., 1994; Furman & Buhrmester, 1985; Parker & Asher, 1993), and that young boys may experience higher levels of enjoyment and positive emotionality with friends (see Rose & Rudolph, 2006). When examining research with college students, however, the gender story appears to shift. Although males and females report spending similar amounts of time with friends (e.g., Caldwell & Peplau, 1982; Hays, 1984; 1985), research indicates that females view their time with friends as more enjoyable than do males (e.g., Jones, 1991; Mendelson & Aboud, 1999; Oswald, Clark, & Kelly, 2004). With regard to companionship, then, although males and females tend to spend equal time engaged in activities with friends, females may find these activities more enjoyable than do males, especially as youth move from childhood and adolescence into adulthood.

There has been much debate among relationship researchers about the interpretation of gender differences observed in friendship, especially in research with adults (see, for example, Fehr, 1996; Wood & Inman, 1993; Wright, 2006). These debates have centered on the issue of whether females' same-sex friendships can truly be characterized as more "intimate" than males' same-sex friendships. This debate is situated in a broader debate about what intimacy actually *is*. Within the friendship literature, the term "intimate" or "intimacy" has been used in at least three different ways: (1) to describe the content of conversations between friends (to what extent do friends discuss highly personal topics, such as deeply-held beliefs, values, or concerns?; e.g., Hays, 1984), (2) to refer to a specific friendship provision or process (to what extent do friends engage in interactions that could be characterized as intimate [i.e., involving personal self-disclosures]?; e.g., Buhrmester, 1990; Furman & Buhrmester, 1985; 1992), and (3) to refer to a holistic judgment of a specific friendship (to what extent can a friendship be characterized as intimate or close?; e.g., Sharabany, 1994). These conceptualizations correspond to different methodological approaches to the study of intimacy. Although these various manifestations of "intimacy" focus on different facets of the construct, they all fall under the rubric of intimacy as conceptualized as a process involving some level of self-disclosure by one partner followed by an explicitly or implicitly validating and caring response by the other (Reis & Shaver, 1988).

With regard to approaches examining intimacy from the perspective of conversational content, researchers have found that the topics that females discuss with

their same-sex friends tend to be, on average, more “intimate” or personal than the topics that males discuss with their same-sex friends (e.g., Barth & Kinder, 1988; Rands & Levinger, 1979; Reis, Senchak, & Solomon, 1985). In this research, intimacy is conceptualized from a social penetration theory perspective (Altman & Taylor, 1979). According to this theory, information that individuals could potentially disclose can be organized along a dimension of depth ranging from more superficial information about things like demographic background, to more central or intimate information about core beliefs, values, and feelings about the self. More superficial or peripheral information represents relatively “low risk” disclosure and can be shared with many different people, regardless of their relationship to the self. More central information, on the other hand, is considered more “high risk” and is likely to be revealed more selectively and only in the context of warm, trusting, and secure relationships (or relationships that an individual views as having the potential to develop into such a relationship). From this perspective, the evidence supports the contention that females’ same-sex friendships are more “intimate” than are males’.

With regard to approaches examining intimacy as a specific friendship provision or process, “intimacy” is viewed as basically synonymous with self-disclosure. Rather than focusing specifically on the content of disclosures among friends, researchers approaching the study of intimacy from this perspective focus on the degree to which self-disclosure is present in the friendship. Self-disclosure is usually assessed with self-report measures asking about how much an individual shares private or personal

information with his or her friend (e.g., Furman & Buhrmester, 1985). As discussed above, there is robust evidence that females engage in higher levels of self-disclosure with their same-sex friends than do males (Rose & Rudolph, 2006), so from this perspective females' same-sex friendships can indeed be characterized as more "intimate" than males'.

With regard to approaches examining intimacy as a holistic judgment about the friendship, evidence suggests that females report higher levels of closeness in their same-sex friendships than do males (e.g., Buhrke & Fuqua, 1987; Caldwell & Peplau, 1982; Radmacher & Azmitia, 2006; Reisman, 1990). In a related vein, researchers have examined whether pathways to intimacy or closeness (assessed as a characteristic of the relationship) might be different for males versus females. Specifically, some have suggested that gender differences in "intimacy" arise because of an overly narrow conceptualization of intimacy as developed solely through mutual self-disclosure, and argue that, if the conceptualization of intimacy were broadened to encompass engagement in shared activities and mutual interests as a pathway to developing intimacy, then males' friendships would look just as intimate as females' friendships (e.g., Wood & Inman, 1993). Although engagement in shared activities has been shown to be related to intimacy (defined as emotional closeness, e.g., Radmacher & Azmitia, 2006), research has also shown that self-disclosure is predictive of intimacy for both males and females (e.g., Camarena, Sarigiani, & Petersen, 1990), and that self-disclosure is seen as a prototypical path to developing intimacy by both males and females (e.g.,

Fehr, 2004; Monsour, 1992). Furthermore, in studies that consider both self-disclosure and engagement in shared activities as pathways to developing intimacy, females' same-sex friendships are still rated as higher in intimacy than are males' (e.g., Radmacher & Azmitia, 2006).

### **Gender and the Assessment of Loneliness**

In previous loneliness research, researchers' ability to test hypotheses about the links between gender and loneliness has been limited by a widespread methodological flaw in the assessment of loneliness. That is, widely-used assessments of loneliness have included item content that asks not only about the emotional experience of loneliness, but also about hypothesized causes of loneliness, including the receipt of provisions from social relationships (see, for example, the UCLA Loneliness Scale, Russell, 1996; Russell, Peplau, & Cutrona, 1980; Russell, Peplau, & Ferguson, 1978; and the Illinois Loneliness and Social Dissatisfaction Questionnaire [ILSDQ], Asher, Hymel, & Renshaw, 1984; Asher & Wheeler, 1985). Existing loneliness assessments contain diverse item content asking not only about feelings of loneliness (e.g., "How often do you feel alone?"), but also about perceptions of the availability of social provisions (e.g., "How often do you feel that you lack companionship?"), descriptions of the processes that take place in friendship (e.g., "How often do you feel that there are people you can talk to?"), perceptions of social self-efficacy (e.g., "It's hard for me to make friends in school"), and dispositional characteristics such as shyness and sociability (e.g., "How often do you feel outgoing and friendly?"). Given the diverse item content employed in

previous measures, it has been difficult to differentiate “true” associations between gender and loneliness from associations between gender and various factors that are best thought of as *causes* of loneliness.

The inclusion of confounding item content in widely-used assessments of loneliness makes it difficult to learn whether there is a link between gender and loneliness. Overall, research with college-aged populations using the UCLA Loneliness Scale tends to find no gender difference in loneliness (e.g., Jones, Carpenter, & Quintana, 1985; Russell et al., 1978; Solano, Batten, & Parish, 1982; Tsai & Reis, 2009; Wheeler, Reis, & Nezelek, 1983). The few studies that do find gender differences find that males report higher levels of loneliness than do females (e.g., Russell, 1996; Russell et al., 1980, Study 1 only; Stokes & Levin, 1986). This finding is perhaps not surprising because a good deal of the content on the UCLA Loneliness Scale asks about the availability of social provisions within one’s social network (e.g., “How often do you feel that there are people who really understand you?” “How often do you feel that there are people you can turn to?”), in addition to items that come closer to asking directly about the emotional experience of loneliness (e.g., “How often do you feel alone?”). Given that researchers find reliable differences between males and females in their reports of the receipt of provisions from social relationships (as discussed above), the gender differences that are found in “loneliness” using these measures are likely due to the diversity of item content asking about the hypothesized causes of loneliness as well as the emotional experience of loneliness itself. Interestingly, one large-scale study with adults



(aged 18 to 80) using a highly-focused assessment of loneliness found no gender difference across all age groups (Rubenstein & Shaver, 1980).

Several researchers in the field of children's peer relations have recognized the problem of overlapping and confounding item content in loneliness assessments and have used smaller subsets of "pure" loneliness items when examining links between loneliness and indices of social-relationship functioning in children (e.g., Parker & Asher, 1993). "Pure" loneliness items have been conceptualized as those items that ask only about feelings of loneliness (e.g., the ILSDQ item "I am lonely at school") without asking about the hypothesized causes of loneliness. Using such pure loneliness items, researchers have documented the expected links among social functioning and loneliness, such that being well-accepted by peers, having friends, having higher-quality friendships, and not being victimized by peers have each been associated with lower levels of loneliness (e.g., Gest, Welsh, & Domitrovich, 2005; Kochenderfer-Ladd & Wardrop, 2001; Ladd & Troop-Gordon, 2003; Parker & Asher, 1993; Woodhouse, Dykas, & Cassidy, 2012).

Although certainly a step in the right direction, the use of a small number of items (item subsets usually consist of three to five items) to assess a key construct of interest is perhaps not ideal from an internal reliability standpoint (e.g., DeVellis, 2003). In recent research, Asher and his colleagues have developed highly-focused assessments of loneliness for use with children (Asher, Gorman, Guerra, Gabriel, & Weeks, 2013) and college students (Asher, Weeks, & McDonald, 2010) that remove overlapping and confounding item content and focus purely on the feeling of loneliness. They accomplish

this by using several different highly-focused item stems to ask about feelings of loneliness in different daily contexts (i.e., “I am lonely in [context],” “I feel sad and alone in [context],” “[context] is a lonely place for me”; Asher et al., 2013). The studies in the current dissertation will employ such highly-focused assessments of loneliness to further explore links among gender, friendship features, and loneliness in young adults.

## CHAPTER 2

### Study 1

Study 1 has three main aims. The first aim is to learn whether the hypothesized paradox in the links among gender, friendship features, and loneliness exists—that is, to learn whether mean-level gender differences in friendship features coexist with mean-level gender similarities in loneliness. In the current study, Asher and colleagues' (2010) Loneliness in Context Questionnaire for College Students was employed to (a) allow for the testing of hypotheses about gender differences in feelings of loneliness without the inclusion of potentially confounding item content; (b) allow for the testing of associations between friendship features and feelings of loneliness without the issue of overlapping item content; and (c) remove the possibility that observed associations between friendship features and loneliness could be attributed to the presence of items asking about social provisions in measures of loneliness as well as in measures of friendship features. In addition, the present study examines gender differences in a number of positive friendship features (i.e., self-disclosure, companionship, validation, and reliable alliance), as well as level of friendship conflict.

The second aim of Study 1 is to test the hypothesized linkage between friendship features and loneliness to learn whether friendship features are indeed associated with loneliness when a highly-focused measure of loneliness is used.

Finally, if the hypothesized paradox is observed, the third aim of Study 1 is to test the possibility that gender differences in loneliness might emerge when friendship

features are statistically controlled. This conjecture is based on predictions from the cognitive discrepancy perspective on loneliness (which argues that loneliness arises from discrepancies between desired and perceived levels of social connectedness), and on recent evidence showing that females hold higher expectations for their friends than do males in many domains (Hall, 2011). If it is the case that loneliness is primarily caused by perceived discrepancies and that females hold higher expectations for their friendships than do males, then it may be that females experience higher levels of loneliness than males when friendship features are statistically controlled.

In summary, the current study has four specific goals. First, the current study will test for mean-level gender differences in loneliness using a highly-focused assessment that does not include overlapping content with assessments of social provisions. Second, the current study will test the hypothesis that statistically significant gender differences in friendship features can coexist with nonsignificant gender differences in loneliness within the same sample when a highly-focused assessment of loneliness is used. Third, the current study will examine whether reports of various friendship features are associated with loneliness when a highly-focused assessment of loneliness is used. Fourth, the current study will test the possibility—suggested by cognitive discrepancy perspectives on loneliness and recent research on gender differences in friendship expectations—that gender differences in loneliness will emerge once friendship features are taken into account.

## Method

**Participants and procedure.** Participants were 1761 young-adult college students (58.3% female; age range = 18 to 30 years, with 99.3% of participants between the ages of 18 and 22). These students participated in a larger study called the Duke Social Relationships Project. This project examined the social and academic experiences of college students at a mid-sized residential university in the Southeastern United States (see Asher and Weeks [2012] for an overview of this four-year study). The participants in the current study are those who participated in the second wave of data collection, conducted in the spring semester of 2008. Participants were recruited via an e-mail sent to all first-, second-, and third-year undergraduate students at the university (total  $n \approx 5148$ ). Each participant received a coupon for a free cup of coffee for their participation, and all participants were entered into a drawing for a number of prizes, including t-shirts, DVDs, tickets to sporting events, and gift cards; 34.2% of the students invited participated in the study. The sample was diverse with regard to self-reported race/ethnicity (57.5% White/Caucasian, 23.3% Asian/Asian American, 6.1% Black/African American, 3.5% Latino/Hispanic, 1.6% other race/ethnicity, 8.0% indicated membership in two or more of the previous categories). Data were collected from the period immediately following spring break through the end of final exams (a period of approximately eight weeks). Participants completed measures focused on various features of their social and academic experiences in college (see Asher & Weeks,

2012). The specific measures of interest for the current study are detailed in the following section.

### **Measures.**

***Loneliness.*** Feelings of loneliness were assessed with the Loneliness in Context Questionnaire for College Students (Asher et al., 2010). The Loneliness in Context Questionnaire for College Students is a ten-item measure that asks about participants' feelings of loneliness in different daily contexts (see Table 1 for a full list of items; participants respond to items on a 5-point scale, 1 = *never*, 5 = *always*). This measure was developed to ask only about *feelings* of loneliness without including content that asks about hypothesized *causes* of loneliness such as evaluations of one's social relationships. This was accomplished by having each item ask about feelings of loneliness in different everyday college contexts. In previous research, the Loneliness in Context Questionnaire for College Students exhibited the expected one-factor structure and had excellent internal reliability ( $\alpha = .91$ ; Asher et al., 2010). Also, scores on the Loneliness in Context Questionnaire for College Students were found to be stable across a one-year period (average  $r = .64$ , Asher et al., 2010). Internal reliability for the current sample was similarly high ( $\alpha = .90$ ).

***Friendship features.*** Participants completed Simpkins and Parke's (2001) adaptation for adults of the Friendship Quality Questionnaire (Parker & Asher, 1993) in reference to their best friendship at university. The Friendship Quality Questionnaire was originally designed for use with children, and the original Friendship Quality

Questionnaire contains 40 items assessing six different friendship features (i.e., companionship and recreation, help and guidance, validation and caring, intimate exchange/self-disclosure, level of conflict, and ease of conflict resolution). In previous research, investigators have used scores at the individual subscale level (e.g., Parker & Asher, 1993), or have combined companionship and recreation, help and guidance, validation and caring, intimate exchange/self-disclosure, and ease of conflict resolution subscales into a composite indicator of positive friendship quality (e.g., Lavalley & Parker, 2009; Rose & Asher, 1999). Level of conflict has always been used as a separate subscale in previous research regardless of what decision was made regarding whether or not to create a composite measure of positive friendship quality.

**Table 1: Items on the Loneliness in Context Questionnaire for College Students**

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Class is a lonely place for me.
I am lonely in the evening.
My place of residence is a lonely place for me.
My free time is a lonely time for me.
I feel sad and alone on weekends.
I am lonely with other people.
I feel sad and alone at social events.
I am lonely during meal times.
I feel sad and alone when I am studying.
Bed time is a lonely time for me.

---

Simpkins and Parke's (2001) adaptation of the Friendship Quality Questionnaire is a briefer, 27-item measure designed to assess the same six features of friendship that were assessed with the original measure. See Appendix B for the full text of this questionnaire. Many of the original 40 items were dropped or reworded by Simpkins and Parke (2001) to be more applicable to adults. Although Simpkins and Parke (2001) employed the same six subscales as the original Parker and Asher (1993) measure, the factor structure of the newly-adapted set of items has not yet been examined. For the current study, participants were instructed to respond to the 27 items on a 5-point scale indicating how true each statement is of their friendship with their best friend at university (1 = *not at all true*, 5 = *really true*). Data for the 27 Friendship-Quality-Questionnaire items were subjected to an exploratory principal axis factor analysis with direct oblimin rotation to examine whether the six originally-hypothesized subscales would emerge.

Five, rather than six, factors with eigenvalues  $\geq 1.00$  were extracted, which explained approximately 63.8% of the common variance among the set of items. These five factors were labeled: intimate exchange/self-disclosure (e.g., "My friend and I are able to tell each other private things"; 4 items,  $\alpha = .88$ ), companionship (e.g., "My friend and I get together often"; 5 items,  $\alpha = .84$ ), validation (e.g., "My friend tells me I'm good at things I do"; 2 items,  $\alpha = .77$ ), reliable alliance (e.g., "If someone were talking about me behind my back my friend would stick up for me"; 6 items,  $\alpha = .84$ ), and conflict (e.g., "My friend and I get irritated with one another a lot"; 4 items,  $\alpha = .77$ ). Two of the



items that loaded on the new “companionship” factor were originally conceptualized as “help and guidance” items (i.e., “My friend and I help each other out with errands or other favors,” “My friend and I loan each other items from time to time”), so these two items were dropped from the new companionship subscale yielding a final three-item companionship subscale ( $\alpha = .83$ ). Similarly, two of the items that loaded on the “reliable alliance” subscale were originally conceptualized as “conflict resolution” items (i.e., “If my friend and I get mad at one another, we will always talk about things and get them resolved,” “My friend and I always make up easily if we have an argument”), so those two items were dropped yielding a final four-item reliable alliance subscale ( $\alpha = .79$ ).

In addition, for certain analyses, items from each of the four positive features subscales (intimate exchange/self-disclosure, companionship, validation, and reliable alliance) were combined into a positive friendship quality composite (13 items), which was used in the regression analysis to avoid potential problems with multicollinearity that could result from using a set of highly-correlated predictors (e.g., Cohen, Cohen, West, & Aiken, 2003; see Table 3 for correlations among friendship features subscales). The composite positive friendship quality measure had excellent internal reliability ( $\alpha = .90$ ). Conflict was maintained as a separate subscale in all analyses.

## **Results**

The first phase of data analysis addressed the first and second study goals and involved examining mean-level gender differences in loneliness and in friendship

features. Note that positive effect sizes indicate that males were higher on a particular variable, whereas negative effect sizes indicate that females were higher on a particular variable. Separate one-way between-subjects analyses of variance were conducted to examine gender differences in loneliness and in the overall positive friendship quality composite; for individual friendship features an omnibus multivariate analysis of variance was conducted followed by follow-up one-way univariate analyses of variance. Table 2 presents means, standard deviations, and  $F$  ratios for each comparison described below.

On average, participants reported relatively low levels of loneliness, indicating that they “hardly ever” felt lonely in different college contexts. There was, however, a significant proportion of participants who indicated that they felt lonely at least “sometimes” across the ten contexts (9.4%), and 1% of participants indicated that they felt lonely most or all of the time. Across the ten contexts, the highest levels of loneliness were reported in the classroom ( $M = 2.40$ ) and in the evenings ( $M = 2.33$ ), and bed time was the least lonely context ( $M = 1.89$ ). As expected, the gender difference in loneliness was small and did not reach the level of statistical significance ( $F(1, 1760) = .37, p = .545, d = .03$ ).

With regard to friendship features, participants’ reports were generally positive. On a 5-point scale ranging from 1 = *not at all true*, to 5 = *really true*, participants indicated that their best friendship in college was relatively high in self-disclosure ( $M = 4.08, SD = .86$ ), reliable alliance ( $M = 4.08, SD = .69$ ), and companionship ( $M = 3.97, SD = .86$ ). Reports of validation were somewhat lower ( $M = 3.58, SD = .94$ ), but were still

above the midpoint of the scale. With regard to conflict, participants reported that their best friendships were, on average, “a little” conflictual ( $M = 1.94, SD = .71$ ).

**Table 2: Mean-Level Gender Differences in Loneliness and Friendship Features**

	Males	Females	<i>F</i>	<i>d</i>
Loneliness	2.11 (.67)	2.09 (.64)	.37	.03
Friendship Features				
Self-Disclosure	3.77 (.89)	4.30 (.77)	178.50***	-.65
Companionship	3.90 (.85)	4.02 (.86)	8.32**	-.14
Validation	3.33 (.92)	3.75 (.91)	90.88***	-.46
Reliable Alliance	3.95 (.68)	4.18 (.69)	47.02***	-.33
Positive Composite	3.79 (.65)	4.11 (.63)	109.96***	-.51
Conflict	2.06 (.75)	1.85 (.66)	37.81***	.30

*Note.* Gender is dummy coded (0 = male, 1 = female); numbers in parentheses are standard deviations. \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ .

Gender differences in the five friendship features subscales (i.e., intimate exchange/self-disclosure, companionship, validation, reliable alliance, and conflict) were examined in a multivariate analysis of variance. Gender differences favoring females were observed in friendship features across the five subscales (Wilks’s  $\lambda = .87, F(5, 1755) = 50.40, p < .001$ ). Follow-up one-way univariate analyses of variance for each

subscale revealed the females reported higher levels of self-disclosure ( $F(1, 1760) = 178.50, p < .001$ ), validation ( $F(1, 1760) = 90.88, p < .001$ ), and reliable alliance ( $F(1, 1760) = 47.02, p < .001$ ) within their best friendship at university. Somewhat counter to expectations, females reported higher levels of companionship ( $F(1, 1760) = 8.32, p = .004$ ), and males reported higher levels of conflict within their best friendship at university ( $F(1, 1760) = 37.81, p < .001$ ). The magnitude of the gender difference varied as a function of subscale, with the largest gender difference occurring for self-disclosure ( $d = -.65$ ) and the smallest gender difference occurring for companionship ( $d = -.14$ ). The magnitude of gender difference for validation ( $d = -.46$ ), reliable alliance ( $d = -.33$ ), and conflict ( $d = .30$ ) fell in between those two extremes.

Gender differences in the overall positive friendship quality composite (created from the self-disclosure, companionship, validation, and reliable alliance subscales) were examined in a univariate analysis of variance. As indicated by the differences observed in the individual subscales, females reported higher levels of positive friendship quality than did males ( $F(1, 1760) = 109.96, p < .001$ ), and the magnitude of this difference was relatively large ( $d = -.51$ )

Together the results regarding gender differences in loneliness and friendship features provide evidence for the hypothesized paradox—significant mean-level gender differences in friendship features did coexist with small and non-significant gender differences in loneliness within the same sample when a highly-focused assessment of loneliness was used.

The second phase of analyses addressed the third and fourth goals of the current study. The third goal was to examine whether friendship features would be associated with loneliness when a highly-focused measure of loneliness was used. The fourth goal was to test the possibility that a gender difference in loneliness would emerge once friendship features were taken into account (i.e., that there would be a suppression effect of friendship features in the link between gender and loneliness). Hierarchical multiple regression analyses were conducted to examine the association of positive friendship features and friendship conflict with feelings of loneliness, as well as any potential interaction effect between gender and positive friendship features or between gender and friendship conflict. Zero-order correlations among study variables are presented in Table 3. Correlations among individual positive friendship features subscales were moderate, ranging in magnitude from .45 to .65. Correlations between positive friendship features and friendship conflict were even more modest, ranging in magnitude from -.03 to -.23, supporting the contention that positive and negative features of friendship are relatively independent from one another.

Gender (with males coded as 0 and females coded as 1) was entered as a predictor in the first step of the hierarchical multiple regression model, followed by a second step which included the positive friendship features composite and the friendship conflict subscale, as well as the interaction between gender and positive friendship features and the interaction between gender and friendship conflict. Positive friendship features and friendship conflict were mean-centered prior to the creation of the multiplicative

interaction terms in order to minimize nonessential collinearity among predictors (Cohen et al., 2003). Overall, this model explained approximately 15% of the variation in loneliness (adjusted  $R^2 = .15$ ); statistics from this model are presented in Table 4. Please note that throughout this dissertation, standardized regression coefficients are presented to facilitate the comparison of the magnitude of effects across studies.

**Table 3: Zero-Order Correlations Among Gender, Loneliness, and Friendship Features**

	1	2	3	4	5	6	7
1. Gender	—						
2. Loneliness	-.01	—					
Friendship Features							
3. Self-Disclosure	.30 <sup>***</sup>	-.30 <sup>***</sup>	—				
4. Companionship	.07 <sup>**</sup>	-.31 <sup>***</sup>	.49 <sup>***</sup>	—			
5. Validation	.22 <sup>***</sup>	-.18 <sup>***</sup>	.53 <sup>***</sup>	.45 <sup>***</sup>	—		
6. Reliable Alliance	.16 <sup>***</sup>	-.33 <sup>***</sup>	.65 <sup>***</sup>	.46 <sup>***</sup>	.49 <sup>***</sup>	—	
7. Positive Composite	.24 <sup>***</sup>	-.36 <sup>***</sup>	.87 <sup>***</sup>	.74 <sup>***</sup>	.73 <sup>***</sup>	.83 <sup>***</sup>	—
8. Conflict	-.15 <sup>***</sup>	.18 <sup>***</sup>	-.11 <sup>***</sup>	-.03	-.10 <sup>***</sup>	-.23 <sup>***</sup>	-.15 <sup>***</sup>

*Note.* Gender is dummy coded (0 = male, 1 = female). \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ .

With regard to the third goal, positive friendship features ( $b^* = -.37, p < .001, sr^2 = .055$ ) and friendship conflict ( $b^* = .16, p < .001, sr^2 = .012$ ) were each uniquely predictive of loneliness. That is, controlling for friendship conflict, participants who rated their best friendship as higher in the composite of self-disclosure, companionship, validation, and reliable alliance reported lower levels of loneliness. In addition, controlling for positive friendship features, participants who rated their best friendship as lower in conflict also reported lower levels of loneliness. These findings indicate that friendship features are related to feelings of loneliness in young adults, even when a highly-focused measure of loneliness removing confounding item content is used.

**Table 4: Predicting Loneliness from Gender and Friendship Features**

	Step 1			Step 2		
	$b^*$	$t$ value	$sr^2$	$b^*$	$t$ value	$sr^2$
Gender	-.01	.61	.000	.09	4.15***	.008
Positive Friendship Features				-.37	10.73***	.056
Friendship Conflict				.16	5.00***	.012
Positive Features x Gender				.01	.29	.000
Conflict x Gender				-.03	.97	.001
Adjusted $R^2$		.000			.15***	
$\Delta R^2$		—			.15***	

Note.  $sr^2$  = squared semi-partial correlation. \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ .

With regard to the fourth goal of the study, which was to test the possibility that gender differences in loneliness might emerge once friendship quality was taken into account, the hypothesized suppression effect of friendship features on the link between gender and loneliness was observed. In the second step of the regression analysis when positive friendship features and friendship conflict were entered into the equation, the initially non-significant effect of gender ( $b^* = -.01, p = .545, sr^2 = .0002$ ) became statistically significant ( $b^* = .09, p < .001, sr^2 = .008$ ). That is, controlling for positive friendship features and friendship conflict, gender was significantly associated with loneliness such that females reported *higher* levels of loneliness than did males. This result suggests that, when friendship quality is statistically equated, females are actually lonelier than are males. Finally, neither interaction term was statistically significant, indicating that the link between friendship features and loneliness was similar for males and females.

A parallel set of analyses was conducted to test for the possibility of a suppression effect in the link between gender and loneliness separately for each friendship feature subscale. Analyses were conducted separately for each subscale rather than as one single analysis including all 5 friendship features subscales because of concerns about multicollinearity among the different friendship features. Therefore, each analysis was conducted separately to examine whether the suppression effect would replicate at the individual subscale level (parameter estimates for these models are presented in Table 5).



For all analyses, continuous predictor variables (i.e., friendship features) were mean centered prior to the creation of interaction terms to avoid unnecessary collinearity among predictors.

**Table 5: Predicting Loneliness from Gender and Individual Friendship Features Subscales**

	Friendship Feature			Gender			$R^2_{adj.}$
	$b^*$	$t$ value	$sr^2$	$b^*$	$t$ value	$b^*$	
Self-Disclosure	-.30	8.79***	.040	.08	3.45***	.006	.09***
Companionship	-.33	9.43***	.050	.01	0.33	.000	.10***
Validation	-.17	4.68***	.012	.03	1.09	.001	.03***
Reliable Alliance	-.34	9.45***	.045	.04	1.73	.002	.11***
Conflict	.18	5.14***	.015	.01	0.49	.000	.03***

*Note.*  $sr^2$  = squared semi-partial correlation; note that interaction effects between gender and each friendship feature were tested, but none was statistically significant.

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

At the subscale level, the suppression effect emerged for only one out of the five friendship features considered. Specifically, at statistically equated levels of self-disclosure ( $b^*_{gender} = .08$ ,  $t = 3.45$ ,  $p < .001$ ;  $sr^2 = .006$ ) females reported higher levels of loneliness than did males. For companionship, validation, reliable alliance, and conflict, however, the effect of gender remained nonsignificant when each of these friendship features was included in the model (although in the reliable alliance model the effect of gender became marginally significant,  $b^*_{gender} = .04$ ,  $t = 1.73$ ,  $p = .084$ ;  $sr^2 = .002$ ).

Interaction effects between gender and each of the friendship features were also included in the various models, but none of these effects was statistically significant, indicating that the effect of friendship features on loneliness was similar for males and females. These findings indicate that the suppression effect observed in the overall model was driven largely by a suppression effect in the links between gender, self-disclosure, and loneliness.

## **Discussion**

Findings from the current study provide evidence for the hypothesized paradox—that a small and non-significant gender difference in loneliness can coexist in the same sample with small- to medium-sized gender differences in friendship features when a highly-focused measure of loneliness is used. In addition, as expected, friendship features were found to be significantly associated with feelings of loneliness, even when a highly-focused measure of loneliness removing potentially confounding content was used.

Factor analyses of the friendship features assessment revealed that five friendship features, rather than the intended six, were being assessed with the adapted Friendship Quality Questionnaire for Adults (Simpkins & Parke, 2001). In addition, several of the friendship features subscales ended up with very few items (i.e., the validation subscale had only 2 items and the companionship subscale had only 3 items) and lower internal reliability than is perhaps optimal (internal reliability for conflict, validation, and reliable alliance were each less than .80). A goal of Study 2, therefore, is to develop a revised

and extended assessment of friendship features that includes more items per friendship feature subscale and that assesses a broader range of friendship features.

Another important finding from Study 1 is that a main effect of gender on loneliness emerged only *after* friendship features were taken into account. That is, when positive friendship quality was statistically controlled, females actually reported *higher* levels of loneliness than did males. Feature-specific analyses revealed that this effect was driven largely by a suppression effect in the links among gender, loneliness, and the friendship feature of self-disclosure. This somewhat distinct pattern of results at the subscale level as compared to the overall composite “positive friendship quality” level highlights the utility of taking a more nuanced approach to the assessment of friendship quality.

What this statistical suppression effect suggests is that there may be an unmeasured third variable at play in the association between gender, friendship features, and loneliness. MacEvoy and Asher (2012) have argued that one possible reason that males and females tend to report comparable levels of loneliness despite females having higher quality friendships is that females have higher expectations for relationships. If this is indeed the case, then it would take higher levels of certain relationship features (e.g., self-disclosure) to protect females against feelings of loneliness than it would for males.

Before this hypothesis can be properly tested, however, it will be important to test whether both the paradox of gender differences in friendship quality coupled with gender

similarities in loneliness and the suppression effect of friendship quality on the link between gender and loneliness replicate in a broader, independent sample. Although the sample of participants in Study 1 was large, it is conceivable that specific features of the sample and/or the context of the study (a four-year residential college) could lead to findings which may not generalize to other groups. Therefore, a key goal of Study 2 is to examine whether the paradox and suppression effect observed in Study 1 replicates in a broader independent sample.

In addition, a revised and expanded assessment of friendship features examining a broader range of features needs to be developed. Results of factor analyses in Study 1 revealed that a narrower range of friendship features was being assessed than was originally intended and with a smaller number of items than is optimal for achieving high levels of internal reliability. In Study 2, the Friendship Quality Questionnaire for Adults used in Study 1 was used as a starting point to develop a revised and expanded assessment of friendship features that includes a larger and more uniform number of items per subscale, as well as a broader array of important friendship features.

Furthermore, there is a need for a slightly revised loneliness assessment that is appropriate for use with adults both within and outside of a college setting. Two of the ten items in Study 1's Loneliness in Context Questionnaire for College Students were specific to a school context (i.e., "Class is a lonely place for me," and "I feel sad and alone when I am studying") and would not apply to non-students. In Study 2 these two

items were modified to make them applicable to all young adults regardless of their student status.

Finally, in addition to loneliness, there is a second theoretically-relevant outcome that was not included in Study 1 that will be important to consider in future research—friendship satisfaction. From an interdependence theory perspective (Kelley & Thibaut, 1978; Thibaut & Kelley, 1959), relationship satisfaction is a key indicator of the degree to which a relationship is providing someone with the benefits or rewards (i.e., provisions) that he or she expects. Friendship satisfaction has been shown in previous research to be associated with higher levels of positive friendship features and lower levels of loneliness (e.g., Furman & Buhrmester, 1985; Parker & Asher, 1993). In Study 2, friendship satisfaction will be examined in addition to loneliness to learn whether the paradox documented in Study 1 extends to the more proximal outcome of friendship satisfaction, and to examine the associations among gender, friendship features, and friendship satisfaction.

## CHAPTER 3

### **Study 2**

Building upon the findings from Study 1, Study 2 has a number of goals which can be separated into measurement development goals and hypothesis-testing goals. The primary measurement development goal of Study 2 is to develop a revised and extended assessment of friendship features for adults, adding additional items to the individual subscales from Study 1, and adding new subscales designed to assess eight additional friendship provisions and processes. The second measurement development goal of Study 2 is to adapt the Loneliness in Context Questionnaire for use with adults either within or outside of a college setting.

There are three hypothesis-testing goals of Study 2. The first is to examine whether the paradox observed in Study 1 will be observed in a broader sample of young adults using the revised assessments of friendship features and loneliness developed in this study. The second hypothesis-testing goal is to test for the possibility of a suppression effect in the link between gender and loneliness in this broader sample with revised and expanded assessments. The third hypothesis-testing goal is to examine the links among gender, friendship features, and friendship satisfaction, which were not examined in the previous study. As noted above, relationship satisfaction is a construct that figures prominently in models of relationship development and maintenance (e.g., Kelley & Thibaut, 1978; Rusbult, 1980; Thibaut & Kelley, 1959), and has been shown in

past research to be closely related to both friendship quality and loneliness (e.g., Parker & Asher, 1993), making it an important additional outcome to consider.

**Measurement development goal 1: Developing a revised and expanded assessment of friendship features.** In Study 1, factor analyses revealed a five-factor structure for the Friendship Quality Questionnaire for Adults that was developed by Simpkins and Parke (2001) to parallel the assessment designed by Parker and Asher (1993) for use with children. These five friendship features were self-disclosure (assessed with four items,  $\alpha = .88$ ), companionship (assessed with three items,  $\alpha = .83$ ), validation (assessed with two items,  $\alpha = .77$ ), reliable alliance (assessed with four items,  $\alpha = .79$ ), and level of conflict (assessed with four items,  $\alpha = .88$ ). Drawing from previous research and theory (e.g., Berndt, 1996; Bukowski et al., 1994; Furman & Buhrmester, 1985; Oswald et al., 2004; Parker & Asher, 1993; Shaver & Buhrmester, 1983; Weiss, 1974), the plan in the current study was to assess a greatly expanded set of features, eight of which are friendship provisions (i.e., the benefits that are derived from friendship) and five of which are friendship processes (i.e., forms of exchange or interaction between friends that can affect the development and quality of the relationship). As noted above, this distinction between provisions and processes was made by Ladd and Kochenderfer (1996). It is also discussed in Bagwell and Schmidt's (2011) review and analysis of the friendship quality literature. For each friendship feature seven items were generated, with the hope that each friendship feature would be assessed with a final set of five items

that load on the particular factor. A more in-depth description of each friendship feature is presented below.

***Friendship provisions.***

*Validation.* Validation refers to the degree to which friends provide each other with positive affirmation, and has been conceptualized as a key factor promoting closeness in relationships (Reis & Shaver, 1988; Shaver & Buhrmester, 1983). Validation can occur with regard to accomplishments (e.g., a friend providing congratulations when a friend has worked hard to reach a valued goal), or with regard to thoughts and feelings (e.g., a friend affirming that the friend's feelings in a situation are appropriate and valid). Sample items in the current study include, "My friend makes me feel good about my ideas," and "My friend makes me feel worthless" (reverse-scored). The provision of validation has been incorporated into previous assessments of friendship quality, including the Network of Relationships Inventory (labeled "reassurance of worth," Furman & Buhrmester, 1985), the Friendship Quality Questionnaire (Parker & Asher, 1993), the Friendship Qualities Scale (labeled "reflected appraisal," Bukowski et al., 1994), and the McGill Friendship Questionnaire (Mendelson & Aboud, 1999). Gender differences favoring females have been found consistently in this feature (e.g., Mendelson & Aboud, 1999; Rose & Rudolph, 2006).

*Comfort/security/safety.* This provision refers to the degree to which an individual feels comfortable, secure, and safe with his or her friend. Security has also been conceptualized as an important factor promoting closeness in relationships (Shaver



& Buhrmester, 1983). Sample items in the current study include “I can really be myself with my friend,” and “My friend makes me feel insecure” (reverse-scored). Similar subscales have been employed in previous assessments (e.g., Mendelson & Aboud, 1999), although they have been considered manifestations of “affective” features of friendship rather than as friendship provisions. Bukowski and colleagues (1994) also included a “security” composite in their Friendship Qualities Scales, but the specific items included in this composite asked about reliable alliance and conflict resolution rather than feelings of comfort and security with friends, which is the focus in the current assessment.

*Emotional support.* Emotional support, another key function of friendship, refers to the degree to which friends are “there for each other” when they are going through hard times. In the present study, sample items include “If I am upset about something my friend will reassure me,” and “My friend is not emotionally supportive” (reverse-scored). Parker and Asher (1993) did not include an emotional support subscale in their original Friendship Quality Questionnaire, and therefore emotional support was not included in the Simpkins and Parke (2001) adaptation of the measure. An emotional support subscale has previously been included in the McGill Friendship Questionnaire (Mendelson & Aboud, 1999). Emotional support is hypothesized to be a key provision in protecting against feelings of loneliness (Shaver & Buhrmester, 1983; Weiss, 1973), and consistent gender differences have been found in previous studies indicating that females’ same-sex friendships are richer in emotional support than are males’ (e.g., Mendelson &

Aboud, 1999; Rose & Rudolph, 2006). Interestingly, in addition to reporting lower levels of emotional support within their friendships, males have also been observed as being less skillful than females in delivering the kinds of “person-centered” messages of emotional support that have been found to be most effective in previous research (MacGeorge, Gillihan, Samter, & Clark, 2003).

*Instrumental help.* Another key function of friendship is the degree to which friends provide instrumental help to one another when it is needed. Sample items assessing the provision of instrumental help in the current study include, “If I have a problem my friend will help me solve it,” and “If I had a task that needed to get done my friend would not be very helpful” (reverse-scored). The provision of help has been incorporated into previous assessment of friendship quality including the Network of Relationships Inventory (Furman & Buhrmester, 1985), the Friendship Quality Questionnaire (Parker & Asher, 1993), the Friendship Qualities Scale (Bukowski et al., 1994), and the McGill Friendship Questionnaire (Mendelson & Aboud, 1999). Consistent gender differences favoring females have been found in this friendship feature (e.g., Mendelson & Aboud, 1999; Rose & Rudolph, 2006).

*Reliable partnership/alliance.* Reliable partnership refers to the degree to which a friend can be counted on no matter what. Reliable alliance in particular refers to a more specific aspect of reliable partnership, which is whether a friend can be counted on to “have your back” in social situations. The reliable partnership items administered in the current study assess that aspect of reliable alliance (e.g., “If someone were talking about

me behind my back my friend would stick up for me”), as well as more global assessments of whether a friend can be “counted on” in general (e.g., “I know I can really rely on my friend,” “My friend is unreliable when it comes to our friendship,” reverse-scored). The content of these items is broader than that of the items administered in Study 1, which focused more specifically on reliable alliance.

The provision of reliable partnership or reliable alliance has been incorporated into previous assessments of friendship features including the Network of Relationships Inventory (Furman & Buhrmester, 1985, although the items on the reliable alliance subscale focus on the degree to which the individual thinks the relationship will last in the future), the Intimate Friendship Scale (labeled “trust and loyalty” by Sharabany, 1974), the Friendship Qualities Scale (Bukowski et al., 1994; items assessing reliable partnership are included on both the reliable alliance and protection subscales), and the McGill Friendship Questionnaire (Mendelson & Aboud, 1999). Consistent gender differences favoring females have been found in this friendship feature (e.g., Mendelson & Aboud, 1999; Sharabany, 1994).

*Shared activities and enjoyable companionship.* Previous assessments of friendship quality have included subscales labeled “companionship” or “companionship and recreation” that have included items assessing how much time friends spend together as well as how much fun they have when they are together (e.g., Bukowski et al., 1994; Furman & Buhrmester, 1985; Mendelson & Aboud, 1999; Parker & Asher, 1993; Simpkins & Parke, 2001). In the current study, those two features of “companionship”

have been broken out into two separate subscales which have been labeled “shared activities” and “enjoyable companionship.” Shared activities items focus on whether friends spend time together doing things (sample items include “My friend and I engage in activities together,” and “I rarely spend time with my friend,” reverse-scored). “Enjoyable companionship” items focus on how much fun friends have when they are together (sample items include “My friend and I make each other laugh,” and “My friend is not very enjoyable to be around,” reverse-scored). Gender differences have been found in previous measures that have focused more on the enjoyable aspects of companionship than on the degree to which friends spend time together, so it is hypothesized that gender differences will be observed in the enjoyable companionship subscale but not in the shared activities subscale.

*Honest feedback.* Honest feedback is a friendship provision that generally has not been included in previous assessments of friendship features. The one exception is Sharabany’s (1974) Intimate Friendship Scale, which includes a similar subscale labeled “Frankness and Spontaneity.” This provision refers to the degree to which friends can be counted on to be honest with each other, even if they have something critical or in other ways unpleasant to say. In a sense, this provision harkens back to conceptualizations of friendship as a moral relationships (e.g., Bukowski & Sippola, 1996; Cicero, *On Friendship*), in which each partner contributes to the moral betterment of the other through candid discussion and feedback about one’s own behavior.

It may be the case that the honest feedback provision is equally derived in the friendships of males and females. Sharabany (1994), using her Frankness and Spontaneity subscale, reported gender differences favoring females, but her subscale included items assessing general self-disclosure as well as the level of honest feedback in the friendship. Items assessing honest feedback in the current study include “If I need an honest opinion about something, my friend will provide it,” and “Sometimes I think my friend is not being honest with me when I ask for advice” (reverse-scored).

***Friendship processes.*** As discussed in Study 1, friendship processes are conceptualized as forms of interaction or exchange between friends that contribute in positive or negative ways to the development and quality of the relationship (Ladd & Kochenderfer, 1996). Each of the friendship processes described below grows out of one of the “social tasks of friendship” proposed by Asher, Parker, Rose, and Walker (Asher et al., 1996; Asher & Rose, 1997; Asher & Parker, 1989).

***Self-disclosure.*** Self-disclosure refers to the sharing of personal or private information about oneself to another, and is widely-recognized as a key feature of friendship (see the previous discussion regarding the role of self-disclosure in the development of intimacy). Items assessing self-disclosure in the present study include, “My friend and I talk to each other about personal or private things,” and “My friend and I rarely talk to one another when something is going wrong in one of our lives” (reverse-scored). The process of self-disclosure has been explicitly incorporated into previous assessment of friendship quality including the Network of Relationships Inventory

(labeled “intimate disclosure,” Furman & Buhrmester, 1985), and the Friendship Quality Questionnaire (labeled “intimate exchange,” Parker & Asher, 1993). In Bukowski et al.’s (1994) Friendship Qualities Scale, a self-disclosure subscale is not explicitly included in the measure, but items assessing self-disclosure are included in the companionship and reliable alliance subscales. Likewise, in Sharabany’s (1974) Intimate Friendship Scale, a self-disclosure subscale is not explicitly included in the measure, but items assessing self-disclosure are included in the “frankness and spontaneity” subscale and the “giving and sharing” subscale. As discussed above, gender differences in self-disclosure favoring females are robust (e.g., Fehr, 1996; Rose & Rudolph, 2006).

*Forgiveness.* Forgiveness refers to the degree to which friends are willing to forgive when one of them has made a mistake. Disappointments and let-downs are inevitable in friendship, and therefore forgiveness is a key process necessary to the maintenance of friendship relationships in the long term. Previous friendship features assessments have not included forgiveness subscales, although a few of the items on the “transcending problems” subscale of the Friendship Qualities Scale (Bukowski et al., 1994) have a similar focus. Items assessing forgiveness in the present study include, “My friend and I are willing to forgive each other if one of us does something wrong,” and “My friend and I hold grudges against one another” (reverse-scored).

*Spirit of equality.* Spirit of equality refers to the degree to which friends are equal partners in the friendship (Asher, Parker & Walker, 1996), and is similar to the process of relative power/status assessed in the Network of Relationships Inventory (Furman &

Buhrmester, 1985). In addition, Hartup and Stevens (1997) discussed reciprocity—a concept closely related to the spirit of equality—as part of what they call the “deep structure” of friendship. Since males’ interactions in the peer group have been characterized as more competitive and status-oriented than females’ (Maccoby, 1998; Rose & Rudolph, 2006), it is possible that males’ close friendships will likewise be characterized by less of a spirit of equality. On the other hand, it is possible that friendship represents a more even play field for males than does the peer group as a whole, which would suggest a lack of gender differences in the feature of spirit of equality. Furman and Buhrmester (1992) did not find gender differences in the feature of relative power, supporting the hypothesis that males’ and females’ friendships may be equally characterized by a spirit of equality. Items assessing spirit of equality in the current study include “My friend and I are equal partners in the friendship,” and “My friendship with my friend is one-sided” (reverse-scored).

*Level of conflict.* This refers to the amount of disagreement and conflict that is present in friendship, and is the only “negative” friendship feature assessed in the current study. Although there are other negative features that are important in friendship, level of conflict has been the one feature widely studied in previous research. The process of conflict has been incorporated into previous assessments of friendship quality including the Network of Relationships Inventory (includes both “conflict” and “antagonism” subscales, Furman & Buhrmester, 1985), the Friendship Quality Questionnaire (labeled “conflict and betrayal,” Parker & Asher, 1993), and the Friendship Qualities Scale

(Bukowski et al., 1994). Interestingly, previous research has shown that level of conflict within a friendship is only modestly correlated with positive features of friendships ( $r$ s usually  $\leq .30$ ), indicating that positive and negative features of friendship likely coexist (Bagwell & Schmidt, 2011). Previous research has typically not found gender differences in level of conflict within friendships, although given the gender difference found in Study 1 it is possible that females will report lower levels of conflict in this study as well. Items assessing conflict in the present study include, “My friend and I get irritated with one another a lot,” and “My friend and I get along very well” (reverse-scored).

*Conflict resolution.* In addition to level of conflict, it is important to take into account how well friends are able to resolve conflicts that arise. As in any close long-term relationship, conflicts are inevitable in friendship. It is when friendship partners are not able to resolve conflicts in a satisfactory manner that conflict can become problematic. The process of conflict resolution has been incorporated into previous assessment of friendship quality including the Friendship Quality Questionnaire (Parker & Asher, 1993) and the Friendship Qualities Scale (labeled “transcending problems,” Bukowski et al., 1994). Previous research has found gender differences in conflict resolution favoring females (e.g., Parker & Asher, 1993). Items assessing conflict resolution in the present study include, “My friend and I can easily manage disagreements,” and “If my friend and I have a disagreement we have trouble working it out” (reverse-scored).



### **Measurement development goal 2: Adapting the Loneliness in Context**

**Questionnaire.** In addition to developing a revised and expanded assessment of friendship features, a slightly revised assessment of loneliness is also included in this study. One of the goals of Study 2 is to replicate the findings from Study 1 with a broader sample including young adults from both within and outside of the college context. In order to assess feelings of loneliness in such a sample, two items on the Loneliness in Context Questionnaire for College Students that referred specifically to school contexts (i.e., “Class is a lonely place for me,” and “I feel sad and alone when I am studying”) were replaced with two items that refer to contexts that any adult might encounter in their day-to-day life (i.e., “Mornings are a lonely time for me,” and “I feel sad and alone when I am running errands”).

**Hypothesis testing goals 1 and 2: Replicate findings from Study 1 in a broader sample.** In order to have a high degree of confidence in the pattern of results observed in Study 1, Study 2 is designed to test whether the findings from Study 1 replicate in a broader, independent sample with revised assessments of key constructs. It is possible that the sample in Study 1, although large, could have had unique features that might limit the generalizability of the paradox/suppression effect findings (e.g., the friendships of young adults living in a residential college environment may differ in some ways from the friendships of young adults attending non-residential colleges or from young adults who do not attend college). By broadening the sample to include a wider age range (young adults between the ages of 18 and 29; unfortunately data were not

collected on participants' exact ages) and young adults from any walk of life, it becomes possible to test the robustness of the hypothesized paradox and the observed suppression effect. As indicated by a recent special section on the topic of replication in the journal *Perspectives on Psychological Science* (Pashler & Wagenmakers, 2012), concerns about replication are on the minds of scientists worldwide, and the practice of replication is crucial to ensuring that findings contained in the scientific literature can be construed as “reliable knowledge” and not just the result of Type I error.

**Hypothesis testing goal 3: Examining links among gender, friendship features, and friendship satisfaction.** In addition to developing revised and extended assessments and broadening the sample, Study 2 builds upon the findings from Study 1 in another way, by considering a second potentially-relevant and more proximal outcome to friendship features—friendship satisfaction. Although it was not included as an outcome in Study 1, friendship satisfaction is an important outcome measure to include when assessing friendship quality. Jones (1991) described friendship satisfaction as a measure used, “to gauge the perceived adequacy of the relationship in meeting the needs of the individual” (p. 168), and previous research has shown that the quality of individuals' friendships is closely linked to their satisfaction with those friendships (e.g., Furman & Buhrmester, 1985; Parker & Asher, 1993). In addition, theoretical perspectives on relationship development and maintenance (e.g., interdependence theory, Kelley & Thibaut, 1978; the investment model of relationships, Rusbult, 1980) emphasize relationship satisfaction as a key outcome in the weighing of costs and benefits in an

existing relationship, and a key predictor (in addition to investment in the relationship and perceived quality of alternatives) of relationship commitment.

Interesting gender-related patterns have been found with regard to friendship satisfaction, indicating a possible developmental shift in the degree to which males and females are satisfied with their friendships. Research with children has found that boys and girls tend to report equal levels of satisfaction with their friendships (see Rose & Rudolph, 2006, for a review), which is in line with the paradox of significant mean-level gender differences in friendship features accompanied by mean-level gender similarities in friendship-related outcomes (i.e., loneliness) documented in Study 1. That is, although friendship features are closely related to friendship satisfaction and research has shown widespread mean-level gender differences in friendship features favoring girls, previous research with children has not found corresponding gender differences in friendship satisfaction.

Findings with adolescents and adults, however, have been more mixed (see Fehr, 1996). When gender differences in friendship satisfaction do emerge, they tend to emerge in the direction of females being more satisfied with their friendships than are males (e.g., Jones, 1991; Lempers & Clark-Lempers, 1993; Wright, 2006), which would suggest that, for adolescents and adults, the paradoxical pattern of gender differences in friendship features and friendship-related outcomes may be specific to the outcome of loneliness. Interestingly, like previous widely-used assessments of loneliness, assessments of relationship satisfaction have been criticized for containing diverse and

overlapping item content (see Fincham & Beach, 2006, for a discussion of this issue in the marital literature). Assessments of satisfaction have tended to include confounding content that overlaps with other constructs of interest (e.g., perceptions of relationship quality), making it difficult to draw firm conclusions from the existing literature. As with much of the loneliness literature, this limits the conclusions that can be drawn about gender differences in satisfaction since there are well-documented gender differences in the hypothesized causes of satisfaction (i.e., friendship features), which could explain observed gender differences in friendship satisfaction favoring females. To address this issue, the current study employed highly-focused items to assess friendship satisfaction and to examine links among gender, friendship features, and friendship satisfaction. These items (adapted from Parker & Asher, 1993) focus only on global perceptions of friendship satisfaction without including content asking about specific friendship features.

## **Method**

**Participants and procedure.** Participants were 1008 young adults aged 18 to 29 living in the United States. Of these participants, 793 were recruited from Amazon Mechanical Turk (MTurk) and 215 were recruited from the psychology participant pool at the same university from which participants were drawn for Study 1. All participants completed the study online via the online survey-administration program Qualtrics.

***MTurk participants and procedure.*** MTurk is an online task-completion system that allows users to complete tasks, including psychological research studies, in exchange

for Amazon credit. Users of this system are called “workers.” These individuals have created accounts on MTurk in order to participate in research studies and complete other types of tasks for small payments. People who complete tasks on MTurk typically receive very small levels of compensation (e.g., \$1.00 for a 45-minute task). Recent research has shown that data collected via MTurk are as reliable as data collected via traditional survey methods, and that MTurk participants tend to be more diverse than those recruited through typical psychology participant pools (Buhrmester, Kwang, & Gosling, 2011).

MTurk participants completed the study in two phases. The first was a brief demographic prescreen asking participants to indicate their age (in block increments ranging from 18-29 up to 100+), gender, native language, and country of residence. Participants who met the qualification requirements (i.e., were between the ages of 18 and 29, were male or female, spoke English as a first language, and lived in the United States) were then invited to participate in the second phase of the study. A total of 2224 participants completed the demographic prescreen measure, and 1035 (46.5%) of those participants qualified to participate in the second phase of the study. Unfortunately participants were not asked to indicate their exact age in the second phase of the study, so for this sample data are not available on the exact age of participants. This omission was rectified in the procedures for Study 3.

Of the 1035 participants who qualified to participate in the second phase of the study, 801 participants did so. Of these 801 participants, 8 participants were dropped

from the sample due to indicators that they provided unreliable responses (e.g., participants filled in primarily “7”s or primarily “1”s on the measures). This left a final MTurk sample of 793 participants, 64.7% of whom were female and 35.3% of whom were male.

In the second phase of the study, which took about 15 minutes to complete, participants (after providing consent) completed the newly-developed Revised Friendship Features Questionnaire for Adults (RFFQ-A), the Loneliness in Context Questionnaire for Adults, items assessing friendship satisfaction, items assessing friendship closeness, questions about their use of MTurk, and additional demographic questions (descriptive information about participants’ use of MTurk is available upon request from the author). The final sample of MTurk participants was relatively diverse in terms of race/ethnicity (73.6% White/Caucasian; 6.9% Hispanic/Latino; 6.8% Black/African/African American; 5.9% Asian/Asian American; 5.4% bi or multiracial; 0.9% other race/ethnicity; 0.5% declined to answer). A majority of participants indicated that they were currently employed (60.2%). Many participants ( $n = 331$ , 41.7%) were students, and, of the 331 students, 77.3% of them attended school full time. Furthermore, of the 331 students, 1.8% attended high school, 18.4% attended a two-year college, 61.7% attended a four-year college, 3.6% attended vocational/technical school, 13.3% attended graduate/professional school, and 1.2% attended another type of school (i.e., type of school was “other”).

*Psychology participant pool participants and procedure.* Participants from the psychology participant pool were recruited via the online experiment sign-up program Sona. A short description of the study was posted on Sona, and students who were interested in participating could sign up and complete the study. All members of the participant pool who were 18 years and older were eligible to participate. A demographic prescreen questionnaire was not administered because it was assumed that all participants would be reasonably fluent in English. Therefore, all demographic questions were administered at the end of the study rather than as a prescreen questionnaire. After providing consent, participants completed the RFFQ-A, the Loneliness in Context Questionnaire for Adults, items assessing friendship satisfaction, items assessing friendship closeness, and demographic questions, all of which took approximately 15 minutes to complete. Participants were then thanked for their participation and provided with a debriefing form.

Participant pool participants ( $n = 215$ ; 60.9% female, 39.1% male) were between 18 and 28 years of age. Most (99.5%) were full-time students, and some (24.7%) held jobs in addition to going to school. The majority of participants (82.8%) indicated that English was their native language, and the sample was diverse in terms of race/ethnicity (54.8% White/Caucasian; 27.0% Asian/Asian American; 11.2% Black/African/African American; 2.3% Hispanic/Latino; 3.7% bi or multiracial; 0.5% other race/ethnicity; 0.5% declined to answer).

**Measures.** Participants completed all measures via Qualtrics, an online survey administration program. Measures were completed by both MTurk participants and psychology participant pool participants unless otherwise indicated.

*Revised Friendship Features Questionnaire for Adults.* The Revised Friendship Features Questionnaire for Adults (RFFQ-A; adapted from Bukowski et al., 1994; Fehr, 2004; Furman & Buhrmester, 1985; Mendelson & Aboud, 1999; Parker & Asher, 1993; Sharabany, 1974; Simpkins & Parke, 2001) is designed to more comprehensively and reliably assess important qualitative features of participants' closest friendship. The RFFQ-A was designed to assess 13 different features of friendship, which can be divided into eight friendship provisions (i.e., validation, comfort/security/safety, emotional support, instrumental help, reliable partnership, shared activities, enjoyable companionship, and honest feedback) and five friendship processes (i.e., self-disclosure, forgiveness, spirit of equality, conflict resolution, and level of conflict) that have been identified as particularly important to close relationships (e.g., Asher et al., 1996; Parker & Asher, 1993; Shaver & Buhrmester, 1983; Weiss, 1974). A set of seven items was generated for each friendship feature, with the intention that each final subscale would contain five items. The only exception was the conflict subscale, which began with a set of nine rather than seven items. Since conflict was the only "negative" feature assessed it was important to ensure that this feature was reliably assessed. For this reason extra items were included to increase the likelihood that five acceptable items would be retained in the final factor solution (see Table 6 for a list of the 93 items administered).



Participants were first instructed to think of their closest same-sex friend and to provide the friend's name, gender, and the length of time (in years and months) that the participant had known the friend. This provided an indication of the duration of the friendship. Using the "pipe text" survey tool in Qualtrics, the friend's name was included in each question in place of the words "my friend." For example, if a participant indicated that her closest friend was named Sally, the item "My friend and I make each other laugh" would appear as "Sally and I make each other laugh" (see Parker & Asher, 1993, for an early example of personalizing a measure of friendship quality). Participants rated how characteristic each statement was of their closest friendship on a 7-point scale ranging from 1 = *not at all true* to 7 = *really true*. The 93 items were presented in a different random order for each participant using the "Randomizer" feature of Qualtrics.

On separate pages, an additional four items were administered asking about overall friendship satisfaction (two items adapted from Parker & Asher, 1993) and friendship closeness (two items adapted from Austin, 2010). Appendix D provides the full text of these items. Participants responded to each of these items on a 15-point scale.

***Loneliness in Context Questionnaire for Adults.*** The Loneliness in Context Questionnaire for Adults (adapted from Asher et al., 2013; Asher et al., 2010) was designed to assess feelings of loneliness by asking about participants' feelings of loneliness in ten different specific contexts of everyday life that are likely to be experienced by adults. This version represents a minor adaptation of the 10-item Loneliness in Context Questionnaire for College Students (Asher et al., 2010) that was

administered in Study 1. Two items that are more applicable to a college student population (i.e., “Class is a lonely place for me,” and “I feel sad and alone when I am studying”) were replaced with two items that could apply to anyone in the general population (i.e., “Mornings are a lonely time for me,” and “I feel sad and alone when I am running errands”). Participants respond to items on a 5-point scale (1 = *never*, 5 = *always*). See Appendix E for the full text of this measure.

***Demographic questionnaire.*** Participants completed a demographic questionnaire asking about their age, gender, country of residence, first language, racial/ethnic background, student status, and occupation. For MTurk participants, questions about age (in broad categories), gender, country of residence, and first language were administered in a prescreen questionnaire to determine their eligibility to participate in the study. The remaining demographic questions (i.e., about racial/ethnic background, student status, and occupation) were administered at the end of the friendship study. For psychology participant pool participants, all of the demographic items were administered together at the end of the study. See Appendix F for the full text of this questionnaire.

## **Results**

The first set of analyses addresses the two measurement development goals of the study, examining the psychometric properties (i.e., factor structure and internal reliability) of both the RFFQ-A and the Loneliness in Context Questionnaire for Adults. The second set of analyses addresses the three hypothesis-testing goals, examining the associations among gender, friendship features, loneliness, and friendship satisfaction

using various instantiations of the general linear model. For all analyses, the MTurk and participant pool samples were combined into a single sample ( $n = 1008$ ). Although there are some mean-level differences between these two samples in their responses to the RFFQ-A and Loneliness in Context Questionnaire for Adults (described in more detail in the following sections), there were no significant differences in the factor structure across samples so it was deemed appropriate to combine the two. Means, standard deviations, and inter-item correlations for all of the items on the RFFQ-A and Loneliness in Context Questionnaire for Adults are available from the author upon request.

**Descriptive information about friendships.** With regard to the closeness of the person whom participants chose to describe on the RFFQ-A, participants were asked to indicate how close the friendship is (i.e., “Relative to all of your other relationships [including friendships, family relationships, romantic relationships, etc.], how would you characterize your friendship with your friend?”) on a 15-point scale (1 = *least close of all my relationships*, 15 = *closest of all my relationships*). On average, participants indicated that the friendship that they were reporting on was somewhat closer than their other relationships, but not the closest of all of their relationships; females rated the friendship they were reporting on as somewhat closer than did males ( $M_{\text{males}} = 11.74$ ,  $M_{\text{females}} = 12.07$ ;  $F(1, 1006) = 4.01$ ,  $p = .046$ ,  $d = -.13$ ). Six percent of participants rated the friendship they were reporting on below the midpoint of the scale (i.e.,  $< 7.00$  on a 15-point scale), indicating that they perceived the friendship to be less close than their other relationships.

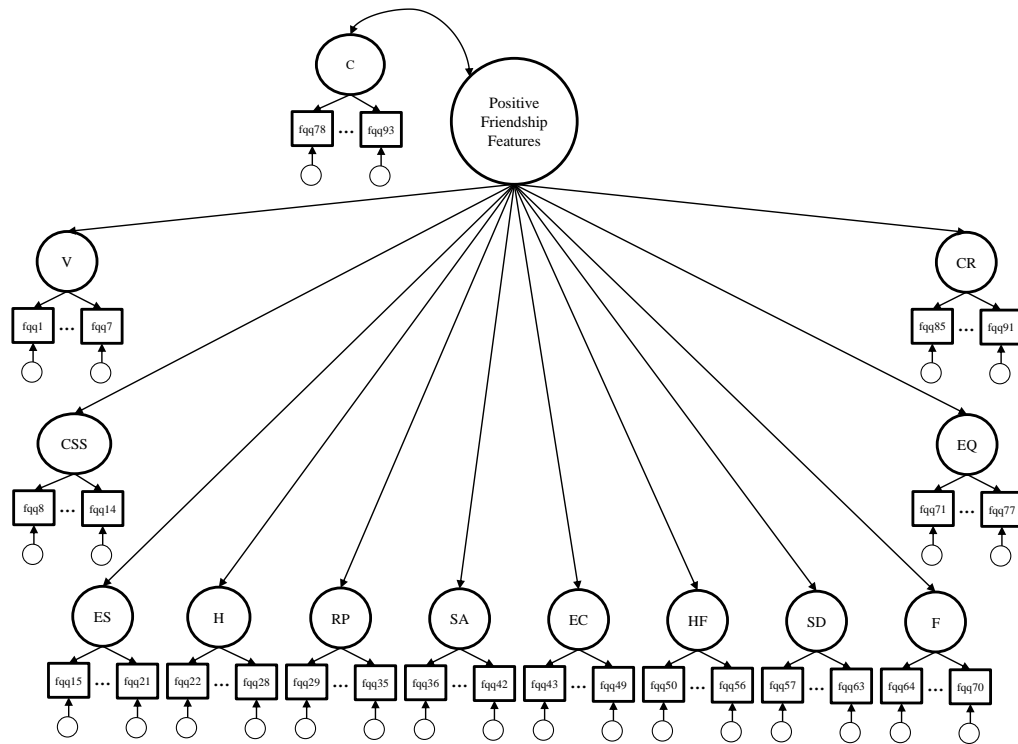
With regard to duration, friendships ranged from relatively new (i.e., had been friends for 1 month) to quite long-lasting (i.e., had been friends for 29 years). On average, friendships had been in existence for a little over eight-and-a-half years, and there were no significant differences between males and females with regard to friendship duration ( $M_{\text{males}} = 8.44$  years,  $M_{\text{females}} = 8.81$  years;  $F(1, 1006) = .81, p = .368, d = -.06$ ).

**Measurement development goal 1: Examining the factor structure and psychometric properties of the RFFQ-A.** To address the first goal of the current study, several confirmatory factor analysis (CFA) models were tested to find the best-fitting model for the RFFQ-A. All models were estimated using full information maximum likelihood (FIML) estimation in MPlus Version 6.1 (Muthén & Muthén, 2010). Omnibus model fit was evaluated with regard to the root mean square error of approximation (RMSEA, Steiger & Lind, 1980), with values  $\leq .08$  indicating close fit (Browne & Cudeck, 1993), and the comparative fit index (CFI, Bentler, 1990), with values  $\geq .95$  indicating acceptable fit (Hu & Bentler, 1999) and values between .90 and .949 indicating marginal fit (e.g., Hoyle, 2011). The model  $\chi^2$  statistic was also examined. The model  $\chi^2$  statistic compares the observed covariance matrix to the model-implied covariance matrix, with lower, preferably non-significant values indicating better model fit. Due to their sensitivity to sample size, however, model  $\chi^2$  statistics were employed to compare the fit of nested models and not as an index of overall model fit (e.g., Hoyle, 2011). Individual model parameters (e.g., estimated factor loadings) were also examined. As suggested by Kline (2006) and Hoyle (2011), considerations of model fit and model

parsimony, as well as the evaluation of specific parameters estimates, were used to select the best-fitting model.

Measurement models for the RFFQ-A were tested in an iterative fashion, beginning with the full set of 93 RFFQ-A items. These factor analyses were conducted in both an exploratory and confirmatory fashion, since there were specific expectations about what the factor structure for the RFFQ-A would look like, but it was also expected that at least two items would be dropped from each subscale and that subscales might be dropped or combined if model parameter estimates, fit statistics, and modification indices indicated that it was appropriate to do so. Although informed by model parameter estimates, fit statistics, and modification indices, decisions about model modification were guided first and foremost by theoretical and conceptual considerations. Table 6 presents a full list of items and parameter estimates from the baseline and final measurement models.

Model testing began from the starting point of a baseline model that included all 93 RFFQ-A items loading onto 13 separate factors corresponding to the 13 hypothesized friendship features dimensions (i.e., validation, comfort/security/safety, emotional support, instrumental help, reliable alliance, shared activities, enjoyable companionship, honest feedback, self-disclosure, forgiveness, spirit of equality, conflict resolution, level of conflict). Figure 1 presents a graphical representation of this baseline model.



**Figure 1: Baseline Measurement Model for the Revised Friendship Features Questionnaire for Adults (RFFQ-A)**

*Note.* Subscale abbreviations are as follows: V=Validation, CSS=Comfort/Security/Safety, ES=Emotional Support, H=Instrumental Help, RP=Reliable Partnership, SA=Shared Activities, EC=Enjoyable Companionship, HF=Honest Feedback, SD= Self-Disclosure, F=Forgiveness, EQ= Spirit of Equality, CR=Conflict Resolution, C=Conflict. In keeping with field conventions, observed variables are represented with squares/rectangles and latent/unobserved variables are represented with circles/ellipses. Observed variables in the model are responses to the individual items on the RFFQ-A, and latent variables are the hypothesized friendship features subscales and the higher-order positive friendship quality composite. A number of parameters have been omitted from the path diagram for clarity of presentation, including disturbance terms, as well as the second through sixth indicator (and their uniquenesses) for each friendship feature subscale (this omission is represented by an ellipsis in the above diagram). Individual parameter estimates for first-order and second-order factor loadings are presented in Table 6.

Additionally, it was hypothesized that 12 of the 13 friendship features factors would load onto a higher-order factor representing overall positive friendship features (i.e., that the

shared variance among the feature-specific factors could be explained by a global “positive friendship features” factor; see Figure 1 for the hypothesized model). The 13<sup>th</sup> factor, level of conflict, was hypothesized to be a separate factor representing a negative, rather than positive, feature of friendship (see, for example, Furman, 1996). The positive friendship quality and friendship conflict factors were allowed to correlate.

The omnibus fit statistics for the baseline model indicated that some modifications should be made ( $\chi^2$  [4172] = 14342.67,  $p < .001$ ; RMSEA = .049 [90% CI = .048 – .050]; CFI = .80). The first step in model modification was to examine individual parameter estimates and drop any items that had rather low standardized loadings on their individual factors (i.e., factor loadings  $< .40$ ). Using this criterion, three items were dropped (fqq8, fqq23, fqq47;  $\chi^2$  [3902] = 13758.37,  $p < .001$ ; RMSEA = .050 [90% CI = .049 – .051]; CFI = .81). Next, modification indices were requested to help identify areas where model fit could be improved. For three items (fqq80, fqq83, fqq84), modification indices suggested cross-loadings on multiple other factors. The suggested cross-loadings did not make sense for the model conceptually, and so those three items were also dropped from the model ( $\chi^2$  [3641] = 12503.02,  $p < .001$ ; RMSEA = .049 [90% CI = .048 – .050]; CFI = .82).

To reduce the number of items on each of the subscales, the lowest-loading items were dropped from each subscale until each subscale had a total of five items. Using this criterion, the following items were dropped: fqq5, fqq6, fqq13, fqq15, fqq20, fqq24, fqq29, fqq32, fqq36, fqq38, fqq46, fqq51, fqq56, fqq61, fqq62, fqq65, fqq69, fqq72,

fqq73, fqq90, fqq91, and fqq93 ( $\chi^2 [2002] = 7008.87, p < .001$ ; RMSEA = .050 [90% CI = .049 – .051]; CFI = .87).

Investigation of model parameter estimates suggested further modifications to the model. For example, the parameter estimate for the path from the shared activities subfactor to the higher order positive friendship quality factor was rather low ( $b^* = -.39$ ) as compared to the parameter estimates for the paths for the other subfactors, which were all  $\geq |.81|$ . This indicated that the shared activities subscale, which was designed to capture the amount of time that friends spend together, did not share a great deal of common variance with the other friendship features subfactors. Inspection of the individual item loadings on the subfactor revealed that the set of items cohered well together, and the internal reliability for the subscale was also high ( $\alpha = .92$ ). Therefore, the shared activities subscale was maintained as a separate factor which was allowed to correlate with the overall positive friendship quality factor and with the friendship conflict factor, but not considered a manifestation of overall positive friendship quality.

In addition, the conflict resolution and forgiveness subfactors were combined into a single factor because the item wordings were rather similar and model modification indices suggested several cross-loadings among the two factors. To combine these two factors, the five highest-loading items were retained and the remaining five items were dropped, leaving a final set of five items representing a forgiveness/conflict resolution subfactor (fqq64, fqq66, fqq70, fqq87, fqq89).



Re-inspection of the items on the comfort/security/safety subscale revealed—although the items cohered together reasonably well in terms of factor loadings and internal reliability—that the item content of the subscale was diverse. Items such as “I feel uncomfortable when I am with my friend,” “I can really trust my friend,” and “My friend likes me just the way I am,” were included, which could be conceptualized as assessments of comfort, trust, and acceptance, respectively. Given that these items did not capture a single specific friendship provision or process as was the case with the other factors, the comfort/security/safety factor was dropped from the model.

In addition, one of the items from the validation factor (fqq7) was dropped because modification indices suggested that its uniqueness was correlated with those of several other items. The four remaining validation items were positively-worded items, with all of the negatively-worded items being dropped from the subscale due to low factor loadings or indicated cross-loadings on other factors. Finally, a correlation between the uniquenesses of fqq31 and fqq34 was added based on model modification indices.

**Table 6: Items and Factor Loadings for the Revised Friendship Features Questionnaire for Adults (RFFQ-A)**

Item	Item Wording	Intended Subscale	Final Subscale	Factor Loading in Baseline Model	Factor Loading in Final Model
fqq1	My friend compliments me about things.	V	V	.636	.655
fqq2	My friend makes me feel good about my ideas.	V	V	.711	.725
fqq3	My friend makes me feel important and special.	V	V	.679	.721
fqq4	My friend cares about me.	V	V	.654	.666
fqq5	My friend criticizes me a lot.*	V	—	-.506	—
fqq6	My friend makes me feel worthless.*	V	—	-.547	—
fqq7	My friend rarely says anything positive about me.*	V	—	-.683	—
fqq8	I feel uncomfortable when I am with my friend.*	CSS	—	.377	—
fqq9	I feel at ease with my friend.	CSS	—	-.655	—
fqq10	I can really be myself with my friend.	CSS	—	-.609	—
fqq11	I can really trust my friend.	CSS	—	-.691	—
fqq12	My friend likes me just the way I am.	CSS	—	-.597	—

Item	Item Wording	Intended Subscale	Final Subscale	Factor Loading in Baseline Model	Factor Loading in Final Model
fqq13	My friend is judgmental of me. *	CSS	—	.561	—
fqq14	My friend makes me feel insecure. *	CSS	—	.592	—
fqq15	If I am going through a tough time my friend doesn't provide much emotional support. *	ES	—	.650	—
fqq16	My friend is there for me when I need emotional support.	ES	ES	-.763	.753
fqq17	If I am upset about something, my friend will reassure me.	ES	ES	-.754	.758
fqq18	My friend cheers me up when I am feeling down.	ES	ES	-.749	.755
fqq19	If I am worried about something my friend will help me get through it.	ES	ES	-.819	.832
fqq20	My friend is not emotionally supportive. *	ES	—	.561	—
fqq21	When I am feeling stressed I can go to my friend for emotional support.	ES	ES	-.794	.794
fqq22	If I needed to borrow something my friend would lend it to me.	H	H	.601	.599

Item	Item Wording	Intended Subscale	Final Subscale	Factor Loading in Baseline Model	Factor Loading in Final Model
fqq23	If I had a task that needed to get done, my friend would not be very helpful.*	H	—	-.375	—
fqq24	I don't go to my friend for help when I have a problem that needs to be solved.*	H	—	-.535	—
fqq25	If I have a problem my friend will help me solve it.	H	H	.801	.813
fqq26	My friend has good ideas for how to get things done.	H	H	.598	.604
fqq27	My friend does favors for me when I need help with something.	H	H	.691	.700
fqq28	If I don't know how to do something my friend will help me figure it out.	H	H	.686	.690
fqq29	If someone were talking about me behind my back, my friend would stick up for me.	RP	—	.612	—
fqq30	I know I can really rely on my friend.	RP	RP	.804	.815
fqq31	My friend breaks promises that he/she makes to me.*	RP	RP	-.609	-.545
fqq32	If I told my friend a secret, he/she might not keep it.*	RP	—	-.561	—

Item	Item Wording	Intended Subscale	Final Subscale	Factor Loading in Baseline Model	Factor Loading in Final Model
fqq33	No matter what happens, I can count on my friend to be there for me.	RP	RP	.796	.824
fqq34	My friend is unreliable when it comes to our friendship.*	RP	RP	-.686	-.637
fqq35	My friend will always be there for me.	RP	RP	.769	.792
fqq36	My friend and I get together for food or drink.	SA	—	.684	—
fqq37	I rarely spend time with my friend.*	SA	SA	-.797	.842
fqq38	My friend and I engage in activities together.	SA	—	.757	—
fqq39	My friend and I hang out together.	SA	SA	.819	-.762
fqq40	My friend and I rarely spend time together doing things.*	SA	SA	-.791	.828
fqq41	My friend and I often do things together.	SA	SA	.806	-.784
fqq42	My friend and I hardly ever go places together.*	SA	SA	-.844	.859
fqq43	My friend and I don't have much fun when we are together.*	EC	EC	.590	.561

Item	Item Wording	Intended Subscale	Final Subscale	Factor Loading in Baseline Model	Factor Loading in Final Model
fqq44	My friend and I make each other laugh.	EC	EC	-.686	-.678
fqq45	When I am spending time with my friend I feel happy.	EC	EC	-.777	-.792
fqq46	My friend and I can be silly or goofy together.	EC	—	-.535	—
fqq47	My friend is not very enjoyable to be around.*	EC	—	.322	—
fqq48	I have a lot of fun when I am with my friend.	EC	EC	-.736	-.735
fqq49	My friend and I enjoy spending time together.	EC	EC	-.768	-.771
fqq50	My friend gives me honest advice.	HF	HF	.768	.777
fqq51	Sometimes my friend doesn't tell me the truth about something I did, even when I ask him/her to.*	HF	—	-.587	—
fqq52	I know my friend will be honest with me, even if he/she has something unpleasant to say.	HF	HF	.737	.740
fqq53	If my friend thought I was making a mistake, he/she would tell me.	HF	HF	.627	.644

Item	Item Wording	Intended Subscale	Final Subscale	Factor Loading in Baseline Model	Factor Loading in Final Model
fqq54	My friend will give me his/her honest opinion if I ask for it.	HF	HF	.678	.681
fqq55	If I need an honest opinion about something my friend will provide it.	HF	HF	.778	.780
fqq56	Sometimes I think my friend is not being honest with me when I ask for advice.*	HF	—	-.501	—
fqq57	My friend and I talk to each other about private or personal things.	SD	SD	.785	.794
fqq58	My friend and I talk to each other about things that are going on in our lives.	SD	SD	.704	.706
fqq59	My friend and I don't talk to each other about things that are bothering us.*	SD	SD	-.670	-.681
fqq60	My friend and I talk to each other about our thoughts and feelings.	SD	SD	.760	.757
fqq61	My friend and I tell each other things that we wouldn't tell other people.	SD	—	.603	—
fqq62	My friend and I talk to each other about our interests and ideas.	SD	—	.570	—
fqq63	My friend and I rarely talk to each other when something is going wrong in our lives.*	SD	SD	-.605	-.612

Item	Item Wording	Intended Subscale	Final Subscale	Factor Loading in Baseline Model	Factor Loading in Final Model
fqq64	My friend is understanding if I make a mistake.	F	FCR	.674	.680
fqq65	If my friend makes a mistake, I would not be able to forgive him/her.*	F	—	-.415	—
fqq66	My friend and I are willing to forgive each other if one of us does something wrong.	F	FCR	.681	.704
fqq67	If I let my friend down, he/she would forgive me.	F	—	.593	—
fqq68	My friend and I hold grudges against each other.*	F	—	-.615	—
fqq69	If I do something wrong my friend won't forget it.*	F	—	-.481	—
fqq70	My friend and I are forgiving of each other.	F	FCR	.696	.716
fqq71	My friend and I share equally in deciding things to do.	EQ	EQ	.558	.545
fqq72	In our friendship one of us has more say about things than the other.*	EQ	—	-.481	—
fqq73	In my friendship with my friend, one of us is dominant over the other.*	EQ	—	-.462	—



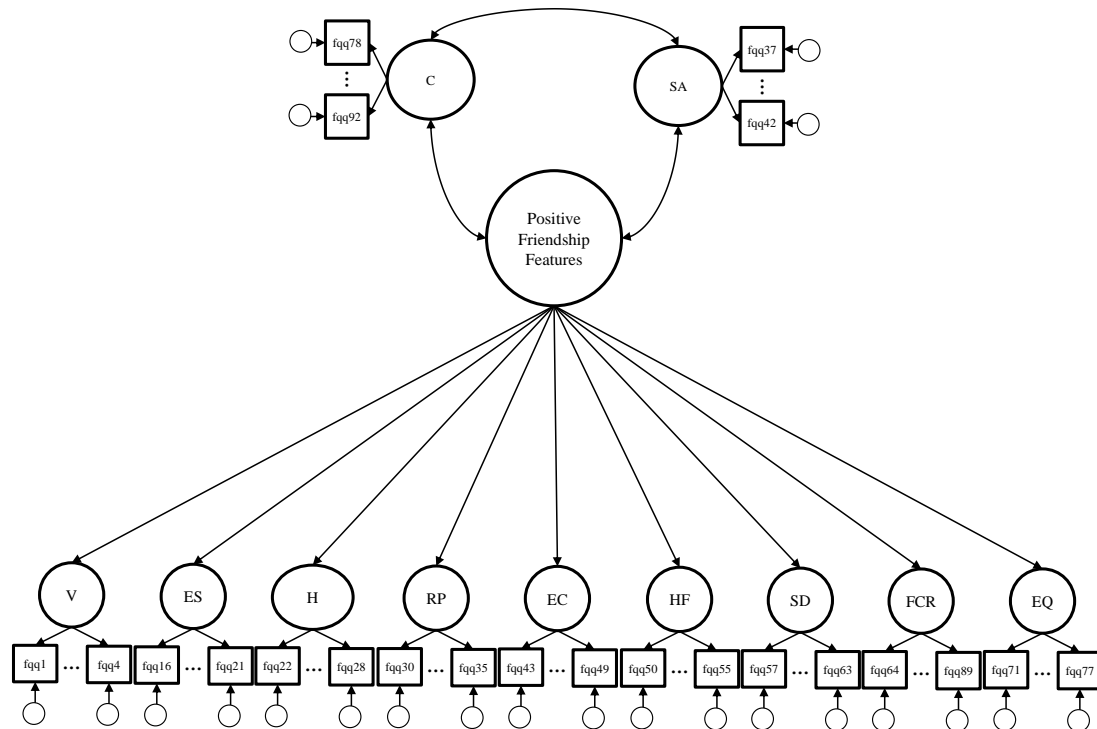
Item	Item Wording	Intended Subscale	Final Subscale	Factor Loading in Baseline Model	Factor Loading in Final Model
fqq74	My friend and I are equal partners in the friendship.	EQ	EQ	.712	.682
fqq75	There is a spirit of fairness in my friendship with my friend.	EQ	EQ	.735	.706
fqq76	My friend and I take each other's wishes and feelings into account.	EQ	EQ	.686	.726
fqq77	My friendship with my friend is one-sided. *	EQ	EQ	-.621	-.580
fqq85	If my friend and I get into an argument, we are good at getting over it.	CR	—	.693	—
fqq86	If my friend and I get into a fight we do not make up easily.*	CR	—	-.602	—
fqq87	My friend and I are good at resolving conflicts with one another.	CR	FCR	.712	.685
fqq88	If my friend and I get into an argument we stay mad at each other for a long time.*	CR	—	-.728	—
fqq89	My friend and I can easily manage disagreements.	CR	FCR	.683	.658

Item	Item Wording	Intended Subscale	Final Subscale	Factor Loading in Baseline Model	Factor Loading in Final Model
fqq90	If my friend and I have a disagreement we have trouble working it out.*	CR	—	-.579	—
fqq91	My friend and I compromise with each other when we disagree about what to do.	CR	—	.568	—
fqq78	My friend and I get irritated with one another a lot.	C	C	.734	.759
fqq79	My friend and I disagree with one another a lot.	C	C	.715	.747
fqq80	My friend and I get into fights with each other.	C	—	.642	—
fqq81	It seems like my friend and I disagree with each other all of the time.	C	C	.734	.750
fqq82	My friend and I hardly ever have arguments about our friendship.*	C	C	-.624	-.625
fqq83	My friend and I make decisions easily about things like what to do and where to go.*	C	—	-.454	—
fqq84	My friend and I get along very well.*	C	—	-.521	—

Item	Item Wording	Intended Subscale	Final Subscale	Factor Loading in Baseline Model	Factor Loading in Final Model
fqq92	There is a lot of conflict in my friendship with my friend.	C	C	.707	.701
fqq93	My friend and I usually agree about things.	C	—	-.547	—
	Validation Subscale	Positive	Positive	.951	.950
	Comfort/Security/Safety Subscale	Positive	—	-.949	—
	Emotional Support Subscale	Positive	Positive	-.910	.941
	Instrumental Help Subscale	Positive	Positive	.893	.900
	Reliable Partnership Subscale	Positive	Positive	.907	.902
	Shared Activities Subscale	Positive	—	.431	—
	Enjoyable Companionship Subscale	Positive	Positive	-.878	-.868

Item	Item Wording	Intended Subscale	Final Subscale	Factor Loading in Baseline Model	Factor Loading in Final Model
	Honest Feedback Subscale	Positive	Positive	.815	.811
	Self-Disclosure Subscale	Positive	Positive	.832	.832
	Forgiveness Subscale	Positive	—	.941	—
	Spirit of Equality Subscale	Positive	Positive	.914	.938
	Conflict Resolution Subscale	Positive	—	.845	—
	Conflict Resolution/Forgiveness Subscale	—	Positive	—	.897

*Note.* Subscale abbreviations are as follows: V=Validation, CSS=Comfort/Security/Safety, ES=Emotional Support, H=Instrumental Help, RP=Reliable Partnership, SA=Shared Activities, EC=Enjoyable Companionship, HF=Honest Feedback, SD=Self-Disclosure, F=Forgiveness, EQ=Spirit of Equality, CR=Conflict Resolution, C=Conflict, FCR=Forgiveness/Conflict Resolution; items marked with an asterisk are reverse-scored. Parameter estimates from the baseline model are for the model depicted in Figure 1; parameter estimates from the final model are for the model depicted in Figure 2. Parameter estimates are standardized factor loadings ( $\lambda$ ) from confirmatory factor analyses conducted in MPlus using FIML estimation; for all estimates  $p < .001$ .



**Figure 2: Final Measurement Model for the Revised Friendship Features Questionnaire for Adults (RFFQ-A)**

*Note.* Subscale abbreviations are as follows: V=Validation, ES=Emotional Support, H=Instrumental Help, RP=Reliable Partnership, EC=Enjoyable Companionship, HF=Honest Feedback, SD=Self-Disclosure, FCR=Forgiveness/Conflict Resolution EQ=Spirit of Equality, C=Conflict, SA=Shared Activities. In keeping with field conventions, observed variables are represented with squares/rectangles and latent/unobserved variables are represented with circles/ellipses. Observed variables in the model are responses to the individual items on the RFFQ-A, and latent variables are the hypothesized friendship features subscales and the higher-order positive friendship quality composite. A number of parameters have been omitted from the path diagram for clarity of presentation. Omitted parameters include disturbance terms, as well as the second and third (for Validation) or second through fourth (for all other subscales) indicators and their uniquenesses for each friendship feature subscale (this omission is represented by an ellipsis in the above diagram); a correlation between the uniqueness of fqq31 and fqq34 was also omitted. Individual parameter estimates for first-order and second-order factor loadings are presented in Table 6.

The final model fit the data relatively well ( $\chi^2 [1364] = 4158.46, p < .001$ ; RMSEA = .045 [90% CI = .044 – .047]; CFI = .91) and was retained as the best-fitting model. A path diagram of the final model is presented in Figure 2. As can be seen in Table 7, each of the subscales had very good internal reliability, and the internal reliability of the composite positive friendship quality factor was excellent ( $\alpha = .97$ ). Interestingly, although previous research has often found that positive and negative features of friendship are not highly correlated (see Bagwell & Schmidt, 2011), the correlation between the friendship conflict subscale and the positive friendship quality composite in the current study was rather high ( $r = -.62$ ).

In addition to examining overall model fit, it was also important to examine whether the factor structure of the RFFQ-A was similar for males and females (i.e., to examine the invariance of the measurement model across gender). It is important to examine measurement invariance across groups to ensure that a measurement instrument behaves comparably across these groups. If a measurement instrument does behave similarly across groups, it indicates that the meaning of the construct of interest is similar across those groups and analyses can be conducted for the two groups combined. If it does not, it indicates that the meaning of the construct is somehow different across groups, and analyses should be conducted for each group separately rather than pooled together.

**Table 7: Internal Reliabilities for the Revised Friendship Features Questionnaire for Adults (RFFQ-A) and the Loneliness in Context Questionnaire for Adults**

Scale/Subscale	Internal Reliability ( $\alpha$ )
<b>RFFQ-A</b>	
Validation	.84
Emotional Support	.91
Instrumental Help	.85
Reliable Partnership	.87
Shared Activities	.92
Enjoyable Companionship	.87
Honest Feedback	.89
Self-Disclosure	.84
Spirit of Equality	.81
Forgiveness/Conflict Resolution	.87
Positive Friendship Features Composite	.97
Friendship Conflict	.84
Loneliness in Context Questionnaire for Adults	.91

Within a structural equation modeling framework, different levels of invariance can be tested, varying in their levels of stringency (for discussions see Byrne, 2012; Hoyle, 2011; Kline, 2006). The least stringent level of invariance is “configural invariance,” which means that each group shows the same pattern of zero and non-zero factor loadings (e.g., an item loads on the same factor across groups). The next most stringent level of invariance is “weak metric invariance,” which means that not only the *pattern* of factor loadings but also the *magnitude* of factor loadings is equivalent across

groups. The next most stringent level of invariance is “strong metric invariance,” which means that both the factor loadings and item intercepts are equivalent across groups. Finally, the most stringent level of invariance is “strict measurement invariance,” in which, in addition to factor loadings and intercepts, error terms or uniqueness for each item are constrained to be equal across groups. For the RFFQ-A, it was expected that the measurement model would show weak metric invariance, with the pattern and magnitude of factor loadings being equivalent for males and females, but with item intercepts being allowed to vary across groups. It was expected that intercepts would not be equivalent across groups because of previous research and findings from Study 1 documenting mean-level gender differences in many friendship features.

The hypothesis of weak metric invariance was tested by comparing the fit of different multigroup models. In the baseline model, separate models were estimated for males and females specifying the same pattern of zero and non-zero loadings across models (configural invariance), but allowing factor loadings to be freely estimated across models. This baseline model was then compared to a constrained model in which factor loadings were constrained to be equal across groups. With a few small modifications (i.e., the introduction of a correlation between the uniquenesses of fqq16 and fqq21 in the model for males, and the introduction of a correlation between the uniquenesses of fqq59 and fqq63 in the model for females), the hypothesis of weak measurement invariance was supported, indicating that the pattern and magnitude of factor loadings was equivalent across groups ( $\Delta\chi^2(49) = 55.10, p = .255$ ). This finding indicates that scores on the

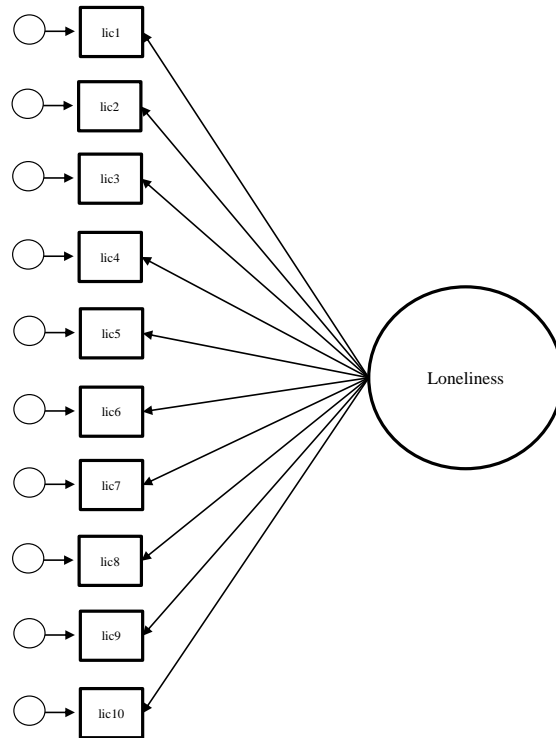


individual subscales and the overall positive friendship features composite of the RFFQ-A have similar meaning for males and females, and thus it is a meaningful exercise to make comparisons across groups.

**Measurement development goal 2: Examining the factor structure and the psychometric properties of the Loneliness in Context Questionnaire for Adults.** The factor structure and internal reliability of the revised Loneliness in Context Questionnaire for Adults was also examined in a separate measurement model. The ten items on the Loneliness in Context Questionnaire for Adults were hypothesized to load on a single latent factor reflecting global loneliness. With slight modifications (specification of a correlation between the uniquenesses for lic6 and lic7, lic2 and lic10, and lic1 and lic5) this model fit the data relatively well ( $\chi^2 [32] = 188.99, p < .001$ ; RMSEA = .070 [90% CI = .060 – .080]; CFI = .97), and the internal reliability of the scale was excellent ( $\alpha = .91$ ). A path diagram of the final model is presented in Figure 3, and internal reliability and parameter estimates and for the final model are presented in Tables 7 and 8, respectively.

With regard to measurement invariance, a hypothesis of strong metric invariance was tested, since there was no evidence that individual intercepts would be likely to vary as a function of gender. This hypothesis was tested with a model comparison approach in which a model allowing the factor loadings to be freely estimated across groups was compared to a model in which the factor loadings were constrained to be equal. The

constrained model fit the data just as well as the freely estimated model, supporting the hypothesis of strong metric invariance ( $\Delta\chi^2(10) = 10.31, p = .414$ ).



**Figure 3: Measurement Model for the Loneliness in Context Questionnaire for Adults**

*Note.* In keeping with field conventions, observed variables are represented with squares/rectangles and latent/unobserved variables are represented with circles/ellipses. Observed variables in the model are responses to the individual items on the Loneliness in Context Questionnaire for Adults. The variance of the latent variable and correlations between the uniquenesses of lic6 and lic7, lic2 and lic10, and lic1 and lic5 are omitted from this diagram for clarity of presentation.

**Table 8: Items and Factor Loadings for the Loneliness in Context Questionnaire for Adults**

Item	Item Wording	Factor Loading in Final Model
lic1	Mornings are a lonely time for me.	.639
lic2	I am lonely in the evening.	.727
lic3	My place of residence is a lonely place for me.	.759
lic4	My free time is a lonely time for me.	.747
lic5	I feel sad and alone on weekends.	.776
lic6	I am lonely with other people.	.635
lic7	I feel sad and alone at social events.	.638
lic8	I am lonely during meal times.	.716
lic9	I feel sad and alone when I am running errands.	.632
lic10	Bed time is a lonely time for me.	.672

*Note.* Parameter estimates are from the model depicted in Figure 3. Parameter estimates are standardized factor loadings ( $\lambda$ ) from confirmatory factor analyses conducted in MPlus using FIML estimation; for all estimates  $p < .001$ .

**Descriptive information about participants from MTurk and participants from the psychology participant pool.** As in Study 1, participants reported relatively low levels of loneliness, relatively high levels of positive friendship features, and relatively low levels of friendship conflict. Participants also reported relatively high levels of satisfaction with their closest friendship. Before addressing the hypothesis-testing goals of the study, however, it is important to note several mean-level differences that emerged between the university participant pool sample ( $n = 215$ ) and the MTurk sample ( $n = 793$ ). Mean-level differences between the two samples were examined with univariate analyses of variance (for loneliness, friendship satisfaction, and overall positive friendship quality) and multivariate analyses of variance with follow-up univariate analyses (for the 11 individual friendship features). Means, standard deviations, and  $F$  ratios for these comparisons between samples are presented in Table 9; please note that positive effect sizes indicate that participant pool participants were higher on a particular variable and negative effect sizes indicate that MTurk participants were higher on a particular variable. For friendship satisfaction, note that preliminary analyses revealed that the distribution of responses for the measure in the current study deviated significantly from normality (skew = -1.81, kurtosis = 4.01). To correct this negative skew, a square transformation was performed on the friendship satisfaction variable, which brought values of skewness and kurtosis into the acceptable range (skew = -1.03, kurtosis = .46). All analyses with friendship satisfaction were therefore conducted with this square-transformed friendship satisfaction variable rather than the raw variable.

**Table 9: Sample Differences in Mean Scores for Loneliness, Friendship Satisfaction (Squared), Friendship Closeness, and Friendship Features**

	Participant Pool		MTurk		<i>F</i>	<i>d</i>
	Mean (SD)					
Loneliness	2.06	(.64)	2.27	(.77)	12.91 <sup>***</sup>	-.28
Friendship Satisfaction (Squared)	184.06	(46.63)	171.63	(55.68)	9.00 <sup>**</sup>	.23
<b>Friendship Features</b>						
Shared Activities	5.98	(1.09)	5.28	(1.50)	41.09 <sup>***</sup>	.49
Conflict	2.21	(1.12)	2.11	(1.10)	1.34	.09
Validation <sup>‡</sup>	5.93	(.97)	5.87	(.99)	.74	.07
Emotional Support <sup>‡</sup>	6.06	(1.02)	5.86	(1.12)	5.60 <sup>*</sup>	.18
Instrumental Help <sup>‡</sup>	5.93	(.93)	5.90	(.95)	.17	.03
Reliable Partnership <sup>‡</sup>	6.17	(.89)	5.97	(1.10)	5.89 <sup>*</sup>	.19
Enjoyable Companionship <sup>‡</sup>	6.51	(.74)	6.35	(.79)	7.22 <sup>**</sup>	.21
Honest Feedback <sup>‡</sup>	6.11	(.90)	6.06	(.95)	.33	.04
Self-Disclosure <sup>‡</sup>	6.05	(.97)	5.89	(1.11)	3.52	.14
Spirit of Equality <sup>‡</sup>	6.01	(.82)	5.92	(.97)	1.75	.10
Forgiveness/Conflict Resolution <sup>‡</sup>	6.09	(.80)	6.01	(.92)	1.39	.09
Positive Friendship Features Composite	6.10	(.74)	5.99	(.84)	3.56	.15

*Note.* Subscales marked with a double dagger are included in the Positive Friendship Quality Composite. \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ .

On average, participants from the psychology participant pool reported lower levels of loneliness ( $F(1, 1006) = 12.91, p < .001, d = -.28$ ) and higher levels of friendship satisfaction ( $F(1, 1006) = 9.00, p = .003, d = .23$ ) than did participants from the MTurk sample. With regard to individual friendship features, there was a significant multivariate effect of sample (Wilks's  $\lambda = .94, F(11, 996) = 6.14, p < .001$ ), and univariate follow-up tests revealed statistically significant differences in emotional support ( $F(1, 1006) = 5.60, p = .018, d = .18$ ), reliable partnership ( $F(1, 1006) = 5.89, p = .015, d = .19$ ), enjoyable companionship ( $F(1, 1006) = 7.22, p = .007, d = .21$ ), and shared activities ( $F(1, 1006) = 41.09, p < .001, d = .49$ ).

Participants recruited from the participant pool reported higher levels of emotional support, reliable partnership, enjoyable companionship, and shared activities than did participants recruited from MTurk. Although data were not collected on how near or far participants lived from their closest friends, it seems likely that participants in the MTurk sample live further away from their friends and therefore spend less time with them than do participants who live in a residential college environment, which would explain the relatively large difference in shared activities observed between the two samples. With regard to overall positive friendship quality, however, there was not a statistically significant difference between samples ( $F(1, 1006) = 3.56, p = .060, d = .15$ ).

**Hypothesis testing goal 1: Examine whether the paradox observed in Study 1 was replicated in this sample, and expand to consider the more proximal outcome of friendship satisfaction.** To address this first hypothesis-testing goal, multivariate and

univariate analyses of variance were conducted to test gender differences in friendship features, friendship satisfaction (squared), and loneliness. Since the two friendship satisfaction items were highly correlated ( $r = .88, p < .001$ ) they were averaged together to create a single friendship satisfaction composite score ( $\alpha = .93$ ). As noted above, this composite score was square transformed to correct a significant negative skew. Note that positive effect sizes indicate that males were higher on a particular variable, whereas negative effect sizes indicate that females were higher on a particular variable. Table 10 presents means, standard deviations,  $F$  ratios, and effect sizes for each comparison described below.

Mean scores for the 11 friendship features retained in the final factor solution were included in a multivariate analysis of variance with gender as the between-subject factor, which yielded a statistically significant multivariate effect (Wilks's  $\lambda = .75, F(11, 996) = 29.88, p < .001$ ). Follow-up univariate ANOVAs revealed significant gender differences for ten of the 11 friendship features, with shared activities being the only factor showing no difference ( $F(1, 1006) = .03, p = .569, d = .04$ ). Effects sizes ranged from small-to-medium for honest feedback ( $F(1, 1006) = 28.51, p < .001, d = -.35$ ), reliable partnership ( $F(1, 1006) = 38.40, p < .001, d = -.41$ ), instrumental help ( $F(1, 1006) = 46.77, p < .001, d = -.45$ ), forgiveness/conflict resolution ( $F(1, 1006) = 49.16, p < .001, d = -.46$ ), spirit of equality ( $F(1, 1006) = 52.79, p < .001, d = -.48$ ), and conflict ( $F(1, 1006) = 54.83, p < .001, d = .49$ ), to medium-to-large/large for enjoyable companionship ( $F(1, 1006) = 102.28, p < .001, d = -.78$ ), emotional support ( $F(1, 1006)$

= 151.68,  $p < .001$ ,  $d = -.81$ ), self-disclosure ( $F(1, 1006) = 159.56$ ,  $p < .001$ ,  $d = -.83$ ), and validation ( $F(1, 1006) = 171.59$ ,  $p < .001$ ,  $d = -.86$ ).

Using the revised and expanded assessment of friendship features, gender differences emerged across almost all of the friendship features. As was seen in Study 1, females reported higher levels of each positive friendship feature (except for shared activities) and lower levels of conflict within their closest friendship as compared to males. Effect sizes for gender were larger with the RFFQ-A than with the Friendship Quality Questionnaire, likely because of the improved precision in assessment (i.e., higher internal reliabilities). It is interesting to note that the two factors of shared activities and enjoyable companionship, which have often been lumped together in previous assessments of friendship quality, showed distinct patterns of gender effects with a small and nonsignificant gender difference for shared activities (i.e., the amount of time friends spend together), and a medium-to-large sized gender difference for enjoyable companionship (i.e., how much fun friends have when they are together). This pattern of findings highlights the importance of considering these two friendship features separately rather than as one composite scale.



**Table 10: Gender Differences in Loneliness, Friendship Satisfaction (Squared), and Friendship Features**

	Males		Females		<i>F</i>	<i>d</i>
	Mean (SD)					
<b>Friendship Features</b>						
Shared Activities	5.47	(1.29)	5.41	(1.54)	.03	.04
Conflict	2.47	(1.14)	1.94	(1.04)	54.83***	.49
Validation <sup>‡</sup>	5.38	(1.05)	6.16	(.82)	171.59***	-.86
Emotional Support <sup>‡</sup>	5.37	(1.19)	6.20	(.92)	151.68***	-.81
Instrumental Help <sup>‡</sup>	5.64	(1.00)	6.06	(.87)	46.77***	-.45
Reliable Partnership <sup>‡</sup>	5.74	(1.12)	6.16	(1.00)	38.40***	-.41
Enjoyable Companionship <sup>‡</sup>	6.07	(.92)	6.65	(.63)	102.28***	-.78
Honest Feedback <sup>‡</sup>	5.87	(1.01)	6.19	(.87)	28.51***	-.35
Self-Disclosure <sup>‡</sup>	5.39	(1.19)	6.23	(.89)	159.56***	-.83
Spirit of Equality <sup>‡</sup>	5.66	(.98)	6.09	(.87)	52.79***	-.48
Forgiveness/Conflict Resolution <sup>‡</sup>	5.76	(.96)	6.17	(.83)	49.16***	-.46
Positive Friendship Features Composite	5.67	(.88)	6.21	(.71)	113.74***	-.70
Loneliness	2.22	(.76)	2.23	(.75)	.03	-.01
Friendship Satisfaction (Squared)	168.35	(54.03)	177.64	(53.89)	6.90**	-.17

*Note.* Subscales marked with a double dagger are included in the Positive Friendship Features Composite. \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ .

The gender effect for the positive friendship quality composite was also examined using univariate analysis of variance (this composite includes items from the validation,

emotional support, instrumental help, reliable partnership, enjoyable companionship, honest feedback, self-disclosure, forgiveness/conflict resolution, and spirit of equality subscales). As would be expected from the gender differences found for the individual subscales, the size of the gender effect for the positive friendship quality composite was relatively large ( $F(1, 1006) = 113.74, p < .001, d = -.70$ ), with females reporting higher levels of positive friendship quality than did males.

Univariate analyses of variance were also employed to test for gender differences in loneliness and friendship satisfaction. With regard to loneliness, the gender effect was once again small and nonsignificant ( $F(1, 1006) = .03, p = .854, d = -.01$ ). Taken together with the findings regarding gender differences in friendship features, these findings again document the paradox of medium- to large-sized gender differences in friendship features coupled with small and nonsignificant gender differences in loneliness.

With regard to friendship satisfaction, as has been found in some previous research with adults (e.g., Jones, 1991), males reported lower levels of friendship satisfaction than did females, although this effect was relatively modest ( $F(1, 1006) = 6.90, p = .009, d = -.17$ ). These findings extend those from Study 1 by using a revised and expanded assessment of friendship features and a revised assessment of loneliness in a broader sample of young adults. In addition, the inclusion of friendship satisfaction provides a second, more proximal outcome with which to examine the links between gender, friendship features, and socioemotional outcomes. Interestingly, the findings

with regard to friendship satisfaction were not as “paradoxical” as the findings for loneliness, in that males did report lower levels of satisfaction with their friendships than did females, as would be expected based on their reports of lower levels of positive friendship features and higher levels of friendship conflict. Still, the differences in satisfaction were quite small given the magnitude of gender differences in friendship features, so some level of paradox remains.

Table 11 presents zero-order correlations among gender, loneliness, friendship satisfaction (squared), and friendship features. Although still in the modest range, the correlations among friendship features subscales assessed with the RFFQ-A in Study 2 were stronger than were the correlations observed in Study 1. This is likely due to the increased precision of measurement (as indicated by the higher levels of internal reliability at the subscale level and at the overall composite level), suggesting that the correlations observed in Study 1 may have been attenuated as a result of measurement error.

**Hypothesis Testing Goal 2: Testing whether the suppression effect in the link between gender and loneliness observed in Study 1 replicates.** The second hypothesis-testing goal of the current study was to test whether the suppression effect observed in Study 1 would replicate with a revised and expanded assessment of friendship features and a revised assessment of loneliness in a broader, independent sample. To address this goal, two sets of hierarchical multiple regression analyses were conducted.

**Table 11: Zero-Order Correlations Among Gender, Loneliness, Friendship Satisfaction (Squared), and Friendship Features**

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Gender	—													
2. Loneliness	.01	—												
3. Satisfaction (Squared)	.08**	-.35***	—											
4. SA	-.02	-.29***	.51***	—										
5. C	-.23***	.24***	-.42***	-.12***	—									
6. V†	.38***	-.27***	.58***	.30***	-.47***	—								
7. ES†	.36***	-.29***	.61***	.29***	-.45***	.81***	—							
8. H†	.21***	-.29***	.58***	.35***	-.45***	.73***	.72***	—						
9. RP†	.19***	-.31***	.66***	.35***	-.52***	.69***	.74***	.73***	—					
10. EC†	.30***	-.31***	.57***	.37***	-.48***	.72***	.69***	.64***	.65***	—				
11. HF†	.16***	-.26***	.52***	.27***	-.35***	.62***	.67***	.67***	.64***	.63***	—			
12. SD†	.37***	-.31***	.56***	.38***	-.39***	.67***	.75***	.58***	.60***	.62***	.56***	—		
13. EQ†	.22***	-.31***	.65***	.36***	-.55***	.71***	.72***	.72***	.72***	.69***	.63***	.61***	—	
14. FCR†	.22***	-.26***	.63***	.28***	-.53***	.69***	.72***	.69***	.69***	.69***	.67***	.60***	.75***	—
15. Positive Features Composite	.32***	-.35***	.71***	.39***	-.56***	.86***	.90***	.85***	.86***	.82***	.80***	.80***	.85***	.85***

Note. Gender is dummy coded (0 = male, 1 = female). Subscale abbreviations are as follows: SA=Shared Activities, C=Conflict, V=Validation, ES=Emotional Support, H=Instrumental Help, RP=Reliable Partnership, EC=Enjoyable Companionship, HF=Honest Feedback, SD=Self-Disclosure, FCR=Forgiveness/Conflict Resolution, EQ=Spirit of Equality. Subscales marked with a double dagger are included in the Positive Friendship Features Composite. \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ .

The first set of analyses examined whether the suppression effect would emerge when the positive friendship features composite, friendship conflict, and shared activities were entered as predictors of loneliness. Table 12 presents model parameter estimates from this first set of analyses. In the first step of this analysis, gender was included as a predictor. In the second step of this analysis, the positive friendship quality composite, friendship conflict, and shared activities were entered as predictors. Interaction effects between positive friendship features and gender, friendship conflict and gender, and shared activities and gender were also included in the second step of this analysis. None of these interaction effects was statistically significant, so for clarity of presentation parameter estimates for these interaction effects are omitted from Table 12. For all analyses, continuous predictor variables (i.e., friendship features) were mean centered prior to the creation of interaction terms to avoid unnecessary collinearity among predictors.

Overall, the model including gender, the positive friendship features composite, friendship conflict, and shared activities moderately contributed to loneliness ( $R^2_{\text{adj}} = .16$ ). In the first step of this analysis, the coefficient for gender was small and nonsignificant ( $b^*_{\text{gender}} = .01, t = .18, p = .854; R^2_{\text{adj}} = .00$ ). When positive friendship features, friendship conflict, and shared activities were entered into the model, this effect became positive (indicating that females were reporting higher levels of loneliness) and statistically significant ( $b^*_{\text{gender}} = .11, t = 3.48, p < .001; sr^2 = .01$ ). That is, the suppression effect in the link between gender and loneliness observed in Study 1 was

replicated in this broader independent sample with revised assessments of friendship features and loneliness.

**Table 12: Predicting Loneliness from Gender and the Positive Friendship Features Composite**

	Step 1			Step 2		
	$b^*$	$t$ value	$sr^2$	$b^*$	$t$ value	$sr^2$
Gender	.01	.18	.000	.11	3.48***	.01
Positive Friendship Features				-.26	6.64***	.04
Friendship Conflict				.10	2.72**	.01
Shared Activities				-.17	5.32***	.02
Adjusted $R^2$		.000			.16***	
$\Delta R^2$		—			.16***	

*Note.* Interaction terms capturing the interactions between gender and each of the three friendship features variables were tested, but were not statistically significant. Gender is dummy coded (0 = male, 1 = female);  $sr^2$  = squared semi-partial correlation. \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ .

The second set of analyses tested the possibility that the suppression effect might emerge at the level of individual friendship features. For this set of analyses, 11 separate analyses were conducted. Each analysis included gender as a predictor in the first step of the analysis, one of the friendship features subscales as a predictor in the second step of the analysis, and the interaction between gender and that friendship feature also in the

second step of the analysis. These models were estimated separately rather than as one single model including all 11 friendship features subscales because of concerns about multicollinearity among the different friendship features. Table 13 presents parameter estimates from each of these models.

In this set of analyses, overall model  $R^2_{\text{adj}}$  ranged from .06 for the model including friendship conflict to .11 for the models including enjoyable companionship and self-disclosure.

With regard to individual subscales, the suppression effect emerged for nine of the 11 friendship features considered. Specifically, at statistically equated levels of validation ( $b^*_{\text{gender}} = .13, t = 3.85, p < .001; sr^2 = .01$ ), emotional support ( $b^*_{\text{gender}} = .12, t = 3.83, p < .001; sr^2 = .01$ ), instrumental help ( $b^*_{\text{gender}} = .07, t = 2.21, p = .027; sr^2 = .004$ ), reliable partnership ( $b^*_{\text{gender}} = .07, t = 2.26, p = .024; sr^2 = .005$ ), enjoyable companionship ( $b^*_{\text{gender}} = .11, t = 3.41, p < .001; sr^2 = .01$ ), self-disclosure ( $b^*_{\text{gender}} = .13, t = 4.19, p < .001; sr^2 = .02$ ), forgiveness/conflict resolution ( $b^*_{\text{gender}} = .06, t = 1.97, p = .049; sr^2 = .004$ ), spirit of equality ( $b^*_{\text{gender}} = .08, t = 2.51, p = .012; sr^2 = .01$ ), and conflict ( $b^*_{\text{gender}} = .06, t = 2.00, p = .045; sr^2 = .004$ ), females reported higher levels of loneliness than did males. The suppression effect did not emerge for shared activities ( $b^*_{\text{gender}} = .00, t = .03, p = .978; sr^2 = .000$ ) and honest feedback ( $b^*_{\text{gender}} = .05, t = 1.66, p = .100; sr^2 = .003$ ). This was not surprising for shared activities because males and females reported similar levels of that feature within their closest friendships. Without a mean-level gender difference a suppression effect would be unlikely to occur.

**Table 13: Predicting Loneliness from Gender and Individual Friendship Features Subscales**

	Friendship Feature			Gender			$p_{interaction}$	$R^2_{adj.}$
	$b^*$	$t$ value	$sr^2$	$b^*$	$t$ value	$sr^2$		
Validation	-.30	6.43***	.04	.13	3.85***	.01	.573	.09***
Emotional Support	-.30	6.55***	.04	.12	3.83***	.01	.316	.10***
Instrumental Help	-.29	6.09***	.03	.07	2.21*	.004	.692	.08***
Reliable Partnership	-.34	7.16***	.05	.07	2.26*	.005	.673	.10***
Enjoyable Companionship	-.30	7.07***	.04	.11	3.41***	.01	.131	.11***
Honest Feedback	-.29	6.07***	.03	.05	1.66	.003	.586	.07***
Self-Disclosure	-.32	7.07***	.04	.13	4.19***	.02	.214	.11***
Forgiveness/Conflict Resolution	-.23	4.94***	.02	.06	1.97*	.004	.266	.07***
Spirit of Equality	-.30	6.30***	.04	.08	2.51*	.01	.380	.10***
Shared Activities	-.27	4.72***	.02	.00	.03	.00	.701	.08***
Conflict	.26	5.19***	.03	.06	2.00*	.004	.894	.06***

*Note.* Gender is dummy coded (0 = male, 1 = female).  $sr^2$  = squared semi-partial correlation;  $p_{interaction}$  =  $p$  value for the test of whether the parameter estimate for the interaction term is significantly different from zero. \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ .



For honest feedback, however, there was a small-to-medium-sized gender effect favoring females ( $d = -.35$ ). This finding suggests that perhaps expectations for honest feedback may be less disparate for males and females, leading to equal levels of loneliness at equal levels of honest feedback within a friendship. Taken together, these findings are in contrast to Study 1, in which a suppression effect was found for the feature of self-disclosure only.

Interaction effects between gender and each of the friendship features were also included in the various models, but none of these effects was statistically significant, indicating that the effect of friendship features on loneliness was similar for males and females.

**Hypothesis testing goal 3: Examining the links among gender, friendship features, and friendship satisfaction.** Friendship satisfaction was also assessed and considered as a criterion variable in the current study. In order to examine the links among gender, friendship features, and friendship satisfaction, two parallel set of analyses to those described for loneliness were conducted. In the first set of analyses, gender was entered as a predictor of friendship satisfaction in the first step of the analysis. In the second step of the analysis, the positive friendship features composite, friendship conflict, and shared activities were entered as predictors of friendship satisfaction. Also in the second step of this analysis, interaction effects between gender and the positive friendship features composite, gender and friendship conflict, and gender and shared activities were entered as predictors.

Table 14 presents model parameter estimates from this analysis. Overall, the model including gender, the positive friendship features composite, friendship conflict, shared activities, and each of their interactions with gender explained approximately 58.2% of the variance in friendship satisfaction ( $R^2_{\text{adj}} = .582$ ). This overall model  $R^2$  was much larger than that observed for loneliness, supporting the contention that friendship satisfaction is more proximally linked to friendship features than is loneliness.

**Table 14: Predicting Friendship Satisfaction (Squared) from Gender and the Positive Friendship Features Composite**

	Step 1			Step 2		
	$b^*$	$t$ value	$sr^2$	$b^*$	$t$ value	$sr^2$
Gender	.08	2.63**	.007	-.12	5.27***	.01
Positive Friendship Features				.48	10.97***	.05
Friendship Conflict				-.17	4.12***	.01
Shared Activities				.25	5.57***	.01
Positive x Gender				.15	3.65***	.01
Conflict x Gender				.09	2.39*	.002
Activities x Gender				.01	.18	.000
Adjusted $R^2$		.006*			.582***	
$\Delta R^2$		—			.578***	

Note. Gender is dummy coded (0 = male, 1 = female);  $sr^2$  = squared semi-partial correlation.  
 \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ .

In contrast to loneliness, mean level gender differences did emerge in friendship satisfaction such that, on average, males reported lower levels of satisfaction with their closest friendship than did females ( $b^*_{\text{gender}} = .08, t = 2.63, p = .009; sr^2 = .007$ ). However, when friendship features were included in the model, a suppression effect emerged such that the gender effect went from positive and significant (indicating that males were less satisfied with their closest friendship) to negative and significant (indicating that, controlling for friendship features, females were *less* satisfied with their closest friendship). The suppression effect emerged for the overall model including the positive friendship quality composite, friendship conflict, and shared activities ( $b^*_{\text{gender}} = -.12, t = 5.27, p < .001; sr^2 = .01$ ).

A second set of analyses tested the possibility that this suppression effect might emerge at the level of individual friendship features. For this set of analyses, 11 separate analyses were conducted. Each analysis included gender as a predictor in the first step of the analysis, one of the friendship features subscales as a predictor in the second step of the analysis, and the interaction between gender and that friendship feature also in the second step of the analysis. These models were estimated separately rather than as one single model including all 11 friendship features subscales because of concerns about multicollinearity among the different friendship features. Table 15 presents parameter estimates from each of these models.

**Table 15: Predicting Friendship Satisfaction (Squared) from Gender and Individual Friendship Features Subscales**

	Friendship Feature			Gender			$p_{interaction}$	$R^2_{adj.}$
	$b^*$	$t$ value	$sr^2$	$b^*$	$t$ value	$sr^2$		
Validation	.57	14.43***	.13	-.15	5.56***	.02	.014	.36***
Emotional Support	.58	15.47***	.14	-.15	5.65***	.02	.003	.40***
Instrumental Help	.55	13.63***	.12	-.04	1.47	.001	.057	.34***
Reliable Partnership	.63	16.78***	.16	-.04	1.76	.002	.178	.44***
Enjoyable Companionship	.53	14.68***	.14	-.10	3.55***	.01	.006	.34***
Honest Feedback	.52	12.32***	.11	.00	.11	.000	.985	.26***
Self-Disclosure	.52	13.28***	.11	-.14	4.92***	.02	.000	.34***
Forgiveness/Conflict Resolution	.60	15.71***	.15	-.05	2.07*	.003	.161	.40***
Spirit of Equality	.64	16.66***	.16	-.06	2.57*	.004	.324	.42***
Shared Activities	.60	11.74***	.10	.09	3.42***	.009	.040	.26***
Conflict	-.49	10.71***	.09	-.02	.69	.000	.061	.18***

Note.  $sr^2$  = squared semi-partial correlation;  $p_{interaction}$  =  $p$  value for the test of whether the parameter estimate for the interaction term is significantly different from zero. \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ .

A clear suppression effect was observed for 6 of the 11 friendship features. These features were validation ( $b^*_{\text{gender}} = -.15, t = 5.56, p < .001; sr^2 = .02$ ), emotional support ( $b^*_{\text{gender}} = -.15, t = 5.65, p < .001; sr^2 = .02$ ), enjoyable companionship ( $b^*_{\text{gender}} = -.10, t = 3.55, p < .001; sr^2 = .01$ ), self-disclosure ( $b^*_{\text{gender}} = -.14, t = 4.92, p < .001; sr^2 = .02$ ), forgiveness/conflict resolution ( $b^*_{\text{gender}} = -.05, t = 2.07, p = .038; sr^2 = .003$ ), and spirit of equality ( $b^*_{\text{gender}} = -.06, t = 2.57, p = .010; sr^2 = .004$ ). In each case, the initially positive gender effect (indicating that females were on average more satisfied with their friendships than were males), became negative and statistically significant, indicating that, when friendship features were statistically controlled, females were actually less satisfied with their friendships than were males. A slight suppression effect emerged for the friendship features of instrumental help ( $b^*_{\text{gender}} = -.04, t = 1.47, p = .141; sr^2 = .001$ ) and reliable partnership ( $b^*_{\text{gender}} = -.04, t = 1.76, p = .078; sr^2 = .002$ ), with the initially positive gender effects becoming slightly negative, but these gender effects did not reach the level of statistical significance. Finally, there was no indication of a suppression effect in the link between gender, shared activities, and friendship satisfaction, and the effect of gender in this model was similar to that observed in the baseline model ( $b^*_{\text{gender}} = .09, t = 3.42, p < .001; sr^2 = .009$ ).

In contrast to the models predicting loneliness, there were a number of statistically significant interaction effects between gender and friendship features in predicting friendship satisfaction. Specifically, the effects of validation ( $b_{\text{interaction}} = 7.40, t = 2.45, p = .014; sr^2 = .004$ ), emotional support ( $b_{\text{interaction}} = 7.71, t = 2.98, p = .003; sr^2 = .004$ ),

= .005), enjoyable companionship ( $b_{\text{interaction}} = 3.74, t = 2.77, p = .006; sr^2 = .005$ ), self-disclosure ( $b_{\text{interaction}} = 10.27, t = 3.75, p < .001; sr^2 = .009$ ), and overall positive friendship quality ( $b_{\text{interaction}} = 13.77, t = 3.65, p < .001; sr^2 = .006$ ) on friendship satisfaction significantly differed across gender. A significant interaction effect was also observed for friendship conflict in the overall composite model ( $b_{\text{interaction}} = 5.94, t = 2.39, p = .017; sr^2 = .002$ ), but this effect did not reach the level of statistical significance in the individual subscale model for conflict ( $b_{\text{interaction}} = 5.46, t = 1.87, p = .061; sr^2 = .003$ ). The converse was true for shared activities, for which a significant interaction effect emerged in the individual subscale model ( $b_{\text{interaction}} = -4.59, t = 2.06, p = .040; sr^2 = .003$ ), but not in the overall composite model ( $b_{\text{interaction}} = .34, t = .18, p = .859; sr^2 = .000$ ). For completeness, the significant interaction effects that were observed for friendship conflict and shared activities will be probed below, but these should be interpreted with caution pending replication in future research. In order to probe these interactions, the online interaction utility created by Preacher, Curran, and Bauer (2006) was used to calculate simple intercepts and simple slopes for the effects of each friendship feature on friendship satisfaction separately for males and females. The results of these tests are presented in Table 16.

Overall, the pattern of results for the interactions was similar across the different friendship features, with the exception of conflict and shared activities. For the majority of the features, although the simple intercepts (indicating the average level of friendship satisfaction for a person at the mean on that friendship feature) for males tended to be

higher, the slopes capturing the relationship between each friendship feature and friendship satisfaction were significantly less steep for males than for females (indicated by the statistical significance of the parameter estimate for the interaction effect). By contrast, although the simple intercepts for females were lower (indicating lower levels of friendship satisfaction at the mean on each friendship feature), the simple slopes capturing the relationship between each friendship feature and friendship satisfaction were significantly steeper for females than for males.

These results indicate that, although females are likely to be less satisfied than males at a given level of a friendship feature, they also seem to experience a greater “boost” in friendship satisfaction with each unit-increase in that friendship feature than do males. In other words, the friendship features of validation, emotional support, enjoyable companionship, self-disclosure, and overall positive friendship quality are more strongly associated with friendship satisfaction for females than for males.

The findings with regard to friendship conflict and shared activities were somewhat different. For conflict, consistent with the previously-described interaction effects, the simple intercept for males was higher than the simple intercept for females indicating that, at the mean of friendship conflict, males were more satisfied with their friendship than were females. In contrast to the previously-described interactions, however, the link between friendship conflict and friendship satisfaction (as indicated by the estimate of the simple slope) was actually *stronger* for males than it was for females. That is, for each unit increase in friendship conflict, males reported a steeper decrease in

friendship satisfaction than did females. Indeed, the estimate of the simple slope for friendship conflict for females was nonsignificant, indicating that there was no significant association between friendship conflict and friendship satisfaction for females.

**Table 16: Simple Intercepts and Simple Slopes for Males and Females for the Link Between Friendship Features and Friendship Satisfaction (Sqaured)**

	Males		Females	
	Simple Intercept	Simple Slope	Simple Intercept	Simple Slope
V	183.97 (2.52)	31.36 (2.17)	166.73 (1.81)	38.75 (2.09)
ES	183.57 (2.41)	28.76 (1.86)	166.73 (1.74)	36.47 (1.80)
EC	180.00 (2.44)	36.87 (2.51)	169.21 (1.81)	47.22 (2.78)
SD	182.07 (2.52)	25.70 (1.94)	166.79 (1.82)	35.97 (1.94)
Positive Composite	181.68 (2.04)	31.66 (2.89)	168.54 (1.44)	45.43 (2.43)
C	181.68 (2.04)	-8.03 (1.95)	168.54 (1.44)	-2.09 (1.54) <sup>ns</sup>
SA	167.58 (2.43)	22.14 (1.89)	177.98 (1.83)	17.55 (1.19)

*Note.* Simple intercepts and simple slopes are significantly different from zero at  $p < .001$  unless otherwise noted, <sup>ns</sup>  $p > .05$ ; slopes for males and females are significantly different from one another at  $p < .05$  (see Table 15 above). Subscale abbreviations are as follows: V=Validation, ES=Emotional Support, EC=Enjoyable Companionship, SD=Self-Disclosure, C=Conflict, SA=Shared Activities.



Finally, for shared activities an opposite pattern emerged. Specifically, for shared activities, males reported lower levels of satisfaction at the mean of shared activities than did females (captured in the sample estimates of the simple intercept for males and females for this feature), but, estimates for the simple slopes indicated that the link between shared activities and friendship satisfaction was actually stronger for males than it was for females. That is, males experienced a greater “boost” in friendship satisfaction than did females for each unit increase in shared activities.

While the patterns of findings that emerged for friendship conflict and shared activities are interesting, they should be interpreted with caution. The interaction effect for friendship conflict emerged in the overall composite model, but not in the feature-specific model (although the interaction effect between gender and friendship conflict in the feature-specific model was marginally significant), and the interaction effect for shared activities emerged in the individual feature model but not in the composite model. Given the inconsistency of these interaction effects across models, it will be important to replicate these findings in an independent sample.

Taken together, these findings are in contrast to previous research, which has found that certain friendship features (i.e., intimacy, mutual assistance, and companionship) contribute to friendship satisfaction equally for males and females (Jones, 1991).

## **Discussion**

Taken together, findings from Study 1 and Study 2 make substantial substantive and measurement development contributions. First, in the substantive realm, this set of studies documents and replicates a fascinating pattern of findings in the links among gender, friendship features, friendship satisfaction, and loneliness using a highly-focused measure of loneliness and a revised and expanded assessment of friendship features. Although there have been hints in previous research that mean-level gender differences in friendship features coexist with mean-level gender similarities in loneliness, the assessments of loneliness used in previous research contain overlapping and confounding item content with item content assessing friendship features. This shortcoming makes it difficult to draw firm conclusions about gender effects on loneliness and about associations between friendship features and loneliness more broadly. In addition, there was a need for more direct and systematic documentations of this paradox. Studies 1 and 2 documented the paradox in independent samples using highly-focused assessments of loneliness and, in Study 2, a revised and considerably expanded assessment of friendship features. Furthermore, the current set of studies has added to this intriguing pattern of findings by documenting and replicating a suppression effect of friendship features on the link between gender and loneliness, as well as documenting an even more striking suppression effect of friendship features on the link between gender and friendship satisfaction. Now replicated in two independent samples, the paradox and suppression effects documented here warrant serious research attention. As discussed above, it is

hypothesized that friendship expectations play a key role in this puzzle. Study 3 will test this hypothesis, and will examine a potential process through which friendship expectations may come to influence friendship satisfaction and feelings of loneliness.

One interesting and unexpected finding that emerged in Study 2 was the interaction effects observed between certain friendship features (i.e., validation, emotional support, enjoyable companionship, self-disclosure, and overall positive friendship features) and gender in predicting friendship satisfaction. In contrast to loneliness, for which no interaction effects were found, interaction probing revealed that the links between overall positive friendship features and friendship satisfaction were actually *stronger* for females than they were for males. A similar pattern of findings emerged at the level of individual friendship features for validation, emotional support, instrumental help, enjoyable companionship, and self-disclosure. So although at statistically equated levels of different friendship features (and overall positive friendship quality) females were less satisfied with their friendships than were males, findings also suggest that females experienced a greater “boost” in friendship satisfaction with each unit-increase in friendship features than did males. Interaction effects were also observed for the features of friendship conflict and shared activities, but these effects were not consistent across models. Probing of these effects revealed stronger links between friendship conflict and friendship satisfaction and between shared activities and friendship satisfaction for males than for females, and Study 2 will examine whether this pattern of findings replicates in an independent sample.

The interaction effects observed between friendship features and friendship satisfaction are in contrast to previous research, which has not found interactions effects between gender and friendship features in predicting satisfaction (Jones, 1991). These differences likely result from differences in assessment strategy. In the current study, the assessment of friendship features was much more comprehensive than the one employed by Jones (1991), and the assessment of friendship satisfaction was a global assessment rather than the domain-specific assessment of friendship satisfaction employed by Jones (1991). The present findings indicate that, at least for some features, males may be less “sensitive” to variations in friendship features than are females, a possibility that deserves attention in future research.

In addition to the substantive contributions of these two studies, Study 2 also makes a substantial contribution in the area of measurement development. Although researchers in the adult literature have been interested in the development and maintenance of friendship, less attention has been paid to the provisions and processes that characterize specific friendships and in understanding how these friendship features contribute to or detract from well-being. The RFFQ-A represents a comprehensive and highly reliable assessment of an individual’s perceptions of the provisions and processes that exist within his or her closest friendship. Confirmatory factor analyses indicated that individual friendship features can be considered at the subscale level, or averaged together into a composite indicator of “positive friendship quality.” In addition, measurement invariance analyses indicated that the measure yields valid and comparable

assessments of different friendship features for males and females. The measure also includes some novel features, such as the separate assessment of shared activities and enjoyable companionship, and the inclusion of a subscale assessing the provision of honest feedback.

Although there are several such measures designed for use with children and adolescents (e.g., the Network of Relationships Inventory, Furman & Buhrmester, 1985; the Friendship Quality Questionnaire, Parker & Asher, 1993; the Friendship Qualities Scale, Bukowski et al., 1994; the Intimate Friendship Scale, Sharabany, 1974), the assessment of a wide range of friendship provisions and processes is less common in the adult literature. The development of such an assessment provides an opportunity for bridge-building between the developmental psychology literature, which tends to focus more on children and adolescents, and the broader field of “relationships research” (bridging disciplines such as social psychology, communication, sociology, and family studies), which tends to focus more on college students and other adults at various stages of the life span. Although the questions that these broad research areas have focused on have been somewhat distinct, there are substantial areas of overlap where both fields would benefit from more “cross-pollination.”

One potential limitation of the current study is that it considered friendship from one partner’s perspective only. Given that a primary focus of the current study was on how *perceptions* of one’s relationships contribute to loneliness, obtaining self-reports of participants’ perceptions of their friendship made sense. For different types of research

questions, however, it may be important to examine the friendship from both partners' perspectives, as well as incorporating more "objective" observational accounts of the processes occurring in the friendship. In addition, examining the role of friendship reciprocity will also be important going forward. This is common practice in the developmental psychology literature where researchers often are able to collect sociometric data from children in an entire class or grade (see Bagwell & Schmidt, 2011), but this becomes more difficult when the pool of potential friends extends beyond a circumscribed context. Some researchers have taken advantage of naturally-occurring more "closed" social systems in the adult world by collecting sociometric data in fraternity, sorority, or work environments (e.g., Ibarra, 1995; Werner & Crick, 1999), and researchers interested in friendship could employ similar strategies to great effect.

A secondary measurement-development contribution of Study 2 is the adaptation of Asher, Weeks, and McDonald's (2010) highly-focused Loneliness in Context Questionnaire for use with a general adult population. Such assessments have now been developed for use with elementary-school, middle-school, high-school, and college students (Asher et al., 2013; Asher et al., 2010), and with the development and validation of an assessment for the general adult population researchers will now have access to "pure" loneliness assessments for basically any population of interest. It is hoped that these assessments will be adopted in the field and will eventually help ameliorate the widespread problem of overlap between assessments of the hypothesized causes of loneliness and the emotional experience of loneliness itself.

In sum, Study 1 and Study 2 provide compelling evidence for a paradoxical pattern of findings with regard to gender, friendship features, and loneliness that has previously gone virtually unnoticed in the literature, and extends the paradox to the more proximal outcome of friendship satisfaction. In addition, Study 2 makes substantial contributions in the area of measurement development by presenting a new and considerably expanded assessment of friendship features for use with adults. Building upon the findings from these two studies, Study 3 will test the hypothesis that gender differences in friendship expectations will explain the suppression effects observed in Study 1 and Study 2, and will examine a potential process through which friendship expectations may come to influence friendship satisfaction and feelings of loneliness.

## CHAPTER 4

### Study 3

Study 3 builds upon and extends findings from Study 1 and Study 2, examining the links among gender, friendship features, friendship expectations, friendship satisfaction, and loneliness in a young adult sample. Study 3 extends the findings from Study 1 and Study 2 in four specific ways. First, Study 3 tests the hypothesis that females hold higher expectations for their friends than do males across a wide range of friendship features. This hypothesis was tested by examining two different facets of friendship expectations, both of which involve examining friendship expectations across the 11 different friendship provisions and processes assessed with the RFFQ-A (i.e., validation, emotional support, instrumental help, reliable partnership, shared activities, enjoyable companionship, honest feedback, self-disclosure, forgiveness/conflict resolution, spirit of equality, and conflict). The first facet of friendship expectations involves asking people how important it is for a friend to fulfill a given expectation. The second facet of friendship expectations involves examining where individuals “set the bar” within each of the 11 friendship features domains, and is designed to assess what specific standards individuals employ in making judgments about whether or not a friend has fulfilled a given expectation—that is, what a friend needs to do in order to fulfill a given expectation. Taken together, assessing these two different facets of the friendship expectations construct will provide a more nuanced picture of the specific expectations



individuals hold for their friends, and how these expectations may contribute to socioemotional well-being.

Second, Study 3 tests the hypothesis that gender differences in friendship expectations (if observed) will explain the suppression effects observed in Study 1 and Study 2. That is, it is hypothesized that the fact that females tend to hold higher expectations for their relationships than do males will explain the finding that, at statistically equated levels of friendship features, females reported higher levels of loneliness and lower levels of friendship satisfaction than did males.

Third, Study 3 provides a test of a fundamental hypothesis derived from the cognitive discrepancy perspective on loneliness—that discrepancies between friendship expectations and perceptions of friendship “realities” are a key correlate of loneliness. Fourth and finally, Study 3 investigates whether and how friendship expectations predict responses to specific friendship situations. Specifically, Study 3 employs a hypothetical situations methodology to examine how friendship expectations may influence responses to situations involving ambiguous violations of friendship expectations.

In order to accomplish the goals of Study 3, a number of measurement development goals must also be accomplished, including the development of two new assessments of friendship expectations that parallel the revised and expanded assessment of friendship features developed in Study 2, and the development of a set of hypothetical situations that present ambiguous friendship expectation-violations across the friendship features dimensions assessed in the RFFQ-A. The content of and rationale behind these

newly-developed measures will be described in more detail following an in-depth review of the existing literature on gender, friendship expectations, friendship satisfaction, and loneliness, highlighting gaps in the literature which Study 3 seeks to address.

**Theory and research on relationship expectations.** Friendship expectations serve as the standards against which individuals evaluate their own and others' behavior as a friend (Hall, 2011). These expectations have been shown to play a role in the maintenance and dissolution of friendships (e.g., Argyle & Henderson, 1984; Fehr, 2004), and are hypothesized to play an important role in the development of friendships as well (e.g., Hall, 2011). Indeed, Holmes (2002) has argued that “expectations are the fundamental building blocks of social cognition and play a crucial role in determining interpersonal behavior, a role that has not been sufficiently understood” (p. 2).

Through the use of essays, interviews, and open-ended prompts, research has been conducted on the expectations people hold for friendship. The bulk of this research has been conducted with children (for exceptions see, Argyle & Henderson, 1984; Reisman & Shorr, 1978). Early research on friendship expectations documented important age-related changes in children's understanding of what it means to be a friend (e.g., Argyle & Henderson, 1984; Bigelow & LaGaipa, 1975; Clark & Ayers, 1993; Reisman & Shorr, 1978; Smollar & Youniss, 1982). Specifically, it appears that expectations for more concrete behavioral features of friendship (e.g., expectations that friends should share, help each other when needed, do things together, talk to one another) tend to dominate children's descriptions of their friendship expectations earlier in development, and

expectations related to more abstract features of friendship (e.g., expectations that friends should be dependable, trustworthy, understanding, emotionally supportive) tend to become increasingly mentioned as children age (e.g., Bigelow, 1977; Furman & Bierman, 1984; Smollar & Youniss, 1982). Importantly, it does not seem to be the case that expectations for more concrete behavioral features decrease with age, but rather that expectations developed earlier on are maintained over time, in addition to more abstract expectations that are developed with age.

It is important to note, however, that studies asking children to write about or describe their friendship expectations may not be able to capture the true sophistication of young children's understanding of friendship since their language comprehension and production capabilities are limited compared to that of older children. Researchers have found that younger children do show a comparatively richer understanding of friendship when story-recognition and picture-sequencing tasks are used rather than open-ended interviews (Bigelow, 1983; Furman & Bierman, 1984), suggesting that traditional methods of assessing friendship expectations may underestimate what young children understand about friendship. Even in studies employing less language-dependent assessments, though, it is the case that more concrete behavioral expectations of friends tend to precede more abstract ones.

The picture that emerges from these early studies highlights the importance of friendship for the social-cognitive development of youth. Smollar and Youniss (1982) proposed the "Sullivan-Piaget Hypothesis," which suggests that, through interaction with

specific friends, children come to develop increasingly sophisticated understandings of social relations and the social world more generally. Smollar and Youniss (1982) developed this hypothesis in a number of in-depth interview studies. Based on observations from these studies, Smollar and Youniss proposed that children progress through three loosely-organized stages of understanding about friendship. In the first stage of friendship concept development proposed by Smollar and Youniss (1982), friendship is conceptualized as developed through proximity, engagement in positive interaction, and mutual cooperation. The major expectation of friends in this stage is that they will maintain a certain level of positivity in friendship interactions, and an understanding is developed that friendship persists through the mutual cooperation and commitment of both parties. In the second stage of friendship concept development proposed by Smollar and Youniss (1982), children begin to see friendship as based not only on proximity and cooperation, but also on shared characteristics and personal qualities of the partners. At this stage it becomes important to share some personal characteristics or features in common. Finally, in the third stage of friendship concept development proposed by Smollar and Youniss (1982), mutual interpersonal sensitivity and emotional support become recognized as important features of friendship. In this final phase, acceptance and supportiveness for the disclosure of personal information is seen as a key “new” feature of social development through friendship.

Another approach to studying relationship expectations is found in the writing of developmental and social-psychological theorists who conceptualize expectations as part

of broader working models or schemas for relationships (e.g., Baldwin, 1992; Dykas & Cassidy, 2011; Holmes, 2002). From this perspective, beliefs about the self and others develop through early interactions with caregivers that are updated and modified in ongoing interactions with significant others. These working models of relationships are thought to subsume expectations for interaction, which influence how we perceive and react to significant others.

Building upon theories of working models of relationships, Fehr (2004) proposed a “prototype interaction-pattern” model of expectations for intimacy within friendships, in which specific behavioral expectations for intimacy are conceptualized as manifestations of broader, more domain-general expectations for what relationship partners will be like. For example, a more domain-general expectation that relationship partners will be trustworthy might be manifested in a prototype interaction pattern such as, “If I tell my friend a secret, my friend will keep it.” Within this model, Fehr (2004) hypothesized a prototype structure for intimacy-related interaction patterns, such that some types of friendship interactions are seen as more prototypical of intimacy and as more likely to promote the development of intimacy than are others. That is, among the wide variety of friendship interactions that could promote the development of intimacy in a friendship, there will be some agreement across individuals about the types of interactions that will be most likely to promote intimacy or to be most characteristic of intimate friendships.

In an elegant test of this model, Fehr (2004) presented a series of six studies designed to test the validity of the prototype interaction-pattern model. In the first two studies, participants (a college sample in Study 1 and a community sample in Study 2) were asked to generate a list of the different interaction patterns (requested in the form of “if...then” statements) that might lead to the development of intimacy in a friendship. These types of “if...then” contingencies are hypothesized by social-cognitive theorists to form the basis of more generalized relationship expectations (e.g., Baldwin, 1992). Specifically, the instructions to participants were as follows:

Research has shown that when asked “What gives meaning to your life?” many people put *friendships* near the top of the list. Yet research on friendship is relatively new in the field of psychology. The purpose of this questionnaire is to explore interaction patterns or ways of relating that might create a sense of *intimacy* in a friendship. For example, patterns such as “If I talk, my friend will listen” or “If I need help, my friend will provide it” might be indicative of intimacy in a friendship.

Please take a moment to think about ways of relating in a friendship that would create or exemplify intimacy. List these interaction patterns or ways of relating below. (Fehr, 2004, p. 269)

A definition of intimacy was not provided to participants, as one of the main goals of the study was to better understand lay people’s conceptions of how intimacy is developed within the context of friendship. Based on participant responses to this prompt, 48 different interaction patterns were identified that at least two participants listed as likely to lead to the development of intimacy within a friendship (e.g., “If I need to talk, my friend will listen,” “If I am away, my friend will keep in touch,” “If I am in

trouble, my friend will help me”; a complete list of the 48 interaction patterns generated is presented in Fehr [2004], Appendix A, Table 1, pp. 270-271).

In Fehr’s third study, participants were asked to make ratings of each of the 48 interaction patterns in terms of how likely they would be to lead to the development of intimacy in a friendship. As predicted by the prototype interaction-pattern model, participants rated interaction patterns involving self-disclosure as most likely to lead to the development of intimacy. That is, friendship interactions involving self-disclosure were viewed as prototypical examples of how intimacy is developed or manifested in friendship. Interaction patterns related to emotional support, acceptance, loyalty, and trust were also rated as likely to lead to the development of intimacy. Interaction patterns that were rated as least likely to lead to the development of intimacy included patterns involving practical help, being able to borrow things, and going to one’s friend for advice. In addition, participants in the fourth study responded more quickly to prototypical than to non-prototypical interaction patterns when asked whether each interaction pattern would promote intimacy in a same-sex friendship. Participants in the fifth study rated prototypical intimacy interaction patterns as more likely to occur within a hypothetical ongoing, established friendship, than in either a hypothetical developing friendship or a hypothetical deteriorating friendship. Finally, participants in the sixth study rated hypothetical violations of prototypical intimacy interaction-patterns as more damaging to a friendship than violations of non-prototypical patterns. Taken together, results from Fehr’s (2004) six studies provide support for the contention that intimacy

expectations are readily accessible to individuals, that they are stored as prototypical interaction patterns, and that violations of prototypical interaction patterns are potentially damaging to friendships.

Other researchers have approached the understanding of relationship expectations from an interdependence theory perspective (e.g., Kelley & Thibaut, 1978; Thibaut & Kelley, 1959). The main tenet of interdependence theory is that individuals strive to maximize rewards (i.e., “whatever gives pleasure or gratification to the person,” p. 8) and minimize costs (i.e., “factors that inhibit or deter the performance of any [desired] behavior or segment of behavior,” p. 8) within their relationships (Kelley & Thibaut, 1978). The goal of interdependence theory is to be able to predict an individual’s satisfaction with and commitment to their interpersonal relationships based on an in-depth analysis of the rewards and costs that they experience within that ongoing relationship.

A key component of interdependence theory—and the concept that is most relevant to the understanding of expectations—is the concept of Comparison Level (CL) and Comparison Level for Alternatives (CL<sub>alt</sub>). The CL is the standard against which the individual compares his or her relationship outcomes, and represents the quality of outcomes that the individual expects or thinks he or she deserves. According to Kelley and Thibaut (1978), outcomes that are perceived as falling above the CL will be associated with higher levels of relationship satisfaction, whereas outcomes that are perceived as falling below the CL should lead to feelings of dissatisfaction with the



relationship. The  $CL_{alt}$ , on the other hand, represents the quality of relationship outcomes that the individual thinks he or she could potentially receive in viable alternative relationships or the quality of outcomes that the individual thinks he or she could potentially receive by being alone. Whereas the CL is thought to be associated primarily with relationship satisfaction, the  $CL_{alt}$  is thought to be primarily associated with relational commitment. That is, individuals who perceive relatively attractive alternatives to their current relationship will tend to be less committed to the relationship than are individuals who perceive relatively few attractive alternatives. Although it will not be a focus of the current study, future research on friendship expectations should take into account the concept of comparison level for alternatives as a predictor of individuals' ongoing commitment to their friendships (see, for example, Rusbult's [1980] research on the investment model in romantic relationships).

In an elaboration of interdependence theory focused on romantic relationships, Fletcher, Simpson, Thomas, and Giles (1999) proposed the Ideal Standards Model (ISM) as an explanation for how people evaluate and make decisions about their intimate relationships. Fletcher and colleagues hypothesized that ideal standards serve two functions in relationships: an evaluation function for helping individuals decide whether their current relationships are meeting their standards, and a regulation function, which spurs action if it is determined that the relationship is not up to standard. The idea of ideal standards is similar to the concept of comparison level, but the ISM focuses on standards for ideal rather than typical relationships. In their model, Fletcher and

colleagues (1999) define ideal standards as “chronically accessible knowledge structures that are likely to predate—and be causally related to—judgments and decisions made in ongoing relationships” (p. 72). They hypothesize that ideal standards play a prominent role in the judgments and decisions we make about ongoing relationships because (1) relationships are a central feature of individuals’ lives, (2) individuals have a lot of information—gleaned from personal relationship experience, the media, the internet etc.—that can be incorporated into ideal standards, (3) ideals are appropriate knowledge structures against which experiences can be gauged, and (4) ideal standards exist at the intersection of knowledge about the self, the partner, and the relationship, and therefore should be frequently called to mind when thinking about or evaluating relational events. Recently, researchers have begun to apply the ISM to the investigation of friendship expectations. Using this model, Hall, Larson, and Watts (2011) found evidence that the degree to which friends are perceived as meeting or exceeding ideal standards is associated with ratings of friendship satisfaction.

**Gender differences in friendship expectations.** Building upon these different theoretical perspectives on relationship expectations, researchers have begun to examine whether males and females hold different expectations for friendship partners. In a recent meta-analysis, Hall (2011) examined gender differences in friendship expectations across four broad domains, which he labeled *symmetrical reciprocity* (consisting of expectations about trust, loyalty, genuineness, and commitment), *communion* (consisting of expectations about intimacy, self-disclosure, and empathic understanding), *solidarity*

(consisting of expectations about inclusion, mutual activities, and companionship), and *agency* (agency expectations refer to what a friend can do, has access to, and is able to offer to a friend in terms of material or social resources, and in this meta-analysis consist of expectations about personal/financial resources, status, and reward value). Studies were included in the meta-analysis if they assessed ideal friendship expectations or some domain of wanted, needed, or desired friendship features. Samples included in the meta-analysis included participants ranging in age from 10- to 57-years-old, and the mean age of participants across samples was approximately 16 years. Across 36 samples, Hall documented small to medium effect sizes for gender differences in three of the four domains of expectations, with females, compared to males, reporting higher levels of symmetrical reciprocity expectations ( $d = .17$ ) and communion expectations ( $d = .39$ ). Females also reported very slightly higher levels of solidarity expectations ( $d = .03$ ), although this effect size was not statistically significant. Males, on the other hand, reported higher levels of expectations for agency ( $d = -.34$ ). Hall also documented a modest effect size for overall composite measures of positive expectations (i.e., measures of friendship expectations that were domain-general rather than domain-specific;  $d = .17$ ), with females reporting higher expectations overall.

In a separate study, Hall and colleagues (2011) conducted a fine-grained examination of the link between gender, friendship expectations, and friendship satisfaction using a daily diary method. Participants (college undergraduates) were instructed to keep a diary of each interaction they had with a best friend, a close friend,

and a “casual” friend (i.e., acquaintance) across five days. Mean-level gender differences were observed in friendship expectations (females reported higher expectations than did males), but there were no mean-level gender differences in daily ratings of expectation fulfillment, or in ratings of friendship satisfaction. Expectations and daily ratings of expectation fulfillment were positively related, such that individuals who had higher expectations were more likely to report having their expectations fulfilled. Interestingly, gender emerged as a moderator of this relationship, such that the link between expectations and expectation fulfillment was linear and positive for women (the higher their expectations, the more likely they were to be fulfilled), but was curvilinear for men. Specifically, as men’s friendship expectations increased, their ratings of daily expectation fulfillment actually *decreased*. The authors suggest that this finding indicates that it is best for men to have “moderate” expectations for their friends, as there may be such a small pool of male same-sex friends who can fulfill high expectations that men with very high friendship expectations are basically setting themselves up for disappointment.

As noted above, Hall and colleagues (2011) also found that daily ratings of expectation fulfillment were linked to friendship satisfaction, such that those who reported that their expectations were fulfilled were more satisfied with their friendships. Interestingly, though, the significant main effect of expectation fulfillment on friendship satisfaction was qualified by a significant three-way interaction between gender, level of expectations, and daily ratings of expectation fulfillment. Contrary to hypotheses, the authors found that men who reported especially “low” friendship expectations (i.e., their

expectations were at least one standard deviation below the mean) were especially dissatisfied with their friendships when their expectations were not fulfilled.

Taken together, these findings paint a complicated picture of the links among friendship expectations, expectation fulfillment, and friendship satisfaction—especially for men. Specifically, for men it seems that having especially high expectations might be problematic because those expectations are less likely to be fulfilled. On the other hand, though, having especially low expectations (and having those expectations not be fulfilled) might also be problematic in that it was linked to especially low levels of friendship satisfaction. For men, at least, it may be that holding moderate expectations that are likely to be fulfilled may be the key to having satisfying friendships.

Unfortunately since Hall and colleagues (2011) did not include an assessment of loneliness in their study, it is not clear how these variables might have been associated with emotional well-being.

**Relationship expectations and loneliness.** As discussed previously, theoretical perspectives on loneliness have implicitly and explicitly emphasized the importance of relationship expectations in contributing to the development of loneliness.

Psychodynamic theorists Gregory Zilboorg (1938) and Melanie Klein (1963/1980) were among the first to argue for the importance of relationship expectations in contributing to loneliness. Theorists from the psychodynamic tradition conceptualize loneliness as a deeply painful and troubling experience that can be associated with psychopathology. As is typical of psychodynamic theory, these perspectives have focused on early experience

(especially within the mother–child relationship) as a key precursor to the experience of loneliness in adult life. Early work in this tradition (Fromm-Reichmann, 1959/1980; Zilboorg, 1938) conceptualized loneliness as stemming from disruptions in early mother–child relationships. Zilboorg (1938) suggested that loneliness was the result of narcissism resulting from an overindulgent mother in childhood, followed perhaps by an abrupt transition into self-sufficiency. Lonely individuals, he suggested, develop unnaturally high expectations of relationships that can never be fulfilled and thus are constantly disappointed and let down by others, leaving them vulnerable to chronic loneliness, anger, and hostility.

Melanie Klein (1963/1980), a prominent object relations theorist, also contributed to the literature on loneliness in the psychodynamic tradition. Klein (1963/1980) suggested that loneliness derives from an unavoidable yearning for an “unattainable perfect state”—a deep, unconscious connection that occurs only very early in life before the infant has differentiated itself from the caregiver. Although Klein argued that this longing was universal, she suggested that pathological loneliness would be experienced only when individuals did not develop adequate psychological defenses to protect against it.

Although psychodynamic perspectives have largely fallen out of favor with contemporary empirically-oriented loneliness researchers, it is interesting to note how contemporary thinking about loneliness has been influenced by psychodynamic theory. Specifically, Zilboorg’s and Klein’s suggestion that loneliness is experienced as a result

of unattainably high expectations for relationships can be seen in modern cognitive discrepancy perspectives on loneliness, although surprisingly cognitive discrepancy perspectives on loneliness have yet to be subjected to rigorous empirical test. One goal of Study 3 is to test hypotheses deriving from the psychodynamic and cognitive discrepancy perspectives on loneliness, which suggest that discrepancies between relationship *expectations* and perceptions of relationships *realities* are a significant cause of loneliness.

Several researchers have examined links among expectation violations (typically conceptualized as discrepancies between actual and ideal social relations), satisfaction with social relations, and emotional well-being, including loneliness. Despite taking a first step toward examining these associations, however, these studies share certain shortcomings that limit their contributions to the field. Specifically, previous studies have employed assessments of loneliness that overlap with assessments of actual and ideal social relations. Therefore, it is difficult to tease apart actual associations among constructs of interest from associations that are due to overlapping item content. In addition, these studies have tended to employ difference scores as assessments of discrepancies, which have less than desirable psychometric properties, impose constraints on hypotheses to be tested that are not always tenable, and lead to difficulties in interpretation (e.g., Edwards, 2001; Edwards & Parry, 1993; a more in-depth discussion of problems with difference scores and their interpretation is presented in the following section). A brief review of studies investigating the links among expectation-violations,

social satisfaction, and emotional well-being and their methodologies follows, with a focus on common findings and questions still to be addressed.

In a study of high school students, Archibald, Bartholomew, and Marx (1995) compared the relative utility of social needs and cognitive discrepancy perspectives on loneliness by examining whether discrepancies between actual and ideal levels of social connectedness predicted loneliness over and above what was predicted by actual social connectedness alone. To assess discrepancies between actual and ideal social connectedness, Archibald et al. (1995) developed the Social Life Questionnaire (SLQ), which consists of 78 items designed to assess actual and ideal levels of social activity with social friends (i.e., acquaintances), close friends, romantic partners, and with regard to specific social events (e.g., parties). Based on participants' responses to these items, discrepancy scores can be calculated within each activity domain or across domains for a single composite actual or ideal social activity score. The SLQ also asks about the social activity level of a "typical student," but those findings are not relevant to the present review. Once actual and ideal scores were calculated, discrepancy scores were created by subtracting actual social activity scores from ideal social activity scores to create an index of the discrepancy between desired/ideal and actual levels of social activity.

Archibald and colleagues (1995) found that, controlling for actual levels of social activity, the discrepancy between actual and ideal levels of social activity was a significant predictor of general social satisfaction (assessed with a seven-item measure), but not of feelings of loneliness (as assessed with the UCLA Loneliness Scale, Russell et



al., 1980). In examining the zero-order correlations presented in the article, the discrepancy between actual and ideal levels of social activity was significantly related to feelings of loneliness as assessed with the UCLA measure ( $r = .35$ ). Although these findings at first appear contradictory, it is possible that the association between the discrepancy score and the UCLA loneliness measure was driven by associations between loneliness and one component of the discrepancy score, rather than a significant association with the discrepancy per se. In any event, the findings from this study are difficult to interpret because of (1) the use of a difference score to assess discrepancies between actual and ideal levels of social activity, and (2) the potential overlap between the assessment of actual and ideal levels of social activity and the assessment of loneliness (for example, items such as “I can find companionship when I want it,” and “My social relationships are superficial” could potentially overlap with items on the SLQ asking about social activity).

Russell and colleagues (2012) adapted Archibald et al.’s (1995) methodology to examine the possibility of a nonlinear association between actual-ideal discrepancies, satisfaction with social life, and feelings of loneliness in a sample of high school students. Specifically, Russell et al. (2012) hypothesized that satisfaction and feelings of loneliness would be linked to discrepancies especially strongly when discrepancies were relatively small versus relatively large. That is, the association between discrepancies and satisfaction/loneliness would be strongest for individuals who were close to their ideal level of social connectedness but were not quite there. For example, they hypothesized

that the link between discrepancies and loneliness would be especially strong for someone who desired four friends but only had three friends, but would be less strong for someone who desired four friends and only had one friend. The rationale articulated for this hypothesis was that the discrepancy would be especially salient for someone who was very close to their ideal but was not quite there, as opposed to someone whose actual level of social connectedness was very far from the ideal. They also hypothesized that the association between discrepancies and satisfaction/loneliness would become non-significant as actual social relations began to exceed ideals.

Russell and colleagues (2012) used the Social Life Questionnaire developed by Archibald et al. (1995), and also included several additional questions asking about actual and ideal numbers of close friends and level of satisfaction with number of close friends. Their focus was on actual-ideal discrepancies in levels of social activity (e.g., how often participants spent time with friends and acquaintances; assessed with the SLQ) and actual-ideal discrepancies in numbers of close friends as predictors of general social satisfaction and loneliness.

With regard to satisfaction, the authors found that actual levels of social activity and the discrepancy between actual and ideal levels of social activity were significantly predictive of satisfaction with social activity. That is, individuals who experienced greater discrepancies between actual and ideal levels of social activity reported lower levels of satisfaction with their social activity. In a separate analysis predicting level of satisfaction with number of close friends, the authors found that the number of close

friends as well as the discrepancy between actual and ideal number of close friends (squared) were significantly predictive of satisfaction with close friends. The squared discrepancy term was intended to capture the hypothesized nonlinear association between discrepancies and satisfaction. In a separate analysis predicting loneliness from the same set of close friend variables, a similar curvilinear association between actual-ideal discrepancies in number of close friends and loneliness was observed. When these nonlinear terms were probed, the authors found what could be characterized as a “reverse check-mark” pattern for satisfaction such that satisfaction was highest when discrepancies were close to zero, and then decreased as discrepancies increased as well as decreased. A similar pattern was seen for loneliness such that individuals with discrepancies closest to 0 reported the lowest levels of loneliness, and individuals with higher discrepancies (in either direction) reported higher levels of loneliness. The authors do not provide an explanation for why individuals whose social connectedness exceeds their expectations might experience lower levels of satisfaction and higher levels of loneliness.

As in the Archibald et al. (1995) study, these findings provided limited support for the cognitive discrepancy model of loneliness. The expected curvilinear associations between discrepancies and satisfaction and between discrepancies and loneliness were not observed, and, contrary to predictions, it appeared that individuals whose expectations were *exceeded* by their actual social relations were more dissatisfied and more lonely than individuals whose expectations were met. Indeed, the pattern of

findings suggested that both having one's expectations go unfulfilled and having one's expectations exceeded were associated with dissatisfaction and loneliness. Again, these results should be interpreted with caution because of the content overlap between assessments of actual/ideal levels of social connectedness and assessments of loneliness, and the use of difference scores as an indicator of discrepancy. A more thorough discussion of problems associated with difference scores and their interpretation is presented below.

A related strategy was employed by Kupersmidt, Sigda, Sedikides, and Voegler (1999), who developed a social self-discrepancy model to examine the link between discrepancies and loneliness in a sample of rural high school students. The social self-discrepancy model, which is an elaboration of the cognitive discrepancy model of loneliness (e.g., Peplau & Perlman, 1982) and Higgins's self-discrepancy theory (e.g., Higgins, 1997), focuses on discrepancies between the *actual social self* and the *ideal social self* in leading to loneliness. The actual social self refers to the level of social connectedness (i.e., type, quantity, and quality of peer relations) that the individual currently has, whereas the ideal social self refers to the level of social connectedness that the individual would ideally like to have. Discrepancies between the actual and ideal social selves are hypothesized to lead to what Higgins (1997) refers to as "dejection-related affect," including feelings of loneliness.

Kupersmidt and colleagues (1999) tested the social self-discrepancy model in a sample of high school students by asking participants to report on the type, quantity, and

quality of social connectedness that they: (a) actually had (the *actual social self*), and (b) would ideally like to have (the *ideal social self*). A particular strength of this study was the assessment of actual and ideal social connectedness across a number of different domains—and the maintenance of this domain-specificity for analyses—rather than at a more global level. Participants rated their actual and ideal social selves across six domains, including (a) having a best friend (actual item – “I have a best friend,” ideal item – “It is important to me to have a best friend”), (b) having a good-quality best friendship (e.g., actual item – “I have a best friend who I can trust,” ideal item – “It is important to me to have a best friend who I can trust”), (c) having a romantic relationship (actual item – “I have a boy/girlfriend,” ideal item – “It is important to me to have a boy/girlfriend”), (d) experiencing peer acceptance (e.g., actual item – “I am liked by a lot of kids,” ideal item – “It is important to me to be liked by a lot of kids”), (e) being in a social network (e.g., actual item – “I have a group of friends,” ideal item – “It is important to me to have a group of friends”), and (f) not being victimized (e.g., actual item – “I am not rejected or disliked by other kids,” ideal item – “It is important to me not to be rejected or disliked by other kids”). Independently, participants were asked to report on feelings of loneliness and social dissatisfaction as assessed with the ILSDQ (Asher & Wheeler, 1985).

Based on responses to the six ideal subscales, Kupersmidt and colleagues classified participants as rating each domain as either important or unimportant (participants who rated the ideal at or above the scale midpoint were classified as

considering that domain “high importance,” participants who rated the ideal below the scale midpoint were classified as considering that domain “low importance”). This dichotomous approach was employed because scores on the ideal subscales were not normally distributed and therefore were considered inappropriate for use as continuous measures. To examine the hypothesized link between discrepancies and feelings of loneliness, Kupersmidt and colleagues (1999) calculated correlations between ratings of actual social connectedness and loneliness scores separately for participants who were classified as high importance and participants who were classified as low importance. For high importance participants, lower actual scores were conceptualized as indicating discrepancies.

Across the six domains, the authors found that individuals reported lower levels of loneliness when their ratings of the actual social self were closer to ratings of the ideal social self (i.e., when discrepancies between actual and ideal were low). In addition, Kupersmidt and colleagues (1999) calculated a cumulative discrepancy score by classifying participants as “discrepant” or “not discrepant” within each of the six domains. Participants were classified as discrepant within a particular domain if they had an ideal score in that domain at or above the scale midpoint and an actual score in that domain below the scale midpoint. They used these dichotomous discrepancy scores to create a sum score of the number of discrepancies across the six domains. Using this discrepancy sum the authors found support for what they termed a “cumulative risk hypothesis,” such that higher numbers of discrepancies were associated with higher levels

of loneliness for youth ( $r$  between number of discrepancies and loneliness = .50).

Although again these findings should be interpreted with caution because of the overlap between assessments of loneliness and assessments of actual and ideal social selves, they do provide tentative support for the cognitive discrepancy model of loneliness by showing that level of discrepancy between actual and ideal social connectedness and number of discrepancies across different domains were each associated with higher levels of loneliness. In addition, although the dichotomizing of potentially-continuous variables was perhaps not ideal, the authors' strategy for examining discrepancies provided a clearer interpretation than the methods employed by Archibald et al. (1995) and Russell et al. (2012).

Although they did not directly examine feelings of loneliness, studies by Demir and Orthel (2011) and Elkins and Peterson (1993) provide some further support for the link between actual-ideal discrepancies and emotional well-being. Demir and Orthel (2011) examined discrepancies between perceptions of friendship quality and ideal standards for friendship quality in a sample of college undergraduates using the McGill Friendship Questionnaire (Mendelson & Aboud, 1999). They found that higher levels of discrepancy between actual and ideal friendship quality were associated with lower levels of friendship satisfaction and lower levels of "happiness" as measured with a composite of different positive and negative emotions as assessed with the Positive and Negative Affect Scale (PANAS; Watson, Clark, & Tellegen, 1988). Similarly, Elkins and Peterson (1993)—in research with college undergraduates—found that a composite assessment of

ideal and actual friendship features (assessed with an adaptation of the Acquaintance Description Form, Wright, 1985) within cross-sex and same-sex best friendships were associated with a composite index of dysphoria encompassing depressive symptoms and low self-esteem. In line with the predictions of the cognitive discrepancy perspective, higher levels of discrepancy were associated with higher levels of dysphoria for both cross-sex and same-sex friendships. Although loneliness was not directly assessed in either of these studies, the use of relatively independent (i.e., non-overlapping) assessments of emotional well-being provides an indication that discrepancies between ideal and actual friendship features are likely associated with loneliness even when a highly-focused assessment is used.

Taken together, the few studies that have examined associations among discrepancies between desired and actual levels of social connectedness, satisfaction with social connectedness, and loneliness/emotional well-being provide some qualified support for the cognitive discrepancy perspective on loneliness. It appears that discrepancies between desired and actual levels of social contact are likely linked with feelings of satisfaction with one's social situation (Archibald et al., 1995; Demir & Orthel, 2011; Russell et al., 2012), but the associations with feelings of loneliness are less clear.

Study 3 improves upon these previous tests of the cognitive discrepancy perspective on loneliness in three ways. First, it employs the highly-focused assessment of loneliness developed in Study 2 that does not contain overlapping or confounding item



content, and is suitable for assessing loneliness in adults who may or may not be in college. Second, it employs a polynomial regression approach rather than a difference score approach to allow for a more valid test of hypotheses derived from cognitive discrepancy perspectives on loneliness. Third, it takes a more nuanced perspective on friendship expectations by assessing two different facets of the expectations construct—feature-specific friendship expectations and feature-specific friendship standards.

**Criticisms of discrepancy scores and polynomial regression as an alternative analysis strategy.** Much of the research examining the effects of discrepancies between actual and ideal social relationships, or discrepancies between relationship expectations and perceptions of relationship “realities,” uses difference scores to quantify the level and direction of discrepancy that a person is experiencing. As alluded to previously, however, the use of such discrepancy scores in the assessment of the effects of congruence between two variables is not ideal. Edwards and his colleagues (e.g., Edwards, 2001, 2002; Edwards & Parry, 1993) have written extensively about potential problems with the use of difference scores in examining the effects of congruence or non-congruence between two variables, and have argued for polynomial regression analysis as an alternative strategy.

Since difference scores represent a linear combination of two component variables, a primary problem is that the psychometric properties (e.g., internal reliability) of a single difference score will tend to be less desirable than the psychometric properties of the two component parts of the difference score analyzed together in a single equation

(Edwards, 2001). In addition, since these scores are linear combinations of two component variables, they do not provide any additional information over and above the information provided by the two component measures. Another major issue with discrepancy scores is that, in typical linear regression analyses, the use of difference scores (and/or squared difference scores) imposes constraints on the regression model that are often untenable and can misrepresent the true associations among constructs (Edwards & Parry, 1993).

For example, the partial regression coefficient for a difference score is basically a coefficient for the expressions  $(X - Y)$ . If one multiplies out the expression  $b_1(X - Y)$ , it is clear that this expression constrains the regression coefficient for  $X$  ( $b_1$ ) to be equal and opposite in sign to the regression coefficient for  $Y$  ( $-b_1$ ); a constraint which is not directly tested and is perhaps unreasonable. Other constraints imposed by difference score models include setting certain parameters in the model to be zero, and setting other parameters to be equal to one another.

Although less widely-used and more time-consuming to interpret, polynomial regression analyses are suggested by Edwards and his colleagues (e.g., Edwards, 2001, 2002; Edwards & Parry, 1993) as the “gold standard” for testing hypotheses about the congruence between two measures (e.g., measures of actual and ideal levels of social contact). Polynomial regression models have been used in past organizational behavior research to test hypotheses about met expectations (i.e., whether expectations about different features of one’s job are met) in the prediction of job satisfaction (e.g., Irving &

Meyer, 1994). The use of polynomial regression requires the interpretation of three-dimensional response surfaces rather than typical two-dimensional linear or curvilinear regression lines. The advantage of this methodology is that it allows for the testing of more complicated hypotheses about the congruence between two measures, as well as allowing for explicit tests of constraints that would otherwise be imposed and untestable in more simplified models. In Study 3, a polynomial regression model was employed to test hypotheses derived from the cognitive discrepancy perspective on loneliness regarding the association between friendship expectations, friendship features, and loneliness.

**Hypothesis testing and measurement development goals of Study 3.** With regard to specific hypothesis-testing goals, there are four. The first hypothesis testing goal of Study 3 is to examine mean-level gender differences in two facets of friendship expectations. First, gender differences in friendship expectations will be examined using a newly-developed measure (the Feature-Specific Friendship Expectations measure) that mirrors the assessment of friendship features developed in Study 2. Second, gender differences in the standards that individuals use to evaluate whether current friendships are living up to expectations will be examined using the newly-developed Feature-Specific Friendship Standards measure. Previous research has documented mean-level gender differences in the broad expectations domains of reciprocity, communion, and agency (Hall, 2011), and Study 3 will build upon these findings by conducting a more fine-grained assessment of expectations for specific friendship features by examining a

broader range of friendship features domains, and by examining where individuals “set the bar” in deciding whether friends are fulfilling or violating expectations, which has not been examined in previous research.

The second hypothesis testing goal of Study 3 is to test the hypothesis that friendship expectations help *explain* the suppression effect in the link between gender and loneliness observed in Studies 1 and 2, and the suppression effect in the link between gender and friendship satisfaction observed in Study 2. If this hypothesis is correct, the gender effects that emerged when friendship features were taken into account in Study 1 and Study 2 will disappear when friendship expectations are included in the statistical model. With regard to loneliness, this means that the statistically significant effect of gender that emerged when friendship features were taken into account would once again become nonsignificant when friendship expectations are considered. With regard to friendship satisfaction, this means that the reversal of the direction of the gender effect that emerged when friendship features were taken into account would then revert to its original direction (with females reporting higher levels of satisfaction than do males) when friendship expectations are considered.

The third hypothesis testing goal of Study 3 is to test hypotheses derived from the cognitive discrepancy perspective on loneliness, which suggests that discrepancies between relationship expectations and actual relationship features lead to dissatisfaction with relationships and feelings of loneliness. Study 3 improves upon previous tests of this hypothesis by (a) using a highly-focused assessment of loneliness that removes

overlapping and confounding item content (the Loneliness in Context Questionnaire for Adults), and (b) employing a polynomial regression analysis approach rather than a difference score approach to examine the effect of discrepancies between friendship expectations and friendship features on friendship satisfaction and feelings of loneliness.

Finally, the fourth hypothesis testing goal of Study 3 is to examine how friendship expectations predict interpretations of specific friendship situations (i.e., situations involving ambiguous friendship-expectation-violations), as well as the consequences of those interpretations for emotional experience (i.e., disappointment, anger, sadness, neutral, hurt feelings, loneliness) and perceptions of the relationship (i.e., friendship satisfaction). It is hypothesized that individuals who hold higher expectations for their friends will make more negative interpretations of a hypothetical friend's behavior in response to an ambiguous friendship expectation violation (e.g., will be more likely to report that the person is not being a good friend and that the friend did something wrong), will report more dissatisfaction with the hypothetical friend's behavior in response to an ambiguous friendship expectation violation, and will in turn report more negative emotional responses (i.e., disappointment, anger, sadness, hurt feelings, and loneliness) in response to an ambiguous friendship-expectation-violation.

In order to accomplish the four hypothesis-testing goals of Study 2, three measurement development goals must also be accomplished. Since one hypothesis-testing goal is to examine how discrepancies between friendship expectations and judgments of friendship features are linked to feelings of loneliness, a set of "yoked"

assessments of friendship expectations and friendship features need to be developed to allow for the examination of discrepancies within specific domains of friendship features, as well as across domains. The first measurement development goal of Study 2 is to develop a “yoked” assessment of friendship expectations (the Feature-Specific Friendship Expectations measure) that assesses friendship expectations across the 11 friendship features domains assessed in the RFFQ-A.

The second measurement development goal of Study 3 is to develop a new measure of the expectation-related construct of “bar-setting” or standards. Although in past studies researchers have documented gender differences in various broad expectations domains (e.g., Hall, 2011), researchers have not yet examined whether there are gender differences in where individuals actually “set the bar” for their friends in terms of the behaviors that are viewed as fulfilling versus violating of a specific friendship expectation. This newly-developed measure of feature-specific friendship standards is designed to assess the standards individuals employ to decide whether or not a friend has fulfilled a specific expectation in the same 11 friendship features domains assessed in the RFFQ-A.

Finally, the third measurement development goal of Study 3 is to develop a set of hypothetical ambiguous expectation-violation vignettes designed to assess participants’ responses to specific friendship situations. This vignettes measure will be used to examine how friendship expectations are related to interpretations of specific friendship situations, emotional responses to specific friendship situations, and satisfaction with a

hypothetical friendship in response to a friend's behavior in specific friendship situations. Building upon the hypothetical situations methodology employed by Asher and colleagues (e.g., MacEvoy & Asher, 2012; McDonald & Asher, 2013; Rose & Asher, 1999), a set of vignettes was developed to correspond to the 11 friendship features domains represented in the other RFFQ-A. In response to each vignette, participants were asked to rate different possible interpretations of the friend's behavior (i.e., my friend is being a good friend, my friend did something wrong, my friend respects me, my friend values me, my friend cares about me, my friend is rejecting me, my friend is trying to push me around, my friend is being weird), the degree to which they would experience different emotions in response to the friend's behavior (i.e., disappointment, happiness, neutral, hurt feelings, loneliness, anger), and how satisfied they would be with the friendship in response to the friend's behavior.

## **Method**

**Participants and procedure.** Participants were 419 young adults aged 18 to 29 living in the United States. Of these participants, 340 were recruited from Amazon Mechanical Turk (MTurk) and 79 were recruited from the psychology participant pool at the same university as in Studies 1 and 2.

***MTurk participants and procedure.*** MTurk participants completed the study in three phases. The three-phase study was posted on MTurk in two different iterations. In the first iteration, participants responded to a brief demographic prescreen questionnaire, which took less than five minutes to complete (Phase 1). Next, in a 40- to 50-minute

session (Phase 2), they completed the Feature-Specific Friendship Expectations measure, the Loneliness in Context Questionnaire for Adults, and the Feature-Specific Friendship Standards measure. Then, in Phase 3, participants completed the RFFQ-A, the friendship satisfaction measure, a number of additional items asking about their social life, the Hypothetical Ambiguous Friendship-Expectation Violation Vignettes Measure, questions about their use of MTurk, and additional demographic questions (Phase 3). Participants completed Phase 3 approximately 5 to 7 days after they completed Phase 2 and this session lasted approximately one hour and 45 minutes. Each phase included a separate informed consent.

The demographic prescreen asked participants to indicate their age, gender, first language, and country of residence. Participants who met the qualification requirements (i.e., were between the ages of 18 and 29, were male or female, spoke English as a first language, and lived in the United States) were then invited to participate in the second phase of the study. A total of 739 participants completed the demographic prescreen measure, and 369 (49.9%) of those participants qualified to participate in the second and third phases of the study. Of the 369 participants who qualified to participate in the second phase of the study, 237 participants (64.2%) did so. Of the 237 participants who participated in the second phase of the study, 191 participants (80.6%) completed the third phase. No significant differences were found between those who completed the third phase of the study and those who did not in terms of gender. Of these 191 participants, 36 participants (18.8%) did not complete the Hypothetical Ambiguous



Friendship-Expectation Violation Vignettes measure. This sample of 36 participants provided data for all study variables except the Hypothetical Ambiguous Friendship Expectation-Violation Vignettes measure and the additional demographic questions asked at the end of the study. These 36 participants were therefore retained in the overall study sample. A total sample of 155 MTurk participants (62.6% female) completed the full study in its first iteration. No significant differences were found between those participants who completed the vignettes and those who did not in terms of gender, loneliness, friendship expectations, or friendship features.

The second iteration of the MTurk study followed the same procedures as the first iteration, except that the Hypothetical Ambiguous Friendship-Expectation Violation Vignettes Measure was dropped from Phase 3 of the study. This decision was taken due to the length of the Hypothetical Ambiguous Friendship-Expectation Violation Vignettes Measure and a suspicion that its length was discouraging more people from participating in the study. It was important to build up as large of a sample as possible to test hypotheses about the role of friendship expectations in predicting friendship satisfaction and loneliness, and this decision to post an abbreviated version of the study on MTurk was taken with this goal in mind. The abbreviated version of Phase 3 of the study took 15 minutes to complete rather than the one hour and forty-five minutes that Phase 3 took in the first iteration of the study. Each phase included a separate informed consent. The second iteration of the study was not posted until after the first iteration was closed.

Individuals who participated in any phase of the first iteration of the study were not eligible to participate in the second iteration.

In the second iteration of the study a total of 412 participants completed the demographic prescreen measure, and 203 (49.3%) of those participants qualified to participate in the second and third phases of the study. Of the 203 participants who qualified to participate in the second phase of the study, 164 participants (80.8%) did so. No significant differences were found between those who completed the second phase of the study and those who did not in terms of gender. Of the 164 participants who participated in the second phase of the study, 149 participants (90.9%) completed the third phase. No significant differences were found between those who completed the third phase of the study and those who did not in terms of gender, loneliness, or friendship expectations.

In addition to the 149 participants who completed the second iteration of the study, the 36 participants who completed all but the vignettes and final demographic components of the first iteration of the study were added to this sample. These participants had complete data on all study measures administered in the second iteration of the study, except for the additional demographic questions that were administered at the end. Therefore, it is important to note that for some demographic questions (i.e., race/ethnicity, exact age, romantic relationship status, employment, and student status) 36 participants have missing data.

The final sample of MTurk participants (including those who completed the vignettes measure) included 340 individuals and was relatively diverse in terms of race/ethnicity (77.6% White/Caucasian, 8.2% Black/African/African American, 5.9% Asian/Asian American, 3.3% Hispanic/Latino, 3.9% bi or multiracial, 1.1% other race/ethnicity). MTurk participants were between 18 and 29 years of age, and the mean age of the MTurk sample was 24.61 years. A majority of participants indicated that they were currently employed (61.0%). Many participants ( $n = 118$ , 38.7%) were students, and of the 118 students 75.2% of them attended school full time. Furthermore, of the 118 students, 0.8% attended high school, 18.6% attended a two-year college, 61.1% attended a four-year college, 1.7% attended vocational/technical school, 14.4% attended graduate/professional school, and 3.4% attended another type of school.

*Psychology participant pool participants and procedure.* Participants from the psychology participant pool were recruited via the online experiment sign-up program Sona. A short description of the study was posted on Sona, and students who were interested in participating could sign up and complete the study. All members of the participant pool who were 18 years and older were eligible to participate. A demographic prescreen questionnaire was not administered because it was assumed that all participants would be reasonably fluent in English. Therefore, demographic questions were administered at the end of the study rather than as a prescreen questionnaire.

Participant pool participants completed the study in two phases. In the first phase of the study, which took approximately 45 minutes to complete, participants (after

providing consent) completed the Feature-Specific Friendship Expectations measure, the Loneliness in Context Questionnaire for Adults, and the Feature-Specific Friendship Standards measure. In the second phase of the study, which was administered approximately 5 to 7 days after the first phase and which took approximately 15 minutes to complete, participants (after providing consent) completed the RFFQ-A, the friendship satisfaction measure, a number of additional questions asking about their social life, and demographic questions.

Participant pool participants ( $n = 79$ ; 63.3% female) were between 18 and 22 years of age ( $M_{\text{age}} = 19.45$ ). All were full-time students, and some (35.4%) held jobs in addition to going to school. The majority of participants (87.3%) indicated that English was their first language, and the sample was diverse in terms of race/ethnicity (60.8% White/Caucasian, 11.4% Asian/Asian American, 8.8% Black/African/African American, 5.1% Hispanic/Latino, 5.1% bi or multiracial, 8.8% other race/ethnicity).

**Measures.** Participants completed all measures via Qualtrics, an online survey administration program. Measures were completed by all participants unless otherwise indicated, and are presented in this section in the order in which they were administered. Prior to their administration to participants in Study 3, newly-developed measures (i.e., the Feature-Specific Friendship Expectations measure, the Feature-Specific Friendship Standards measure, and the Hypothetical Ambiguous Friendship Expectation-Violation Vignettes measure) were pilot tested with 14 young adults recruited from the psychology

participant pool and from the general community. Measures were modified based on feedback about the realism and clarity of the measures.

***Feature-Specific Friendship Expectations measure.*** This measure, developed for this study, parallels the final set of items on the RFFQ-A developed in Study 2. That is, for each RFFQ-A item, a corresponding item was created for the Feature-Specific Friendship Expectations measure (this strategy is similar to that employed in previous research on friendship expectations, e.g., Demir & Orthel, 2011). These items ask about what best friends in general *should* do, rather than what a particular close or best friendship is actually like (e.g., “A best friend should compliment you about things,” “A best friend should give you honest advice”). The full text of this measure is presented in Appendix G. The Feature-Specific Friendship Expectations measure, like the RFFQ-A, has 11 subscales (with five items per subscale) assessing expectations about validation, emotional support, instrumental help, reliable partnership, shared activities, enjoyable companionship, honest feedback, self-disclosure, forgiveness/conflict resolution, spirit of equality, and conflict. It is important to note that, in contrast to the RFFQ-A, the conflict subscale of the Feature-Specific Friendship Expectations measure is phrased such that higher scores indicate expectations for *lower* levels of conflict (e.g., “Best friends shouldn’t get irritated with one another a lot,” “Best friends should have few arguments”). For each item, participants respond on a 7-point scale from 1=*strongly disagree*, to 7=*strongly agree*. This assessment strategy allows for the creation of expectations scores for each participant that correspond to reports of the friendship

features that are present within participants' close or best friendships. Using the Randomizer feature of Qualtrics, items on the Feature-Specific Friendship Expectations measure were presented in a different random order to each participant.

***Loneliness in Context Questionnaire for Adults.*** The Loneliness in Context Questionnaire for Adults administered in Study 2 was also administered in Study 3. Using the Randomizer feature of Qualtrics, items on the Loneliness in Context Questionnaire for Adults were presented in a different random order to each participant. As in Study 2, the internal reliability for this measure was high ( $\alpha = .90$ ). See Appendix E for the full text of this measure.

***Feature-Specific Friendship Standards measure.*** This measure, also developed for this study, was designed to assess the expectations-related construct of feature-specific friendship standards, also referred to as “bar-setting.” The Feature-Specific Friendship Standards measure presents participants with 11 different situations relevant to the following 11 friendship features domains: validation, emotional support, instrumental help, reliable partnership, enjoyable companionship, honest feedback, self-disclosure, forgiveness, conflict resolution, spirit of equality, and conflict. Even though forgiveness and conflict resolution loaded together on a single factor in Study 2, forgiveness and conflict resolution were considered to be sufficiently distinct that separate items were created to capture these two features. Unfortunately, due to experimenter error, a shared activities item was not created for this measure. A shared activities item will be created and added to any future iterations of this measure.

For each item on the Feature-Specific Friendship Standards measure, participants were presented with a list of five possible behaviors that a friend could enact in that situation. For each behavior, participants rated, on a 15-point scale (1 = *strongly disagree*, 15 = *strongly agree*) the degree to which they think their friend is being a “good friend” in that situation. Ratings on this scale were conceptualized as an index of satisfaction with the friend’s behavior.

The situations and list of possible behaviors for this measure were developed in an iterative process. The researcher first drafted a preliminary set of items and shared those items with colleagues who were familiar with the purpose of the measure and of the study. Based on colleague feedback, these items were modified until a set of items was agreed upon as presenting situations and behaviors that varied in the degree to which they were fulfilling of different friendship expectations. This set of items was then presented to pilot participants and was modified based on participant feedback.

Below is an example bar-setting item from the emotional support domain. The full text of the 11 feature-specific friendship standards items is presented in Appendix H.

*Situation: You have an important project due at work and you are feeling really stressed out about it. The project is due in one week and you are worried that you might lose your job if you don’t do well on the project. You tell your friend that you are feeling really stressed.*

- 1. Your friend just kind of grunts and doesn’t really reply.*
- 2. Your friend says, “Oh yeah? That’s too bad!” and then changes the subject to ask you about something else unrelated to work.*
- 3. Your friend says he/she is sorry that you are stressed but he/she is sure that you will do a good job with the project.*

4. *Your friend says he/she is sorry you are stressed and asks if there is anything he/she can do to help.*
5. *Your friend says he/she is sorry you are stressed and asks if there is anything he/she can do to help. He/she checks in with you again over the course of the week to see how things are going and how you are feeling about the project.*

For each feature, the five responses were developed to represent a continuum of behaviors ranging from minimally fulfilling of that friendship expectation to highly fulfilling of that friendship expectation. In this situation, for example, the response marked “1” is intended to be the least fulfilling of an expectation for emotional support and the item marked “5” is intended to be the most fulfilling of an expectation for emotional support. A similar continuum was included in each of the situations so the response marked “1” was intended to be the least fulfilling of the expectation and the item marked “5” was intended to be the most fulfilling of the expectation. Using the Randomizer feature of Qualtrics, the 11 different feature-specific friendship standards items were presented in a different random order to each participant; in addition, within each item, the five possible behaviors were also presented in a different random order to each participant.

In addition to the ratings they provided for each level of bar-setting within each item, each participant was also assigned a single bar-setting score for each of the 11 friendship features domains. This score was intended to capture where participants “set the bar” in each domain by assigning a score based on the minimum level of an individual feature that the participant would consider satisfactory. To assign this score, participant’s ratings of the five different levels in response to the question “I would think



my friend is being a good friend” (1 = *strongly disagree*, 15 = *strongly agree*) were examined, and participants were assigned a single score based on the lowest level of response to which they gave a rating above the midpoint of the scale (i.e., a rating of 8 or higher). Participants’ scores could range from 1 to 5 in each domain, with higher scores indicating higher levels of bar-setting within that domain. Participants were also assigned a twelfth feature-specific friendship standards composite score, which was the average of their feature-specific friendship standards scores across the 11 friendship features domains ( $\alpha = .74$ ).

***Revised Friendship Features Questionnaire for Adults (RFFQ-A)***. The 54-item version of the RFFQ-A used in Study 2 was also employed in Study 3, with one small change. To ensure an equal number of items assessing each friendship feature, an additional validation item was added (i.e., “My friend makes me feel good about myself”) for a total of 55 RFFQ-A items. As in Study 2, participants were first instructed to think of their closest same-sex friend and to provide the friend’s name, gender, and the length of time (in years and months) that the participant had known the friend (i.e., the duration of the friendship). Using the “pipe text” survey tool in Qualtrics, the friend’s name was included in each question in place of the words “my friend.” Participants rated how characteristic each statement was of their closest same-sex friendship on a 7-point scale ranging from 1 = *not at all true* to 7 = *really true*. Using the Randomizer feature of Qualtrics, items on the RFFQ-A were presented in a different random order to each participant. As in Study 2, this measure included two items asking about friendship

satisfaction ( $\alpha = .92$ ) and two items asking about friendship closeness ( $\alpha = .79$ ). See Appendix I for the full text of this measure.

***Hypothetical Ambiguous Friendship-Expectation-Violation Vignettes measure.***

A subset of MTurk participants ( $n = 155$ ) responded to a set of 55 hypothetical situations vignettes asking about their interpretations and emotions in response to situations that were designed to represent ambiguous friendship expectation violations across 11 friendship features domains: validation, emotional support, instrumental help, reliable partnership, enjoyable companionship, honest feedback, self-disclosure, forgiveness, conflict resolution, spirit of equality, and conflict. As with the Feature-Specific Friendship Standards measure, forgiveness and conflict resolution were considered to be sufficiently distinct that separate items were created to capture these two features. As with the feature-specific friendship standards measure, due to experimenter error, shared activities vignettes were not created. Shared activities items will be created and added to any future versions of this measure. The full text of this measure is presented in Appendix J.

The hypothetical ambiguous friendship-expectation-violation vignettes were designed to be construed as more expectation-violating by individuals who have relatively high expectations for their friends (either in the sense of having a high expectation for a particular domain, or in the sense of setting the bar high/having a high standard for a particular domain), but as more expectation-fulfilling by individuals who hold lower expectations for their friends (either in the sense of having a low expectation

for a particular domain or in the sense of setting the bar low/having a low standard for a particular domain). That is, the situations were designed to contain sufficient ambiguity so that the friend's behavior could be construed differently by different people. The use of ambiguous situations to examine individual differences in social cognition has been employed to great advantage in past research (see, for example, Dodge's [1980] research on aggressive children's responses to ambiguous provocation situations).

The vignettes for this measure were developed in an iterative process. The researcher first drafted a preliminary set of vignettes and shared those vignettes with colleagues who were familiar with the purpose of the measure and of the study. Based on colleague feedback, these items were modified until a set of items was agreed upon as presenting situations and behaviors that varied in the degree to which they were fulfilling of different friendship expectations. This set of vignettes was then presented to pilot participants and was modified based on participant feedback.

Following procedures used by Asher and colleagues in previous research (e.g., MacEvoy & Asher, 2012; McDonald & Asher, 2013; Rose & Asher, 1999), participants were instructed to carefully read each vignette and imagine that they were actually in that situation with a close friend. Following the presentation of each vignette, participants were asked to rate a number of interpretations and emotions on a 7-point scale ranging from 1 = *strongly disagree* to 7 = *strongly agree*. An example vignette from the instrumental help domain is:

*You are trying to put together a new shelving unit for your apartment and you are having a difficult time putting it together on your own. You ask your friend if he/she can come over and help you. Your friend comes over and helps for a little while, but then spends the rest of the time talking to his/her mom on the phone and you have to finish putting together the shelves by yourself.*

With regard to interpretations, participants were asked to indicate the degree to which they agreed with the following statements: “I would think my friend is being a good friend,” “I would think my friend did something wrong,” “I would think my friend respects me,” “I would think my friend values me,” “I would think my friend cares about me,” “I would think my friend is rejecting me,” “I would think my friend is trying to push me around,” and “I would think my friend is being weird.” Of primary interest in this study are the interpretations that the friend has done something wrong and the interpretation that the friend is not being a good friend. The remaining interpretations are included to provide continuity with previous research (e.g., MacEvoy & Asher, 2012; McDonald & Asher, 2013). With regard to emotions, participants were asked to rate on a 7-point scale ranging from 1 = *not at all* to 7 = *a lot* how disappointed, happy, okay, hurt, lonely, and mad they would feel in that situation. Finally, participants were asked to rate, on a scale from 1 = *very dissatisfied* to 7 = *very satisfied*, how satisfied they would be with the friend’s behavior in that situation.

A total of 55 vignettes were presented to each participant, with five vignettes corresponding to each of the 11 friendship features domains listed above. Using the Randomizer feature of Qualtrics, individual vignettes were presented to participants in a

random order. In addition, interpretations and emotions were presented in a different random order (within each category) for each vignette.

## **Results**

### **Preliminary analyses examining mean-level differences between samples.**

Before addressing the hypothesis-testing goals of Study 3, preliminary analyses were conducted examining mean level differences and differences in associations among variables between the psychology participant pool sample ( $n = 79$ ), the MTurk vignettes sample ( $n = 155$ ), and the MTurk sample that did not complete the vignettes ( $n = 185$ ).

Mean-level differences between the three samples were examined using univariate analyses of variance (for loneliness, friendship satisfaction [squared], positive friendship features composite, and positive friendship expectations composite) and multivariate analyses of variance with follow-up univariate analyses (for the 11 individual friendship features and for the 11 friendship expectations domains). Analyses were conducted with the squared friendship satisfaction variable rather than the raw friendship satisfaction variable because preliminary analyses indicated that the distribution of responses for friendship satisfaction deviated significantly from normality (skew = -1.74, kurtosis = 4.89). The square transformation brought values of skewness (-.89) and kurtosis (.53) for friendship satisfaction into the acceptable range.

Tables 17, 18, and 19 show means, standard deviations, and  $F$  ratios for the comparison of means across samples. Analyses revealed a number of mean-level differences between samples. Where statistically significant differences did emerge,

they tended to show that the participant pool sample was significantly different from the two MTurk samples, similar to the sample differences seen in Study 2. Significant sample differences were found for friendship satisfaction ( $F(2, 416) = 3.59, p = .003$ ), such that participant pool participants reported higher levels of satisfaction with their closest friendship than did participants from either MTurk sample. With regard to friendship features, a significant multivariate effect of sample was found (Wilks's  $\lambda = .906, F(22, 812) = 1.86, p = .010$ ), and follow-up univariate analyses revealed significant sample differences for shared activities ( $F(2, 416) = 12.26, p < .001$ ), emotional support ( $F(2, 416) = 5.93, p = .003$ ), reliable partnership ( $F(2, 416) = 4.99, p = .007$ ), enjoyable companionship ( $F(2, 416) = 4.13, p = .017$ ), self-disclosure ( $F(2, 416) = 3.89, p = .021$ ), and spirit of equality ( $F(2, 416) = 3.41, p = .034$ ). For shared activities, emotional support, reliable partnership, enjoyable companionship, self-disclosure, and spirit of equality, participants from the psychology participant pool reported higher levels of each friendship feature than did participants from either MTurk sample.

**Table 17: Sample Differences in Loneliness, Friendship Satisfaction (Squared), and Friendship Features**

	Participant Pool		MTurk with Vignettes		MTurk No Vignettes		<i>F</i>
	Mean (SD)						
Loneliness	2.18	(.55)	2.27	(.71)	2.39	(.74)	2.80 <sup>†</sup>
Satisfaction (Squared)	187.65 <sup>a</sup>	(37.79)	171.09 <sup>b</sup>	(52.88)	172.71 <sup>b</sup>	(45.64)	3.59 <sup>*</sup>
<b>Friendship Features</b>							
SA	5.92 <sup>a</sup>	(1.20)	5.02 <sup>b</sup>	(1.39)	5.30 <sup>b</sup>	(1.29)	12.26 <sup>***</sup>
C	2.19	(1.12)	2.39	(1.16)	2.26	(1.09)	1.01
V <sup>‡</sup>	6.04	(.78)	5.79	(.95)	5.77	(.98)	2.61 <sup>†</sup>
ES <sup>‡</sup>	6.17 <sup>a</sup>	(.80)	5.75 <sup>b</sup>	(1.11)	5.70 <sup>b</sup>	(1.05)	5.93 <sup>**</sup>
H <sup>‡</sup>	6.01	(.69)	5.86	(.82)	5.81	(.92)	1.58
RP <sup>‡</sup>	6.29 <sup>a</sup>	(.76)	5.90 <sup>b</sup>	(1.04)	5.91 <sup>b</sup>	(1.01)	4.99 <sup>**</sup>
EC <sup>‡</sup>	6.53 <sup>a</sup>	(.60)	6.25 <sup>b</sup>	(.80)	6.29 <sup>b</sup>	(.70)	4.13 <sup>*</sup>
HF <sup>‡</sup>	6.22	(.77)	6.08	(.87)	6.07	(.91)	.42
SD <sup>‡</sup>	6.11 <sup>a</sup>	(.92)	5.73 <sup>b</sup>	(1.06)	5.76 <sup>b</sup>	(1.07)	3.89 <sup>*</sup>
EQ <sup>‡</sup>	6.19 <sup>a</sup>	(.75)	5.90 <sup>b</sup>	(.88)	5.92 <sup>b</sup>	(.86)	3.41 <sup>*</sup>
FCR <sup>‡</sup>	6.10	(.73)	5.99	(.81)	5.96	(.85)	.81
Positive Features Composite	6.18 <sup>a</sup>	(.61)	5.92 <sup>b</sup>	(.77)	5.91 <sup>b</sup>	(.78)	4.24 <sup>*</sup>

*Note.* Subscales marked with a double dagger are included in the Positive Friendship Features Composite. Different superscripts indicate statistically significant differences between means. Abbreviations for individual friendship features are as follows: V = *Validation*; ES = *Emotional Support*; H = *Instrumental Help*; RP = *Reliable Partnership*; EC = *Enjoyable Companionship*; HF = *Honest Feedback*; SD = *Self-Disclosure*; EQ = *Spirit of Equality*; FCR = *Forgiveness/Conflict Resolution*; C = *Conflict*.  
<sup>†</sup>  $p < .10$ ; <sup>\*</sup>  $p < .05$ , <sup>\*\*</sup>  $p < .01$ , <sup>\*\*\*</sup>  $p < .001$ .

**Table 18: Sample Differences in Feature-Specific Friendship Expectations**

	Participant Pool	MTurk with Vignettes	MTurk No Vignettes	<i>F</i>
	Mean (SD)			
Shared Activities	5.52 <sup>a</sup> (1.08)	5.71 <sup>ab</sup> (.88)	5.84 <sup>b</sup> (.83)	3.61 <sup>*</sup>
Conflict	3.47 <sup>a</sup> (1.21)	4.01 <sup>b</sup> (1.04)	4.12 <sup>b</sup> (1.12)	9.96 <sup>***</sup>
Validation <sup>‡</sup>	5.59 (.87)	5.65 (.78)	5.68 (.81)	.30
Emotional Support <sup>‡</sup>	5.99 (.82)	6.03 (.79)	6.08 (.77)	.38
Instrumental Help <sup>‡</sup>	5.10 <sup>a</sup> (.89)	5.32 <sup>ab</sup> (.83)	5.50 <sup>b</sup> (.86)	6.32 <sup>**</sup>
Reliable Partnership <sup>‡</sup>	6.25 (.76)	6.24 (.67)	6.28 (.66)	.20
Enjoyable Companionship <sup>‡</sup>	6.20 (.77)	6.29 (.69)	6.31 (.64)	.66
Honest Feedback <sup>‡</sup>	6.16 (.78)	6.23 (.77)	6.33 (.64)	1.77
Self-Disclosure <sup>‡</sup>	6.01 (.92)	6.08 (.79)	6.07 (.81)	.21
Spirit of Equality <sup>‡</sup>	5.88 <sup>a</sup> (.91)	6.11 <sup>ab</sup> (.72)	6.13 <sup>b</sup> (.66)	3.28 <sup>*</sup>
Forgiveness/Conflict Resolution <sup>‡</sup>	5.66 <sup>a</sup> (.84)	6.01 <sup>b</sup> (.77)	6.15 <sup>b</sup> (.68)	11.62 <sup>***</sup>
Expectations Composite	5.87 (.68)	5.99 (.60)	6.06 (.56)	2.73 <sup>†</sup>

*Note.* Subscales marked with a double dagger are included in the Friendship Expectations Composite. Different superscripts indicate statistically significant differences between means. <sup>†</sup>  $p < .10$ ; <sup>\*</sup>  $p < .05$ , <sup>\*\*</sup>  $p < .01$ , <sup>\*\*\*</sup>  $p < .001$ .

The same was true for the overall positive friendship features composite ( $F(2, 416) = 4.24, p = .015$ ). Marginally-significant sample differences emerged for loneliness ( $F(2, 416) = 2.80, p = .062$ ) and for the friendship feature of validation ( $F(2, 416) = 2.61, p = .075$ ), but follow-up tests did not indicate any statistically significant differences between individual group means.



With regard to feature-specific friendship expectations, there was a significant multivariate effect of sample (Wilks's  $\lambda = .871$ ,  $F(22, 812) = 2.65$ ,  $p < .001$ ), and univariate follow-up tests revealed statistically significant differences in expectations for shared activities ( $F(2, 416) = 3.61$ ,  $p = .028$ ), conflict ( $F(2, 416) = 9.96$ ,  $p < .001$ ), instrumental help ( $F(2, 416) = 6.32$ ,  $p = .002$ ), spirit of equality ( $F(2, 416) = 3.28$ ,  $p = .039$ ), and forgiveness/conflict resolution ( $F(2, 416) = 11.62$ ,  $p < .001$ ). Follow-up Tukey's HSD tests revealed the converse pattern of mean differences to what was seen for friendship features. Specifically, participants from the two MTurk samples (especially the MTurk sample that did not complete the hypothetical situations vignettes) reported *higher* levels of feature-specific friendship expectations than did the participants from the psychology participant pool. Although a marginally-significant effect of sample was found for the positive friendship expectations composite ( $F(2, 416) = 2.73$ ,  $p = .066$ ), follow-up tests did not indicate any statistically-significant differences between individual group means.

With regard to feature-specific friendship standards, there was a significant multivariate effect of sample (Wilks's  $\lambda = .91$ ,  $F(22, 812) = 1.78$ ,  $p = .016$ ), and univariate follow-up tests revealed statistically significant differences in expectations for reliable partnership ( $F(2, 416) = 4.17$ ,  $p = .016$ ), self-disclosure ( $F(2, 416) = 7.16$ ,  $p = .001$ ), forgiveness ( $F(2, 416) = 3.86$ ,  $p = .022$ ), and conflict resolution ( $F(2, 416) = 4.78$ ,  $p = .009$ ). In addition, sample differences emerged for the Feature-Specific Friendship Standards composite score in a univariate analysis of variance ( $F(2, 416) = 4.78$ ,  $p =$

.009). Interestingly, in contrast to the findings for feature-specific friendship expectations, follow-up Tukey's HSD tests for feature-specific friendship standards revealed that the participant pool sample reported *higher* standards than did the MTurk sample. For forgiveness, however, the MTurk sample that did not complete the vignettes was not significantly different from either of the other two samples. The fact that sample differences emerged in different directions for feature-specific friendship expectations and feature-specific friendship standards suggests that these two measures do indeed capture distinct facets of friendship expectations.

Despite a number of significant mean-level differences between the three samples, correlational analyses revealed no significant differences between the three samples in terms of associations among variables. Therefore, all further analyses were conducted with the combined sample of 419 participants rather than separately by sample. The only exception was for analyses with the Hypothetical Ambiguous Friendship-Expectation-Violation Vignettes measure, for which only 155 participants provided data. All analyses with that measure include only those 155 participants.

**Table 19: Sample Differences in Feature-Specific Friendship Standards**

	Participant Pool	MTurk with Vignettes	MTurk No Vignettes	<i>F</i>
	Mean (SD)			
Conflict <sup>‡</sup>	2.00 (.70)	2.01 (.65)	2.14 (.74)	1.97
Validation <sup>‡</sup>	1.68 (.84)	1.49 (.59)	1.58 (.66)	2.23
Emotional Support <sup>‡</sup>	2.82 (.59)	2.70 (.72)	2.68 (.72)	1.28
Instrumental Help <sup>‡</sup>	1.68 (.93)	1.60 (.79)	1.57 (.71)	.61
Reliable Partnership <sup>‡</sup>	2.28 <sup>a</sup> (.83)	1.98 <sup>b</sup> (.83)	1.97 <sup>b</sup> (.84)	4.17 <sup>*</sup>
Enjoyable Companionship <sup>‡</sup>	2.28 (1.22)	2.33 (1.11)	2.29 (1.13)	.07
Honest Feedback <sup>‡</sup>	1.70 (1.04)	1.64 (.99)	1.65 (1.03)	.08
Self-Disclosure <sup>‡</sup>	2.91 <sup>a</sup> (.96)	2.43 <sup>b</sup> (.97)	2.49 <sup>b</sup> (.97)	7.16 <sup>**</sup>
Spirit of Equality <sup>‡</sup>	1.71 (.74)	1.52 (.69)	1.59 (.73)	1.77
Forgiveness <sup>‡</sup>	3.53 <sup>a</sup> (.86)	3.23 <sup>b</sup> (.83)	3.28 <sup>ab</sup> (.79)	3.86 <sup>*</sup>
Conflict Resolution <sup>‡</sup>	2.94 <sup>a</sup> (.87)	2.57 <sup>b</sup> (.97)	2.59 <sup>b</sup> (.92)	4.78 <sup>**</sup>
Standards Composite	2.23 <sup>a</sup> (.43)	2.13 <sup>b</sup> (.46)	2.17 <sup>b</sup> (.45)	4.78 <sup>**</sup>

*Note.* Subscales marked with a double dagger are included in the friendship standards composite. Different superscripts indicate statistically significant differences between means. <sup>†</sup>  $p < .10$ ; <sup>\*</sup>  $p < .05$ , <sup>\*\*</sup>  $p < .01$ , <sup>\*\*\*</sup>  $p < .001$ .

**Internal reliability of newly-developed measures.** Since a number of new measures were created for this study, it was important to examine the internal reliability of these measures in the current sample at the individual subscale level and at the level of overall composites. Table 20 presents sample estimates of internal reliability for the subscales of the RFFQ-A (developed in Study 2) and the newly-developed Feature-

Specific Friendship Expectations measure (designed to parallel exactly the subscales of the RFFQ-A). Internal reliabilities for the RFFQ-A subscales were similar to those found in Study 2, and internal reliabilities for the Feature-Specific Friendship Expectations measure subscales, although in some cases somewhat lower than the RFFQ-A subscales, were still in the acceptable range.

**Table 20: Internal Reliabilities for the Revised Friendship Features Questionnaire for Adults (RFFQ-A) and the Feature-Specific Friendship Expectations Measure (FSFE)**

	Internal Reliability ( $\alpha$ )	
	RFFQ-A	FSFE
Shared Activities	.91	.90
Conflict	.84	.83
Validation <sup>‡</sup>	.87	.78
Emotional Support <sup>‡</sup>	.92	.88
Instrumental Help <sup>‡</sup>	.82	.80
Reliable Partnership <sup>‡</sup>	.85	.81
Enjoyable Companionship <sup>‡</sup>	.85	.81
Honest Feedback <sup>‡</sup>	.91	.84
Self-Disclosure <sup>‡</sup>	.84	.90
Spirit of Equality <sup>‡</sup>	.81	.76
Forgiveness/Conflict Resolution <sup>‡</sup>	.85	.84
Positive Composite	.96	.96

*Note.* Subscales marked with a double dagger are included in the positive composite.

For the Feature-Specific Friendship Standards measure, internal reliabilities were examined from two different perspectives. First, the internal reliability of the Feature-

Specific Friendship Standards composite was examined. As a reminder, this composite score was derived by averaging participants' bar-setting score across the 11 friendship features domains assessed in this measure. Internal reliability for this composite score was adequate ( $\alpha = .74$ ), but perhaps somewhat lower than is optimal. Second, internal reliabilities were examined within each level of bar-setting across the 11 friendship features assessed. That is, for each of the five levels, an internal reliability estimate was calculated to examine the consistency of participant responses to each of the five levels of bar-setting. Although these five levels were not developed to represent equal intervals of bar-setting across items (i.e., the difference between Level 1 and Level 2 of bar-setting for one feature was not intended to be the same as the difference between Level 1 and Level 2 of bar-setting for another feature), if the measure is working as intended it would be reasonable to expect some level of consistency in responses within each level. Internal reliability estimates revealed that this was indeed the case: Level 1  $\alpha = .83$ ; Level 2  $\alpha = .75$ ; Level 3  $\alpha = .77$ ; Level 4  $\alpha = .83$ ; Level 5  $\alpha = .89$ . Interestingly, internal reliabilities were somewhat lower for intermediate levels of bar-setting than for lower or higher levels of bar-setting, suggesting that participants responded somewhat less consistently to behaviors designed to represent the middle of the bar-setting spectrum than they did to behaviors at the extremes.

Finally, internal reliabilities were examined for the newly-developed Hypothetical Ambiguous Friendship Expectation Violation Vignettes measure. In keeping with previous research using hypothetical friendship situations vignettes (e.g., MacEvoy &

Asher, 2012), internal reliabilities were calculated separately for each interpretation and emotion, both at the feature-specific level and across all vignettes. Separate internal reliability estimates were also calculated for ratings of satisfaction.

Table 21 presents sample estimates of internal reliability for ratings of interpretations, emotions, and satisfaction in response to the hypothetical ambiguous friendship-expectation-violation vignettes. Internal reliability estimates presented at the individual feature level are based on responses to that specific item across the five vignettes for that feature; internal reliability estimates presented at the composite level are based on responses to that specific item across all 55 vignettes.

At the level of individual features, internal reliabilities for interpretations, emotions, and satisfaction ranged from .56 to .84. For interpretations, average reliabilities across the 11 domains were above .70, with the exception of “I would think my friend is being a good friend” (average  $\alpha = .69$ ) and “I would think my friend is being weird” (average  $\alpha = .67$ ). For emotions, average reliabilities across the 11 domains were all above .70, with the exception of disappointment (average  $\alpha = .66$ ). For satisfaction, the average reliability across the 11 domains was .69. These reliabilities, although technically acceptable, are certainly lower than is optimal. At the level of composite responses across the 11 features, however, internal reliabilities were extremely high ( $\alpha \geq .94$ ). Therefore, results from analyses with the Hypothetical Ambiguous Friendship Expectation Violation Vignettes measure will be presented at the overall composite level, with feature-specific results available from the author upon request.

**Table 21: Internal Reliabilities for Ratings of Interpretations, Emotions, and Satisfaction in Response to Ambiguous Friendship-Expectation-Violation Vignettes**

	V	ES	H	RP	EC	HF	SD	EQ	F	CR	C	ALL
<b>Interpretations</b>												
Good Friend	.61	.68	.73	.73	.70	.71	.76	.65	.70	.57	.75	.96
Wrong	.73	.70	.76	.73	.71	.73	.69	.68	.66	.67	.65	.96
Respect	.62	.70	.78	.76	.73	.72	.78	.68	.76	.68	.75	.96
Value	.67	.70	.76	.79	.75	.74	.77	.67	.74	.68	.75	.96
Care	.69	.64	.77	.80	.77	.74	.77	.69	.73	.72	.76	.96
Rejection	.75	.68	.75	.75	.75	.72	.70	.73	.70	.71	.79	.96
Push Around	.80	.80	.84	.79	.82	.83	.79	.68	.65	.65	.76	.96
Being Weird	.62	.72	.75	.75	.68	.68	.61	.70	.62	.63	.60	.95
<b>Emotions</b>												
Disappointed	.67	.65	.70	.71	.64	.70	.70	.62	.66	.56	.63	.94
Hurt Feelings	.67	.65	.77	.72	.74	.69	.75	.70	.74	.73	.71	.96
Lonely	.79	.64	.78	.76	.79	.78	.77	.78	.81	.78	.80	.97
Mad	.70	.68	.76	.74	.74	.72	.74	.71	.61	.71	.66	.96
Happy	.61	.67	.76	.77	.72	.71	.75	.63	.75	.59	.75	.96
Neutral	.68	.68	.75	.75	.69	.72	.70	.63	.75	.62	.69	.95
Satisfaction	.63	.68	.76	.73	.71	.70	.72	.68	.63	.60	.74	.96

*Note.* Abbreviations for individual friendship features are as follows: V = *Validation*; ES = *Emotional Support*; H = *Instrumental Help*; RP = *Reliable Partnership*; EC = *Enjoyable Companionship*; HF = *Honest Feedback*; SD = *Self-Disclosure*; EQ = *Spirit of Equality*; F = *Forgiveness*; CR = *Conflict Resolution*; C = *Conflict*; ALL = all features combined.

Future research will focus on further developing and fine-tuning the set of vignettes to develop situations that will yield highly reliable responses at the level of individual features as well as across features.

**Correlations among study variables.** In this section, tables are presented showing correlations among study variables. These tables will not be discussed in detail, but rather are presented for the information of the reader. Due to space constraints, correlations among all study variables cannot be presented here. Any correlations that are not available in this document are available from the author upon request.

Table 22 presents zero-order correlations among loneliness, friendship satisfaction (squared), and friendship features. In contrast to the findings of Study 1 and Study 2 where correlations between friendship features and loneliness ranged from  $|.18|$  to  $|.36|$ , the correlations between individual friendship features subscales and loneliness in the current sample were rather low and in some cases nonsignificant. Loneliness was significantly associated with reliable partnership ( $r = -.16, p = .001$ ), shared activities ( $r = -.14, p = .004$ ), honest feedback ( $r = -.13, p = .007$ ), spirit of equality ( $r = -.12, p = .015$ ), self-disclosure ( $r = -.11, p = .020$ ), and the overall positive friendship features composite ( $r = -.12, p = .012$ ), and was marginally associated with instrumental help ( $r = -.09, p = .067$ ), enjoyable companionship ( $r = -.09, p = .071$ ), and forgiveness/conflict resolution ( $r = -.09, p = .061$ ). Loneliness was not significantly associated with conflict ( $r = .04, p = .448$ ), validation ( $r = -.06, p = .207$ ), or emotional support ( $r = -.06, p = .230$ ).



**Table 22: Correlations Among Loneliness, Friendship Satisfaction (Squared), and Friendship Features**

	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Loneliness	—												
2. Satisfaction (Squared)	-.21 <sup>***</sup>	—											
3. SA	-.14 <sup>***</sup>	.48 <sup>***</sup>	—										
4. C	.04	-.34 <sup>***</sup>	-.12 <sup>**</sup>	—									
5. V <sup>‡</sup>	-.06	.57 <sup>***</sup>	.37 <sup>***</sup>	-.33 <sup>***</sup>	—								
6. ES <sup>‡</sup>	-.06	.61 <sup>***</sup>	.41 <sup>***</sup>	-.33 <sup>***</sup>	.82 <sup>***</sup>	—							
7. H <sup>‡</sup>	-.09 <sup>†</sup>	.64 <sup>***</sup>	.41 <sup>***</sup>	-.32 <sup>***</sup>	.68 <sup>***</sup>	.75 <sup>***</sup>	—						
8. RP <sup>‡</sup>	-.16 <sup>**</sup>	.71 <sup>***</sup>	.43 <sup>***</sup>	-.38 <sup>***</sup>	.68 <sup>***</sup>	.74 <sup>***</sup>	.75 <sup>***</sup>	—					
9. EC <sup>‡</sup>	-.09 <sup>†</sup>	.63 <sup>***</sup>	.40 <sup>***</sup>	-.37 <sup>***</sup>	.67 <sup>***</sup>	.68 <sup>***</sup>	.65 <sup>***</sup>	.67 <sup>***</sup>	—				
10. HF <sup>‡</sup>	-.13 <sup>**</sup>	.56 <sup>***</sup>	.30 <sup>***</sup>	-.22 <sup>***</sup>	.55 <sup>***</sup>	.61 <sup>***</sup>	.67 <sup>***</sup>	.61 <sup>***</sup>	.58 <sup>***</sup>	—			
11. SD <sup>‡</sup>	-.11 <sup>*</sup>	.57 <sup>***</sup>	.42 <sup>***</sup>	-.31 <sup>***</sup>	.61 <sup>***</sup>	.73 <sup>***</sup>	.53 <sup>***</sup>	.58 <sup>***</sup>	.55 <sup>***</sup>	.52 <sup>***</sup>	—		
12. EQ <sup>‡</sup>	-.12 <sup>*</sup>	.66 <sup>***</sup>	.37 <sup>***</sup>	-.43 <sup>***</sup>	.67 <sup>***</sup>	.68 <sup>***</sup>	.70 <sup>***</sup>	.74 <sup>***</sup>	.68 <sup>***</sup>	.61 <sup>***</sup>	.56 <sup>***</sup>	—	
13. FCR <sup>‡</sup>	-.09 <sup>†</sup>	.57 <sup>***</sup>	.26 <sup>***</sup>	-.44 <sup>***</sup>	.64 <sup>***</sup>	.66 <sup>***</sup>	.66 <sup>***</sup>	.66 <sup>***</sup>	.67 <sup>***</sup>	.59 <sup>***</sup>	.51 <sup>***</sup>	.70 <sup>***</sup>	—
14. Features Composite	-.12 <sup>*</sup>	.74 <sup>***</sup>	.46 <sup>***</sup>	-.42 <sup>***</sup>	.85 <sup>***</sup>	.90 <sup>***</sup>	.85 <sup>***</sup>	.86 <sup>***</sup>	.81 <sup>***</sup>	.77 <sup>***</sup>	.76 <sup>***</sup>	.84 <sup>***</sup>	.81 <sup>***</sup>

*Note.* Subscales marked with a double dagger are included in the Positive Friendship Features Composite. Abbreviations for individual friendship features are as follows: V = *Validation*; ES = *Emotional Support*; H = *Instrumental Help*; RP = *Reliable Partnership*; EC = *Enjoyable Companionship*; HF = *Honest Feedback*; SD = *Self-Disclosure*; EQ = *Spirit of Equality*; FCR = *Forgiveness/Conflict Resolution*; C = *Conflict*.

<sup>†</sup>  $p < .10$ ; <sup>\*</sup>  $p < .05$ , <sup>\*\*</sup>  $p < .01$ , <sup>\*\*\*</sup>  $p < .001$ .

**Table 23: Correlations Among Feature-Specific Friendship Expectations and Friendship Features**

	1	2	3	4	5	6	7	8	9	10	11	12
1. Shared Activities	.20***	-.05	.18***	.12*	.15**	.06	.17*	.06	.11*	.06	.12*	.14**
2. Conflict	.03	-.16**	.08	.04	-.02	-.08	-.03	-.05	-.01	-.02	.04	.00
3. Validation <sup>†</sup>	.11*	-.16*	.33***	.30***	.22***	.15**	.22***	.15**	.28***	.19***	.27***	.29***
4. Emotional Support <sup>†</sup>	.10*	-.17***	.37***	.39***	.33***	.22***	.35***	.29***	.34***	.27***	.34***	.39***
5. Instrumental Help <sup>†</sup>	.14**	-.03	.17***	.17***	.24***	.11*	.15**	.15**	.10*	.12*	.20***	.19***
6. Reliable Partnership <sup>†</sup>	.06	-.18***	.27***	.26***	.32***	.24***	.33***	.26***	.21***	.25***	.31***	.32***
7. Enjoyable Companionship <sup>†</sup>	.11*	-.18***	.33***	.25***	.29***	.24***	.39***	.23***	.25***	.23***	.27***	.33***
8. Honest Feedback <sup>†</sup>	.07	-.18***	.28***	.25***	.33***	.28***	.41***	.42***	.24***	.29***	.41***	.38***
9. Self-Disclosure <sup>†</sup>	.11*	-.20***	.37***	.37***	.30***	.24***	.35***	.27***	.38***	.26***	.29***	.38***
10. Spirit of Equality <sup>†</sup>	.09 <sup>†</sup>	-.24***	.31***	.26***	.29***	.18***	.30***	.24***	.23***	.31***	.35***	.33***
11. Forgiveness/Conflict Resolution <sup>†</sup>	.06	-.19***	.25***	.20***	.28***	.20***	.31***	.21***	.18***	.24***	.37***	.29***
12. Positive Composite	.12*	-.21***	.38***	.35***	.36***	.26***	.39***	.31***	.31***	.30***	.40***	.41***

*Note.* Feature-Specific Friendship Expectations subscales are listed down the rows; corresponding friendship features subscales are listed across the columns. Subscales marked with a double dagger are included in the Positive Composite. <sup>†</sup> $p < .10$ ; \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ .

**Table 24: Correlations Among Feature-Specific Friendship Expectations and Feature-Specific Friendship Standards**

	V	ES	H	RP	EC	HF	SD	EQ	F	CR	C	SC
Shared Activities	.04	-.04	.08	.01	.12*	-.06	.08	.03	.07	.06	.11*	.09
Conflict	.03	-.02	.06	-.04	.01	-.02	-.15**	-.05	.02	-.04	.18***	-.01
Validation <sup>‡</sup>	.11*	.07	.02	.12*	.11*	-.12*	.10*	.00	.05	.12*	.17***	.13*
Emotional Support <sup>‡</sup>	.12*	.10*	.03	.12*	.10*	-.06	.15**	.04	.11*	.15**	.11*	.16**
Instrumental Help <sup>‡</sup>	.07	-.08	.11*	.02	-.03	-.06	.06	.02	-.03	.05	.08	.03
Reliable Partnership <sup>‡</sup>	.07	.06	.07	.15**	.08	-.02	.18***	.09 <sup>†</sup>	.18***	.12*	.08	.18***
Enjoyable Companionship <sup>‡</sup>	.11*	.06	.03	.08 <sup>†</sup>	.14**	-.01	.17***	.09 <sup>†</sup>	.12*	.13**	.15**	.18***
Honest Feedback <sup>‡</sup>	-.08 <sup>†</sup>	-.05	-.06	.08 <sup>†</sup>	-.03	.04	.13**	.00	.03	-.02	.05	.02
Self-Disclosure <sup>‡</sup>	.12*	.07	.02	.13**	.12*	-.01	.18***	.04	.12*	.11*	.10*	.18***
Spirit of Equality <sup>‡</sup>	.05	.04	-.03	.05	.04	.00	.05	.01	.04	.06	.08	.06
Forgiveness/Conflict Resolution <sup>‡</sup>	.01	-.04	-.03	.04	.05	-.05	.02	.03	.04	.03	.12*	.03
Expectations Composite	.09 <sup>†</sup>	.03	.02	.11*	.08 <sup>†</sup>	-.05	.15**	.04	.09 <sup>†</sup>	.10*	.13**	.14**

*Note.* Feature-Specific Friendship Expectations are listed down the rows; Feature-Specific Friendship Standards are listed across the columns. Subscales marked with a double dagger are included in the Expectations Composite. Abbreviations for Feature-Specific Friendship Standards are as follows: V = *Validation*; ES = *Emotional Support*; H = *Instrumental Help*; RP = *Reliable Partnership*; EC = *Enjoyable Companionship*; HF = *Honest Feedback*; SD = *Self-Disclosure*; EQ = *Spirit of Equality*; F = *Forgiveness*; CR = *Conflict Resolution*; C = *Conflict*; SC = *Feature-Specific Friendship Standards Composite* (all 11 feature-specific friendship standards subscales are included in this composite).

<sup>†</sup>  $p < .10$ ; \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ .

**Table 25: Correlations Among Loneliness, Friendship Satisfaction (Squared), and Feature-Specific Friendship Expectations**

	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Loneliness	—												
2. Satisfaction (Squared)	-.21 <sup>***</sup>	—											
3. SA	.05	.07	—										
4. C	.01	-.02	.31 <sup>***</sup>	—									
5. V <sup>‡</sup>	.04	.15 <sup>**</sup>	.55 <sup>***</sup>	.36 <sup>***</sup>	—								
6. ES <sup>‡</sup>	-.02	.20 <sup>***</sup>	.50 <sup>***</sup>	.19 <sup>***</sup>	.70 <sup>***</sup>	—							
7. H <sup>‡</sup>	-.03	.16 <sup>**</sup>	.58 <sup>***</sup>	.43 <sup>***</sup>	.53 <sup>***</sup>	.55 <sup>***</sup>	—						
8. RP <sup>‡</sup>	-.06	.21 <sup>***</sup>	.53 <sup>***</sup>	.11 <sup>*</sup>	.46 <sup>***</sup>	.66 <sup>***</sup>	.52 <sup>***</sup>	—					
9. EC <sup>‡</sup>	-.12 <sup>*</sup>	.24 <sup>***</sup>	.62 <sup>***</sup>	.18 <sup>***</sup>	.58 <sup>***</sup>	.62 <sup>***</sup>	.48 <sup>***</sup>	.58 <sup>***</sup>	—				
10. HF <sup>‡</sup>	-.06	.29 <sup>***</sup>	.35 <sup>***</sup>	.01	.32 <sup>***</sup>	.55 <sup>***</sup>	.42 <sup>***</sup>	.60 <sup>***</sup>	.48 <sup>***</sup>	—			
11. SD <sup>‡</sup>	-.05	.21 <sup>***</sup>	.56 <sup>***</sup>	.17 <sup>**</sup>	.62 <sup>***</sup>	.78 <sup>***</sup>	.49 <sup>***</sup>	.67 <sup>***</sup>	.62 <sup>***</sup>	.57 <sup>***</sup>	—		
12. EQ <sup>‡</sup>	-.02	.21 <sup>***</sup>	.51 <sup>***</sup>	.28 <sup>***</sup>	.53 <sup>***</sup>	.63 <sup>***</sup>	.46 <sup>***</sup>	.62 <sup>***</sup>	.56 <sup>***</sup>	.55 <sup>***</sup>	.65 <sup>***</sup>	—	
13. FCR <sup>‡</sup>	-.07	.22 <sup>***</sup>	.48 <sup>***</sup>	.30 <sup>***</sup>	.51 <sup>***</sup>	.60 <sup>***</sup>	.54 <sup>***</sup>	.58 <sup>***</sup>	.53 <sup>***</sup>	.56 <sup>***</sup>	.60 <sup>***</sup>	.65 <sup>***</sup>	—
14. Expectations Composite	-.05	.26 <sup>***</sup>	.66 <sup>***</sup>	.30 <sup>***</sup>	.75 <sup>***</sup>	.87 <sup>***</sup>	.72 <sup>***</sup>	.80 <sup>***</sup>	.77 <sup>***</sup>	.71 <sup>***</sup>	.85 <sup>***</sup>	.80 <sup>***</sup>	.79 <sup>***</sup>

*Note.* Subscales marked with a double dagger are included in the Feature-Specific Friendship Expectations Composite. Abbreviations for individual friendship features are as follows: V = *Validation*; ES = *Emotional Support*; H = *Instrumental Help*; RP = *Reliable Partnership*; EC = *Enjoyable Companionship*; HF = *Honest Feedback*; SD = *Self-Disclosure*; EQ = *Spirit of Equality*; FCR = *Forgiveness/Conflict Resolution*; C = *Conflict*.

†  $p < .10$ ; \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ .

**Table 26: Correlations Among Loneliness, Friendship Satisfaction (Squared), and Feature-Specific Friendship Standards**

	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Loneliness	—												
2. Satisfaction (Squared)	-.21 <sup>***</sup>	—											
3. V	.00	-.01	—										
4. ES	.02	-.06	.20 <sup>***</sup>	—									
5. H	-.02	-.10 <sup>*</sup>	.30 <sup>***</sup>	.20 <sup>***</sup>	—								
6. RP	.00	.00	.23 <sup>***</sup>	.25 <sup>***</sup>	.26 <sup>***</sup>	—							
7. EC	.08	-.11 <sup>*</sup>	.24 <sup>***</sup>	.30 <sup>***</sup>	.28 <sup>***</sup>	.24 <sup>***</sup>	—						
8. HF	.04	-.12 <sup>*</sup>	.11 <sup>*</sup>	.13 <sup>**</sup>	.05	.14 <sup>**</sup>	.01	—					
9. SD	-.04	-.01	.30 <sup>***</sup>	.27 <sup>***</sup>	.25 <sup>***</sup>	.25 <sup>***</sup>	.25 <sup>***</sup>	.15 <sup>***</sup>	—				
10. EQ	-.04	.03	.19 <sup>***</sup>	.22 <sup>***</sup>	.28 <sup>***</sup>	.25 <sup>***</sup>	.23 <sup>***</sup>	.09 <sup>†</sup>	.27 <sup>***</sup>	—			
11. F	-.09 <sup>†</sup>	.08	.20 <sup>***</sup>	.25 <sup>***</sup>	.17 <sup>***</sup>	.26 <sup>***</sup>	.22 <sup>***</sup>	.01	.25 <sup>***</sup>	.17 <sup>***</sup>	—		
12. CR	-.04	-.08	.25 <sup>***</sup>	.30 <sup>***</sup>	.25 <sup>***</sup>	.30 <sup>***</sup>	.29 <sup>***</sup>	.09 <sup>†</sup>	.31 <sup>***</sup>	.25 <sup>***</sup>	.24 <sup>***</sup>	—	
13. C	.02	-.03	.20 <sup>***</sup>	.20 <sup>***</sup>	.17 <sup>***</sup>	.17 <sup>***</sup>	.28 <sup>***</sup>	.06	.20 <sup>***</sup>	.23 <sup>***</sup>	.32 <sup>***</sup>	.18 <sup>***</sup>	—
14. Standards Composite	-.01	-.08	.52 <sup>***</sup>	.55 <sup>***</sup>	.54 <sup>***</sup>	.57 <sup>***</sup>	.60 <sup>***</sup>	.34 <sup>***</sup>	.62 <sup>***</sup>	.52 <sup>***</sup>	.52 <sup>***</sup>	.60 <sup>***</sup>	.49 <sup>***</sup>

*Note.* All subscales are included in the Feature-Specific Friendship Standards Composite. Abbreviations for individual friendship features are as follows: V = Validation; ES = Emotional Support; H = Instrumental Help; RP = Reliable Partnership; EC = Enjoyable Companionship; HF = Honest Feedback; SD = Self-Disclosure; EQ = Spirit of Equality; F = Forgiveness; CR = Conflict Resolution; C = Conflict.

†  $p < .10$ ; \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ .

To examine whether these correlations were similarly low across various groups in the sample, correlations between friendship features and loneliness were examined separately for males and females; MTurk participants and participant pool participants; students and non-students; participants in committed romantic relationships and participants not in a committed romantic relationship; and participants who were employed and participants who were unemployed. Across all of these various subgroups, the correlations among friendship features and loneliness were similarly low. This low degree of association between friendship features and loneliness makes it difficult to test many of the key hypotheses proposed in this study. Since there is a statistically significant degree of association between many of the friendship features and loneliness, analyses testing hypotheses involving an association between friendship features and loneliness were still conducted. However, due to the lower-than-expected associations between friendship features and loneliness at the zero-order correlation level, any significant or non-significant findings involving friendship features and loneliness should be interpreted with caution pending replication in an independent sample.

By contrast, with regard to friendship satisfaction, each friendship feature was significantly associated with friendship satisfaction, and the magnitude of these correlations was similar to that observed in Study 2. The correlation between friendship satisfaction and loneliness, although somewhat lower than that observed in Study 2, was still statistically significant ( $r = -.21, p < .001$ ).

Table 23 presents correlations among the subscales of the RFFQ-A and the newly-developed Feature-Specific Friendship Expectations measure. As noted above, the Feature-Specific Friendship Expectations measure was developed to parallel the subscales of the RFFQ-A, with the items phrased to ask about what best friends *should* do rather than what a specific close or best friendship is actually like. Correlations on the diagonal are between corresponding expectations and features subscales. In almost all cases, correlations between feature-specific friendship expectations subscales and their corresponding friendship features subscales were stronger than were correlations between feature-specific friendship expectations subscales and non-corresponding friendship features subscales. The one exception was reliable partnership expectations, which was equally strongly correlated with a number of different friendship features. Overall, correlations between expectations and features were modest, ranging from  $|.03|$  to  $|.42|$ . These modest correlations support the idea that the Feature-Specific Friendship Expectations measure and the RFFQ-A are indeed capturing distinct aspects of social cognition and social experience.

Table 24 presents correlations among the subscales of the Feature-Specific Friendship Expectations measure and the Feature-Specific Friendship Standards measure. These two newly-developed measures were designed to capture distinct facets of friendship expectations, and correlations among the measures indicate that this goal was accomplished. Correlations between feature-specific friendship expectations and feature-specific friendship standards were quite modest, ranging from  $|.00|$  to  $|.18|$ , supporting the

contention that expectations and standards represent distinct aspects of friendship expectations.

Table 25 presents correlations among loneliness, friendship satisfaction, and feature-specific friendship expectations. Correlations between loneliness and feature-specific friendship expectations were low, and in most cases nonsignificant. The only exception was enjoyable companionship expectations, which were associated with lower levels of loneliness ( $r = -.12, p = .011$ ). With regard to friendship satisfaction, each friendship expectations domain was significantly associated with higher levels of friendship satisfaction, with the exception of shared activities expectations and conflict expectations. That is, individuals who held higher expectations for their friends also reported higher levels of satisfaction with their closest friendship. This is in line with the findings of Hall and colleagues (2011), who found that individuals who reported higher levels of expectations for their friends also reported higher levels of expectation fulfillment.

Finally, Table 26 presents correlations among loneliness, friendship satisfaction, and feature-specific friendship standards. Correlations between loneliness and feature-specific friendship expectations were low, and in most cases nonsignificant. The only exception was standards for forgiveness, which were marginally associated with lower levels of loneliness ( $r = -.09, p = .057$ ). With regard to friendship satisfaction, standards for three of the 11 friendship features were significantly associated with friendship satisfaction. These features were instrumental help ( $r = -.10, p = .036$ ), enjoyable



companionship ( $r = -.11, p = .025$ ), and honest feedback ( $r = -.12, p = .017$ ). In each case, higher standards for these friendship features were associated with *lower* levels of friendship satisfaction. These findings are in contrast to the findings for feature-specific friendship expectations, for which higher levels of expectations were associated with higher levels of friendship satisfaction. Although the associations for feature-specific friendship standards are quite modest, this pattern of opposite correlations with friendship satisfaction provides further support for the hypothesis that feature-specific friendship expectations and feature-specific friendship standards represent distinct dimensions of social cognition.

**Testing for replication of the paradox observed in Studies 1 and 2: Gender differences in friendship features, loneliness, and friendship satisfaction.** Gender differences in friendship features, loneliness, and friendship satisfaction were examined to see if the paradox observed in Studies 1 and 2 would replicate in this third independent sample. Table 27 presents means, standard deviations,  $F$  ratios, and effect sizes for test of gender differences in friendship features, loneliness, and friendship satisfaction.

To examine gender differences in friendship features, mean scores for the 11 friendship features were included in a multivariate analysis of variance with gender as the between-subject factor. This analysis revealed a statistically significant multivariate effect of gender (Wilks's  $\lambda = .758, F(11, 407) = 11.83, p < .001$ ). Follow-up univariate analyses of variance revealed significant gender differences for ten of the 11 friendship features, which paralleled the gender differences observed in Study 2. That is, gender

differences emerged for the features of honest feedback ( $d = -.25$ ), reliable partnership ( $d = -.25$ ), instrumental help ( $d = -.33$ ), forgiveness/conflict resolution ( $d = -.28$ ), spirit of equality ( $d = -.43$ ), conflict ( $d = .51$ ), enjoyable companionship ( $d = -.41$ ), emotional support ( $d = -.68$ ), self-disclosure ( $d = -.68$ ), and validation ( $d = -.76$ ). As was seen in Study 2, no gender difference emerged for the feature of shared activities ( $d = -.06$ ). Consistent with the findings of Studies 1 and 2, females reported higher levels of each positive friendship feature (with the exception of shared activities, for which there was no gender difference) and lower levels of conflict within their closest friendship than did males. The effect sizes for gender observed in this sample were slightly more modest than those observed in Study 2.

Using univariate analysis of variance, the gender difference in the positive friendship features composite was also examined. As would be expected from the gender differences found at the individual subscale level, the gender effect for the positive friendship features composite was relatively large ( $d = -.56$ ), with females reporting higher levels of positive friendship features than did males.

Univariate analyses of variance were also employed to examine gender differences in loneliness and friendship satisfaction (squared). With regard to loneliness, the gender effect was once again small and nonsignificant, although the effect size was slightly larger than that observed in Studies 1 and 2 ( $d = -.16$ ). This negative effect size indicated that females reported slightly higher levels of loneliness than did males in this sample.

**Table 27: Gender Differences in Friendship Features, Loneliness, and Friendship Satisfaction (Squared)**

	Males		Females		<i>F</i>	<i>d</i>
	Mean (SD)					
Shared Activities	5.27	(1.26)	5.35	(1.40)	.33	-.06
Conflict	2.60	(1.10)	2.06	(1.08)	26.53***	.51
Validation <sup>‡</sup>	5.44	(.91)	6.11	(.86)	59.46***	-.76
Emotional Support <sup>‡</sup>	5.40	(1.05)	6.10	(.99)	47.32***	-.68
Instrumental Help <sup>‡</sup>	5.70	(.84)	5.98	(.83)	11.21**	-.33
Reliable Partnership <sup>‡</sup>	5.83	(.92)	6.08	(1.03)	6.48*	-.25
Enjoyable Companionship <sup>‡</sup>	6.15	(.72)	6.44	(.71)	17.13***	-.41
Honest Feedback <sup>‡</sup>	5.98	(.78)	6.19	(.92)	6.23*	-.25
Self-Disclosure <sup>‡</sup>	5.42	(.99)	6.09	(1.00)	46.75***	-.68
Spirit of Equality <sup>‡</sup>	5.75	(.80)	6.11	(.86)	18.96***	-.43
Forgiveness/Conflict Resolution <sup>‡</sup>	5.86	(.76)	6.09	(.83)	8.24**	-.28
Positive Features Composite	5.86	(.67)	6.10	(.52)	26.53***	-.51
Loneliness	2.24	(.72)	2.35	(.68)	2.45	-.16
Friendship Satisfaction (squared)	171.41	(43.85)	177.45	(49.81)	1.66	-.13

*Note.* Subscales marked with a double dagger are included in the Positive Friendship Features Composite. \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ .

With regard to friendship satisfaction, the gender difference did not reach the level of statistical significance, in contrast to the finding from Study 2. The magnitude of the effect observed in the current study ( $d = -.13$ ), however, was very similar to that observed in Study 2 ( $d = -.17$ ), indicating that females reported slightly higher levels of friendship satisfaction than did males.

Taken together, these findings replicate the paradox of medium- to large-sized gender differences in friendship features coupled with small and nonsignificant gender differences in loneliness, and in friendship satisfaction. The third element of the paradox—that friendship features are significantly associated with loneliness—was only moderately replicated in this sample (see Table 22). This presents an important caveat to the replication. With regard to friendship satisfaction, however, the associations between friendship features and friendship satisfaction were robust, providing a replication of the paradox with regard to friendship satisfaction. Given the weaker-than-expected association between friendship features and loneliness, replication of the suppression effect with regard to loneliness and any potential explanation of the suppression effect with regard to loneliness by the inclusion of friendship expectations in the model is likely to be rather muted, and should be interpreted with caution pending replication in independent samples. Associations between friendship features and friendship satisfaction, however, were more robust, so attempts to replicate the suppression effect and to test hypotheses about the explanatory power of friendship expectations in this model are likely to be more fruitful.

**Hypothesis-testing goal 1: Examining mean-level gender differences in friendship expectations.** Next, the hypothesis that females have higher expectations for their friends than do males was tested. To test this hypothesis, gender differences in friendship expectations were examined for both the Feature-Specific Friendship Expectations measure—designed to assess the degree to which individuals expect their friendships to be characterized by certain features—and the Feature-Specific Friendship Standards measure—designed to assess where individuals “set the bar” in deciding whether a friendship expectation has been met. Examining gender differences in these two distinct facets of friendship expectations provides a more nuanced perspective on the question of whether females do indeed hold higher expectations for their friends than do males. Once again, throughout this section please note that negative effect sizes indicate that females were higher on a particular variable and positive effect sizes indicate that males were higher on a particular variable.

*Gender differences in feature-specific friendship expectations.* Table 28 presents means and standard deviations for males and females for each of the 11 feature-specific friendship expectations domains. A multivariate analysis of variance with gender as the between-subjects factor was conducted on the 11 feature-specific friendship expectations subscales. Consistent with hypotheses and with previous research, this analysis yielded a statistically significant multivariate effect of gender (Wilks’s  $\lambda = .76$ ,  $F(11, 407) = 11.74$ ,  $p < .001$ ). Follow-up univariate analyses of variance revealed

statistically significant gender differences for seven of the 11 friendship expectations domains.

**Table 28: Gender Differences in Feature-Specific Friendship Expectations**

	Males		Females		<i>F</i>	<i>d</i>
	Mean (SD)		Mean (SD)			
Shared Activities	5.70	(.95)	5.76	(.87)	.53	-.07
Conflict	3.99	(1.15)	3.93	(1.12)	.28	.05
Validation <sup>‡</sup>	5.42	(.86)	5.81	(.74)	25.03 <sup>***</sup>	-.50
Emotional Support <sup>‡</sup>	5.80	(.91)	6.22	(.64)	30.47 <sup>***</sup>	-.55
Instrumental Help <sup>‡</sup>	5.47	(.89)	5.27	(.84)	5.38 <sup>*</sup>	.23
Reliable Partnership <sup>‡</sup>	6.18	(.77)	6.31	(.61)	3.84 <sup>†</sup>	-.19
Enjoyable Companionship <sup>‡</sup>	6.11	(.78)	6.40	(.58)	19.97 <sup>***</sup>	-.44
Honest Feedback <sup>‡</sup>	6.18	(.77)	6.33	(.67)	4.45 <sup>*</sup>	-.21
Self-Disclosure <sup>‡</sup>	5.80	(.91)	6.25	(.70)	32.98 <sup>***</sup>	-.57
Spirit of Equality <sup>‡</sup>	5.87	(.83)	6.22	(.64)	24.01 <sup>***</sup>	-.49
Forgiveness/Conflict Resolution <sup>‡</sup>	5.94	(.84)	6.05	(.71)	1.84	-.13
Friendship Expectations Composite	5.86	(.67)	6.10	(.52)	15.97 <sup>***</sup>	-.40

*Note.* Subscales marked with a double dagger are included in the Friendship Expectations Composite. <sup>†</sup>  $p < .10$ ; <sup>\*</sup>  $p < .05$ , <sup>\*\*</sup>  $p < .01$ , <sup>\*\*\*</sup>  $p < .001$ .

Specifically, females reported higher expectations than did males with regard to honest feedback ( $d = -.21$ ), enjoyable companionship ( $d = -.44$ ), spirit of equality ( $d = -.49$ ), validation ( $d = -.50$ ), emotional support ( $d = -.55$ ), and self-disclosure ( $d = -.57$ ). Interestingly, in one domain of friendship expectations—expectations for help—males reported higher expectations than did females ( $d = .23$ ), a finding that is consistent with Hall (2011). Of the remaining four feature-specific friendship expectations domains, shared activities ( $d = -.07$ ), conflict ( $d = .05$ ), and forgiveness/conflict resolution ( $d = -.13$ ) showed no difference, and a marginal gender difference was found for reliable partnership ( $d = -.19$ ).

In addition to examining gender differences at the level of individual features, the gender difference in the feature-specific friendship expectations composite was also examined. A one-way univariate analysis of variance revealed a statistically significant gender difference for the feature-specific friendship expectations composite, such that females reported higher levels of positive friendship expectations than did males ( $d = -.40$ ).

***Gender differences in feature-specific friendship standards or “bar-setting.”***

The next set of analyses was conducted to test the hypothesis that males and females “set the bar” differently in terms of what a friend needs to do to fulfill a given friendship expectation. As a reminder, the feature-specific friendship standards measure included 11 different scenarios each corresponding to a different friendship feature. For each scenario participants were presented with a list of five possible behaviors that a friend

could enact in that situation. For each behavior, participants rated, on a 15-point scale (1 = *strongly disagree*, 15 = *strongly agree*), the degree to which they agree that their friend is being a “good friend” in that situation. Ratings on this scale were conceptualized as an index of satisfaction with the friend’s behavior.

Gender differences in feature-specific friendship standards were examined in two different sets of analyses. The first set of analyses examined gender differences in responses to each of the five levels of bar-setting across the 11 friendship features domains. This allowed for an examination of gender differences in responses to identical friendship behaviors (i.e., do males and females report similar levels of satisfaction with an identical friendship behavior?). The second set of analyses examined gender differences in the minimum bar-setting score assigned to each participant. This set of analyses allowed for a direct examination of gender differences in where individuals “set the bar” for friends across the 11 friendship features domains.

For the first set of analyses, a series of 11 repeated measures analyses of variance was conducted examining gender differences in how participants evaluated the five different behaviors presented in each friendship scenario. In these analyses, bar level is a within-subjects factor and gender is a between-subjects factor. Eleven separate Bar Level (5) x Gender (2) analyses were conducted rather than a single Feature (11) x Bar Level (5) x Gender (2) analysis because the effect of feature was not of interest in this particular part of the study. It should be noted that the substantive results of the analysis were the



same whether the first step of the analysis was a single 11 x 5 x 2 analysis or 11 separate 5 x 2 analyses.

Table 29 presents a summary of the omnibus effects of bar level, gender, and the bar level by gender interaction for each of the 11 friendship features domains. Illustrative results from the Bar (5) x Gender (2) repeated measures analysis of variance for the emotional support domain—including follow-up univariate analyses of variance examining gender differences within each bar level—are presented in Table 30. Tables presenting specific results for the remaining 10 analyses are presented in Appendix K.

Significant multivariate effects of bar level were found for all 11 features: validation (Wilks's  $\lambda = .322$ ,  $F(4, 414) = 217.52$ ,  $p < .001$ ), emotional support (Wilks's  $\lambda = .104$ ,  $F(4, 414) = 893.78$ ,  $p < .001$ ), instrumental help (Wilks's  $\lambda = .284$ ,  $F(4, 414) = 260.33$ ,  $p < .001$ ), reliable partnership (Wilks's  $\lambda = .276$ ,  $F(4, 414) = 271.75$ ,  $p < .001$ ), enjoyable companionship (Wilks's  $\lambda = .194$ ,  $F(4, 414) = 430.75$ ,  $p < .001$ ), honest feedback (Wilks's  $\lambda = .359$ ,  $F(4, 414) = 184.99$ ,  $p < .001$ ), self-disclosure (Wilks's  $\lambda = .159$ ,  $F(4, 414) = 546.17$ ,  $p < .001$ ), forgiveness (Wilks's  $\lambda = .080$ ,  $F(4, 414) = 1197.41$ ,  $p < .001$ ), conflict resolution (Wilks's  $\lambda = .164$ ,  $F(4, 414) = 526.69$ ,  $p < .001$ ), spirit of equality (Wilks's  $\lambda = .321$ ,  $F(4, 414) = 218.66$ ,  $p < .001$ ), and conflict (Wilks's  $\lambda = .179$ ,  $F(4, 414) = 476.29$ ,  $p < .001$ ). That is, for each situation, participants were differentially satisfied with the five different levels of expectation fulfillment. As noted above, internal reliability analyses within each bar level indicated significant internal consistency in

participants' responses to each level of bar-setting across the different scenarios (Level 1  $\alpha = .83$ ; Level 2  $\alpha = .75$ ; Level 3  $\alpha = .77$ ; Level 4  $\alpha = .83$ ; Level 5  $\alpha = .89$ ).

**Table 29: Summary of Omnibus Effects of Bar Level, Gender, and the Bar Level x Gender Interaction for Feature-Specific Friendship Standards**

	Bar Level	Gender	Bar Level x Gender
	$F(4, 414)$	$F(1, 417)$	$F(4, 414)$
Validation	217.52 <sup>***</sup>	4.54 <sup>*</sup>	3.00 <sup>*</sup>
Emotional Support	893.78 <sup>***</sup>	.42	12.08 <sup>***</sup>
Instrumental Help	260.33 <sup>***</sup>	6.45 <sup>*</sup>	.97
Reliable Partnership	271.75 <sup>***</sup>	1.05	7.03 <sup>***</sup>
Enjoyable Companionship	430.75 <sup>***</sup>	.20	8.65 <sup>***</sup>
Honest Feedback	184.99 <sup>***</sup>	1.80	1.68
Self-Disclosure	546.17 <sup>***</sup>	2.22	8.40 <sup>***</sup>
Spirit of Equality	218.66 <sup>***</sup>	4.45 <sup>*</sup>	1.32
Forgiveness	1197.41 <sup>***</sup>	1.12	9.14 <sup>***</sup>
Conflict Resolution	526.69 <sup>***</sup>	.18	5.12 <sup>***</sup>
Conflict	476.29 <sup>***</sup>	7.66 <sup>**</sup>	4.74 <sup>**</sup>

*Note.*  $F$  ratios for the bar level and bar level x gender interaction effects are multivariate  $F$  tests for the significance of Wilks's  $\lambda$  (Wilks's  $\lambda$  estimates for each feature are presented in Appendix K);  $F$  ratios for gender effects are tests of the omnibus between-subjects gender effect. <sup>\*</sup>  $p < .05$ , <sup>\*\*</sup>  $p < .01$ , <sup>\*\*\*</sup>  $p < .001$ .

**Table 30: Gender Differences in Feature-Specific Friendship Standards for Emotional Support**

	Wilks's $\lambda$	Multivariate $F(4, 414)$	Within-Subjects $F(2.04, 849.43)$	
Bar Level	.104	893.78 <sup>***</sup>	2057.84 <sup>***</sup>	
Bar Level x Gender	.895	12.08 <sup>***</sup>	23.98 <sup>**</sup>	
	Mean (SE)		$F_{gender}(1, 417)$	$d$
	Males	Females		
Level 1	4.53 (.21)	2.96 (.18)	33.03 <sup>***</sup>	.57
Level 2	4.86 (.24)	3.96 (.20)	8.17 <sup>**</sup>	.28
Level 3	11.73 (.17)	12.30 (.15)	6.33 <sup>*</sup>	-.25
Level 4	12.85 (.14)	13.65 (.12)	18.33 <sup>***</sup>	-.42
Level 5	13.64 (.12)	14.30 (.11)	17.24 <sup>***</sup>	-.41

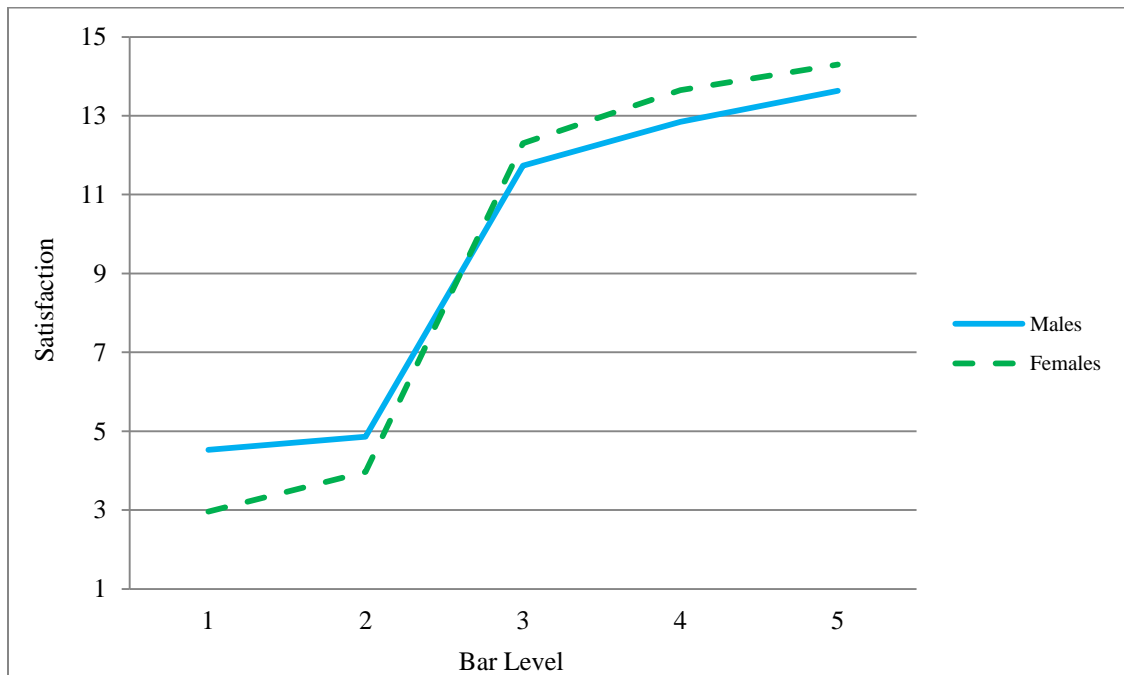
*Note.* Means are estimated marginal means from a Gender (2) x Bar Level (5) repeated measures analysis of variance. Within-subjects  $F$  is Greenhouse-Geisser corrected for violation of the assumption of sphericity;  $F_{gender}$  is from univariate follow-up tests of the effect of gender within each level of the Bar factor. <sup>†</sup>  $p < .10$ ; \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ .

In addition, for eight of the 11 features, significant main effects of bar level were qualified by statistically significant bar x gender interaction effects. These interaction effects emerged for validation (Wilks's  $\lambda = .972$ ,  $F(4, 414) = 3.00$ ,  $p = .018$ ), emotional support (Wilks's  $\lambda = .895$ ,  $F(4, 414) = 12.08$ ,  $p < .001$ ), reliable partnership (Wilks's  $\lambda = .936$ ,  $F(4, 414) = 7.03$ ,  $p < .001$ ), enjoyable companionship (Wilks's  $\lambda = .923$ ,  $F(4, 414) = 8.65$ ,  $p < .001$ ), self-disclosure (Wilks's  $\lambda = .925$ ,  $F(4, 414) = 8.40$ ,  $p < .001$ ), forgiveness (Wilks's  $\lambda = .919$ ,  $F(4, 414) = 9.14$ ,  $p < .001$ ), conflict resolution (Wilks's  $\lambda = .953$ ,  $F(4, 414) = 5.12$ ,  $p < .001$ ), and conflict (Wilks's  $\lambda = .956$ ,  $F(4, 414) = 4.74$ ,  $p =$

.001) expectations, and indicated that the effect of gender varied across the different levels of bar-setting.

To probe these interaction effects, follow-up univariate analyses of variance were conducted examining the simple effect of gender within each level of feature-specific friendship standards. The results of these follow-up tests indicated an interesting pattern of gender effects, with significant gender differences emerging in *different directions* at different levels of feature-specific friendship standards. Specifically, at low levels of feature-specific friendship standards, males tended to report higher levels of satisfaction than did females, and this effect was statistically significant for six out of the eight features for which interaction effects occurred. These features were emotional support ( $F(1, 417) = 33.03, p < .001, d = .57$ ), reliable partnership ( $F(1, 417) = 18.06, p < .001, d = .42$ ), enjoyable companionship ( $F(1, 417) = 8.33, p = .004, d = .29$ ), self-disclosure ( $F(1, 417) = 12.10, p = .001, d = .34$ ), forgiveness ( $F(1, 417) = 8.34, p = .004, d = .29$ ), and conflict resolution ( $F(1, 417) = 5.69, p = .018, d = .24$ ). The gender effect for conflict at level 1 of bar-setting/standards was marginally significant ( $F(1, 417) = 3.28, p = .071, d = .18$ ), and for validation there was no significant gender effect at level 1 of bar-setting/standards ( $F(1, 417) = 2.24, p = .135, d = .15$ ). At higher levels of feature-specific friendship standards, however, gender differences were in the opposite direction such that females reported higher levels of satisfaction with their friend's behavior than did males. At the highest level of feature-specific friendship standards (level 5), gender differences favoring females were found for all eight of the features for which there were

statistically significant bar x gender interactions: validation ( $F(1, 417) = 12.09, p = .001, d = -.34$ ), emotional support ( $F(1, 417) = 17.24, p < .001, d = -.41$ ), reliable partnership ( $F(1, 417) = 6.90, p = .009, d = -.26$ ), enjoyable companionship ( $F(1, 417) = 33.19, p < .001, d = -.57$ ), self-disclosure ( $F(1, 417) = 18.80, p < .001, d = -.43$ ), forgiveness ( $F(1, 417) = 17.05, p < .001, d = -.41$ ), conflict resolution ( $F(1, 417) = 9.44, p = .002, d = -.30$ ), and conflict ( $F(1, 417) = 19.30, p < .001, d = -.44$ ). Figure 4 provides a graphic representation of gender differences in feature-specific friendship standards for the feature of emotional support. Figures presenting gender differences for the remaining 10 features are presented in Appendix K.



**Figure 4: Graphic Representation of Gender Differences in Feature-Specific Friendship Standards for Emotional Support**

Taken together, these findings are consistent with the interaction effects between gender and friendship features in predicting friendship satisfaction found in Study 2, suggesting that males may be less “sensitive” to subtle variations in friendship features, or conversely that females seem to receive a greater “boost” in satisfaction for each unit-increase in friendship features than do males.

Significant bar x gender interactions did not emerge for the features of instrumental help (Wilks’s  $\lambda = .991$ ,  $F(4, 414) = .97$ ,  $p = .425$ ), honest feedback (Wilks’s  $\lambda = .984$ ,  $F(4, 414) = 1.68$ ,  $p = .155$ ), and spirit of equality (Wilks’s  $\lambda = .987$ ,  $F(4, 414) = 1.32$ ,  $p = .263$ ). For instrumental help ( $F(1, 417) = 6.45$ ,  $p = .011$ ) and spirit of equality ( $F(1, 417) = 4.45$ ,  $p = .035$ ), significant main effects of gender did emerge such that females reported higher levels of satisfaction across the five levels of feature-specific friendship standards than did males. For honest feedback, however, no main effect of gender was found ( $F(1, 417) = 4.45$ ,  $p = .035$ ), indicating that, at each of the five levels of feature-specific friendship standards for that feature, males and females were similarly satisfied.

The second set of analyses examining gender differences in feature-specific friendship standards employed a single feature-specific friendship standards score for each participant within each of the 11 friendship features domains, rather than the five ratings in each domain used in the previous analysis. These scores were intended to capture where participants “set the bar” for friends within each friendship feature domain.

As a reminder, these scores were derived by assigning a number to each participant based on the lowest level of bar-setting for which a participant gave a rating above the scale midpoint (i.e.,  $\geq 8$ ). For example, a participant who rated Level 1 as a 4, Level 2 as a 6, Level 3 as a 9, Level 4 as an 11, and Level 5 as a 13 would be assigned a bar-setting score of 3 for that domain, because Level 3 was the lowest level for which they rated the friend's behavior at or above an 8. For this participant, the behavior indicated at Level 3 would be the least that a friend could do in that domain for the participant to feel satisfied (as opposed to dissatisfied) with their friend's behavior. Participants were assigned a score for each of the 11 friendship features domains assessed with the Feature-Specific Friendship Standards measure. Participants' scores could range from 1 to 5 in each domain, with higher scores indicating higher levels of bar-setting within that domain. A feature-specific friendship standards composite score was also calculated; this composite score was the average of participants' bar-setting scores across the 11 friendship features domains.

Table 31 presents means, standard deviations,  $F$  ratios, and effect sizes for this set of feature-specific friendship standards gender comparisons. As can be seen from the means presented, participants were generally satisfied at relatively low levels of bar-setting, with the highest average bar-setting score being for forgiveness ( $M_{\text{males}} = 3.25$ ,  $M_{\text{females}} = 3.35$ ), and the lowest average bar-setting score being for validation ( $M_{\text{males}} = 1.48$ ,  $M_{\text{females}} = 1.63$ ). Gender differences in feature-specific standards scores were examined with a multivariate analysis of variance with gender as the between-subjects

factor. A significant multivariate effect of gender emerged (Wilks's  $\lambda = .899$ ,  $F(11, 407) = 4.17$ ,  $p < .001$ ), and follow-up univariate analyses revealed significant gender differences for five of the 11 features: validation ( $d = -.22$ ), reliable partnership ( $d = -.23$ ), enjoyable companionship ( $d = -.25$ ), self-disclosure ( $d = -.27$ ), and emotional support ( $d = -.45$ ). In each case, females set the bar higher than did males. In addition, a separate univariate analysis of variance showed a significant gender difference in the feature-specific friendship standards composite such that females set the bar higher than did males ( $d = -.25$ ).

Taken together, findings regarding gender differences in friendship expectations support the contention that females hold higher expectations for their friends than do males, both in terms of feature-specific friendship expectations and in terms of feature-specific friendship standards. These differences were consistent across the Feature-Specific Expectations measure and the Feature-Specific Friendship Standards measure for validation, emotional support, reliable partnership, enjoyable companionship, and self-disclosure. Interestingly, there was some indication that males actually hold higher expectations for their friends than do females in the domain of instrumental help, although this difference was statistically significant for the feature-specific friendship expectations measure only. For the domains of spirit of equality, honest feedback, forgiveness, conflict resolution, shared activities, and conflict, however, it appears that males and females hold similar expectations for friends. These findings once again



highlight the importance of taking a more nuanced, domain-specific approach to the assessment of friendship.

**Table 31: Gender Differences in Feature-Specific Friendship Standards**

	Males	Females	<i>F</i>	<i>d</i>
	Mean (SD)			
Validation <sup>‡</sup>	1.48 (.66)	1.63 (.68)	4.92 <sup>*</sup>	-.22
Emotional Support <sup>‡</sup>	2.53 (.85)	2.84 (.53)	22.26 <sup>***</sup>	-.45
Instrumental Help <sup>‡</sup>	1.66 (.81)	1.56 (.76)	1.52	.13
Reliable Partnership <sup>‡</sup>	1.92 (.89)	2.11 (.80)	5.48 <sup>*</sup>	-.23
Enjoyable Companionship <sup>‡</sup>	2.14 (1.09)	2.42 (1.16)	6.46 <sup>*</sup>	-.25
Honest Feedback <sup>‡</sup>	1.68 (1.07)	1.64 (.98)	.16	.04
Self-Disclosure <sup>‡</sup>	2.39 (.97)	2.65 (.98)	7.09 <sup>**</sup>	-.27
Spirit of Equality <sup>‡</sup>	1.62 (.75)	1.57 (.70)	.53	.07
Forgiveness <sup>‡</sup>	3.25 (.91)	3.35 (.76)	1.58	-.12
Conflict Resolution <sup>‡</sup>	2.58 (.99)	2.69 (.89)	1.41	-.12
Conflict <sup>‡</sup>	2.05 (.75)	2.08 (.67)	.21	-.04
Standards Composite	2.12 (.49)	2.23 (.42)	6.62 <sup>*</sup>	-.25

*Note.* Subscales marked with a double dagger are included in the Standards Composite. <sup>\*</sup>  $p < .05$ , <sup>\*\*</sup>  $p < .01$ , <sup>\*\*\*</sup>  $p < .001$ .

**Hypothesis-testing goal 2: Examining friendship expectations as an explanation for suppression effects.** To address this second hypothesis testing goal of Study 3, it was first important to examine whether the suppression effect in the link between gender and loneliness observed in Studies 1 and 2, and the suppression effect in the link between gender and friendship satisfaction observed in Study 2 would replicate in this third independent sample. Then, if the suppression effects did replicate, the next step was to test the hypothesis that gender differences in friendship expectations would explain these suppression effects.

It is important to note here that the comparatively weak associations between friendship features and loneliness observed in the current sample will make it difficult to draw firm conclusions about (a) the replicability of the suppression effect in the link between gender and loneliness, and (b) whether or not gender differences in friendship expectations actually explain the hypothesized suppression effect in the link between gender and loneliness. While the associations between friendship features and loneliness observed in the current sample were indeed much weaker than anticipated, many of these associations did reach the level of statistical significance. Therefore hypothesis-testing analyses proceeded as planned, although all findings involving a link between friendship features and loneliness are interpreted with caution pending replication.

***Loneliness.*** To parallel the analyses conducted in Studies 1 and 2, two sets of analyses were conducted testing for a suppression effect in the link between gender and loneliness, and examining whether gender differences in friendship expectations would

explain this suppression effect. The first set of analyses was conducted at the overall composite level, and the second set of analyses was conducted at the level of the 11 individual friendship features.

*Analyses at the overall composite level.* A three-step hierarchical multiple regression analysis was conducted to examine whether (a) a suppression effect would be observed in the link between gender and loneliness, and (b) gender differences in friendship expectations would explain this suppression effect. In the first step of the analysis, gender was entered as a predictor of loneliness to examine the baseline association between the two variables. In the second step of the analysis, the positive friendship features composite and friendship conflict were entered as predictors to examine whether (a) these features would be significantly associated with loneliness, and (b) the gender effect would become statistically significant indicating a suppression effect of friendship features on the link between gender and loneliness. (Note that the shared activities subscale was not included in this analysis due to indicated problems with multicollinearity with the positive friendship features composite and with friendship conflict.) In the third step of the analysis, the feature-specific friendship expectations composite, feature-specific friendship conflict expectations, and the feature-specific friendship standards composite were entered as predictors to test the hypothesis that these variables would explain any suppression effect observed in the link between gender and loneliness. That is, it was hypothesized that any statistically-significant gender effects that emerged in the second step of the model (when friendship features were taken into

account), would once again become nonsignificant once friendship expectations were considered. If this were the case, it would indicate that friendship expectations do indeed explain any suppression effect observed in the link between gender and loneliness. Note that interaction effects between gender and friendship features were considered in these analyses (as they were in Studies 1 and 2), but no significant interaction effects were found. These findings were consistent with Studies 1 and 2, and indicated that associations between friendship features and loneliness were similar for males and females.

Table 32 presents the results of the hierarchical multiple regression analysis predicting loneliness from gender, positive friendship features, friendship conflict, feature-specific friendship expectations, and feature-specific friendship standards. Consistent with the findings examining mean-level gender differences in loneliness, the regression coefficient for gender in the first step of the model was once again small and nonsignificant ( $b^*_{\text{gender}} = .08, t = 1.56, p = .119; R^2_{\text{adj}} = .004$ ), indicating no mean-level gender differences in loneliness. In the second step of the model, the positive friendship features composite was associated with lower levels of loneliness ( $b^*_{\text{positive features composite}} = -.15, t = 2.84, p = .005$ ), whereas friendship conflict was not significantly associated with loneliness ( $b^*_{\text{friendship conflict}} = .002, t = .04, p = .968$ ). Interestingly, although the associations between friendship features and loneliness were considerably lower than what was observed in Studies 1 and 2, the suppression effect of friendship features on the link between gender and loneliness was once again observed—once positive friendship

features and friendship conflict were included in the model, the initially nonsignificant effect of gender became statistically significant ( $b^*_{\text{gender}} = .12, t = 2.32, p = .021$ ). That is, when friendship features were statistically controlled, females reported higher levels of loneliness than did males. Overall, this model explained approximately 2% of the variance in loneliness ( $R^2_{\text{adj}} = .021$ ), significantly lower than the approximately 15% of variance that was explained in Studies 1 and 2.

In the third step of the analysis, the positive friendship expectations composite and friendship conflict expectations (as assessed with the Feature-Specific Friendship Expectations measure) were included as predictors, along with the feature-specific friendship standards composite. These predictors were included to test the hypothesis that gender differences in friendship expectations would explain the suppression effect observed in the link between gender and loneliness. In this third step of the analysis, none of the friendship expectations variables were significantly associated with loneliness. This was perhaps not surprising given the very low (and in most cases nonsignificant) zero-order correlations between feature-specific friendship expectations, feature-specific friendship standards, and loneliness.

**Table 32: Predicting Loneliness from Gender, Positive Friendship Features, Friendship Conflict, Feature-Specific Friendship Expectations, and Feature-Specific Friendship Standards at the Overall Composite Level**

	Step 1			Step 2			Step 3		
	<i>b</i> <sup>*</sup>	<i>t</i> value	<i>sr</i> <sup>2</sup>	<i>b</i> <sup>*</sup>	<i>t</i> value	<i>sr</i> <sup>2</sup>	<i>b</i> <sup>*</sup>	<i>t</i> value	<i>sr</i> <sup>2</sup>
Gender	.08	1.56	.006	.12	2.32 <sup>*</sup>	.01	.12	2.39 <sup>*</sup>	.01
Positive Friendship Features				-.15	2.84 <sup>**</sup>	.02	-.15	2.51 <sup>*</sup>	.015
Friendship Conflict				.002	0.04	.00	.002	.04	.000
Positive Friendship Expectations Composite							-.02	.28	.000
Friendship Conflict Expectations							.01	.28	.000
Bar-Setting Composite							-.03	.51	.000
Adjusted <i>R</i> <sup>2</sup>		.004			.02 <sup>**</sup>			.015	
$\Delta R^2$		—			.022 <sup>**</sup>			.000	

*Note.* Interaction terms capturing the interactions between gender and each of the friendship features variables were tested, but were not statistically significant. Gender is dummy coded (0 = *male*, 1 = *female*); *sr*<sup>2</sup> = squared semi-partial correlation.

\* *p* < .05, \*\* *p* < .01, \*\*\* *p* < .001.

In addition, the effect of gender remained positive and significant in this third step of the analysis ( $b_{\text{gender}}^* = .12$ ,  $t = 2.32$ ,  $p = .021$ ), providing no support for the hypothesis that gender differences in friendship expectations would explain the suppression effect observed in the link between gender and loneliness. Any firm conclusions about whether this finding is “reliable knowledge” or not are withheld pending replication in an independent sample.

*Analyses at the individual feature level.* To examine whether the suppression effect would be observed at the level of individual friendship features, and whether gender differences in friendship expectations would explain any observed suppression effects, 11 feature-specific three-step hierarchical multiple regression analyses were conducted paralleling the analyses described above. In each analysis, gender was entered as a predictor in the first step of the analysis, a friendship feature was entered as a predictor in the second step of the analysis, and the corresponding feature-specific friendship expectation and feature-specific friendship standards subscales were entered as predictors in the third step of the analysis. In the case of shared activities, feature-specific friendship standards were not included in the analysis because shared activities standards were not assessed with the Feature-Specific Friendship Standards measure. In the case of forgiveness/conflict resolution, which was included as a single subscale in the RFFQ-A and the Feature-Specific Friendship Expectations measure, but as two separate subscales in the Feature-Specific Friendship Standards measure, a composite forgiveness/conflict resolution score was created for feature-specific friendship standards by averaging across the forgiveness and conflict resolution domains.

Table 33 presents the results of the hierarchical multiple regression analyses predicting loneliness from gender, friendship features, feature-specific friendship expectations, and feature-specific friendship standards for each of the 11 friendship features. Seven of the 11 friendship features were significantly associated with loneliness—validation ( $b^*_v = -.12, t = 2.18, p = .030$ ), instrumental help ( $b^*_H = -.11, t = 2.11, p = .035$ ), reliable partnership ( $b^*_{RP} = -.17, t = 3.34, p < .001$ ), honest feedback ( $b^*_{HF} = -.14, t = 2.58, p = .010$ ), self-disclosure ( $b^*_{SD} = -.14, t = 2.67, p = .017$ ), spirit of equality ( $b^*_{EQ} = -.15, t = 2.83, p = .005$ ), and shared activities ( $b^*_{SA} = -.16, t = 3.19, p = .002$ ). As was observed in the zero-order correlations and the overall composite analysis, these associations were modest. In addition, forgiveness/conflict resolution was marginally associated with loneliness ( $b^*_{FCR} = -.09, t = 1.70, p = .090$ ), and emotional support ( $b^*_{ES} = -.09, t = 1.60, p = .111$ ), enjoyable companionship ( $b^*_{EC} = -.05, t = .99, p = .322$ ), and conflict ( $b^*_C = .06, t = 1.23, p = .220$ ) were not significantly associated with loneliness.

With regard to the suppression effect, results at the individual feature level were similar to the findings for the overall composite analysis. The suppression effect emerged for validation ( $b^*_{gender} = .11, t = 2.01, p = .046$ ), emotional support ( $b^*_{gender} = .11, t = 2.04, p = .042$ ), reliable partnership ( $b^*_{gender} = .10, t = 2.03, p = .045$ ), enjoyable companionship ( $b^*_{gender} = .11, t = 2.12, p = .010$ ), self-disclosure ( $b^*_{gender} = .13, t = 2.53, p = .012$ ), forgiveness/conflict resolution ( $b^*_{gender} = .10, t = 1.99, p = .047$ ), and spirit of equality ( $b^*_{gender} = .11, t = 2.09, p = .037$ ), such that females reported higher levels of loneliness than did males at statistically equated levels of these friendship features. In



addition, marginal effects of gender emerged for instrumental help ( $b_{\text{gender}}^* = .09, t = 1.87, p = .063$ ), honest feedback ( $b_{\text{gender}}^* = .09, t = 1.94, p = .054$ ), and conflict ( $b_{\text{gender}}^* = .09, t = 1.82, p = .070$ ) once friendship features were included in the analysis. As was observed in Study 2, the effect of gender remained nonsignificant even after the shared activities subscale was included in the model ( $b_{\text{gender}}^* = .08, t = 1.61, p = .107$ ).

In the third step of the analyses, feature-specific friendship expectations and feature-specific friendship standards were included as predictors. Consistent with the findings of the overall composite analysis, almost none of the feature-specific friendship expectations or feature-specific friendship standards subscales were significantly associated with loneliness. One exception was the feature of enjoyable companionship, for which feature-specific friendship expectations were significantly associated with loneliness ( $b_{\text{expectations}}^* = -.14, t = 2.58, p = .010$ ) and feature-specific friendship standards were marginally associated with loneliness ( $b_{\text{bar-setting}}^* = .08, t = 1.71, p = .087$ ). Interestingly, feature-specific friendship expectations for enjoyable companionship were associated with *lower* levels of loneliness, whereas feature-specific friendship standards were associated with *higher* levels of loneliness. In addition, the composite forgiveness/conflict resolution standards subscale was marginally associated with lower levels of loneliness ( $b_{\text{bar-setting}}^* = -.09, t = 1.76, p = .079$ ). Given the small magnitude of these effects and the inconsistency of their associations across features, they do not qualify the general conclusion that feature-specific friendship expectations and feature-specific friendship standards do not appear to make a significant contribution to loneliness in the current sample.

**Table 33: Predicting Loneliness from Gender, Friendship Features, Feature-Specific Friendship Expectations, and Feature-Specific Friendship Standards at the Individual Subscale Level**

	Friendship Feature			Gender			Feature-Specific Expectations			Feature-Specific Standards			$R^2_{adj.}$
	$b^*$	$t$	$sr^2$	$b^*$	$t$	$sr^2$	$b^*$	$t$	$sr^2$	$b^*$	$t$	$sr^2$	
V	-.12	2.18*	.01	.11	2.01*	.01	.06	1.09	.003	-.01	.26	.000	.008
ES	-.09	1.60	.006	.11	2.04*	.01	-.02	.29	.000	.00	.06	.000	.004
H	-.11	2.11*	.01	.09	1.87 <sup>†</sup>	.008	.01	.13	.000	-.02	.49	.000	.007
RP	-.17	3.34***	.03	.10	2.03*	.01	-.03	.57	.000	.01	.10	.000	.03**
EC	-.05	.99	.002	.11	2.12*	.01	-.14	2.58*	.02	.08	1.71 <sup>†</sup>	.007	.03**
HF	-.14	2.58*	.02	.09	1.94 <sup>†</sup>	.009	-.01	.15	.000	.04	.74	.001	.02*
SD	-.14	2.67**	.02	.13	2.53*	.02	-.02	.34	.000	-.03	.63	.001	.02*
FCR	-.09	1.70 <sup>†</sup>	.007	.10	1.99*	.009	-.04	.74	.001	-.09	1.76 <sup>†</sup>	.007	.02*
EQ	-.15	2.83**	.02	.11	2.09*	.01	.00	.04	.000	-.06	1.15	.003	.02*
SA	-.16	3.19**	.02	.08	1.61	.006	.08	1.58	.006	—	—	—	.02**
C	.06	1.23	.003	.09	1.82 <sup>†</sup>	.008	.02	.35	.000	.01	.27	.000	.000

*Note.* Interaction terms capturing the interactions between gender and each of the friendship features variables were tested, but were not statistically significant. Gender is dummy coded (0 = male, 1 = female).  $sr^2$  = squared semi-partial correlation. Abbreviations for individual friendship features are as follows: V = Validation; ES = Emotional Support; H = Instrumental Help; RP = Reliable Partnership; EC = Enjoyable Companionship; HF = Honest Feedback; SD = Self-Disclosure; EQ = Spirit of Equality; FCR = Forgiveness/Conflict Resolution; C = Conflict <sup>†</sup>  $p < .10$ ; \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ .

*Friendship satisfaction.* To test the hypothesis that gender differences in friendship expectations would explain any suppression effects observed in the link between gender and friendship satisfaction, a parallel set of analyses was conducted to those described above. In contrast to loneliness, the magnitude of the associations observed between friendship features and friendship satisfaction were consistent with the magnitude of associations observed in Study 2, so findings relating to associations between friendship features and friendship satisfaction can be interpreted with more confidence.

*Analyses at the overall composite level.* Table 34 presents the results of a three-step hierarchical multiple regression analysis predicting friendship satisfaction (squared) from gender, positive friendship features, friendship conflict, feature-specific friendship expectations, and feature-specific friendship standards. This analysis was parallel to the overall composite analysis described above for loneliness.

In the first step of the analysis, the gender effect was small and did not reach the level of statistical significance ( $b^*_{\text{gender}} = .06, t = 1.29, p = .200$ ). In the second step of the analysis, consistent with the findings of Study 2, positive friendship features were significantly associated with friendship satisfaction such that higher levels of positive features were associated with higher levels of satisfaction ( $b^*_{\text{positive features}} = .66, t = 11.96, p < .001$ ). In this model, friendship conflict was not significantly associated with friendship satisfaction ( $b^*_{\text{friendship conflict}} = -.07, t = 1.85, p = .197$ ).

**Table 34: Predicting Friendship Satisfaction (Squared) from Gender, Positive Friendship Features, Friendship Conflict, Feature-Specific Friendship Expectations, and Feature-Specific Friendship Standards**

	Step 1			Step 2			Step 3		
	<i>b</i> <sup>*</sup>	<i>t</i> value	<i>sr</i> <sup>2</sup>	<i>b</i> <sup>*</sup>	<i>t</i> value	<i>sr</i> <sup>2</sup>	<i>b</i> <sup>*</sup>	<i>t</i> value	<i>sr</i> <sup>2</sup>
Gender	.06	1.29	.004	-.15	4.27 <sup>***</sup>	.02	-.14	4.15 <sup>***</sup>	.02
Positive Friendship Features				.66	11.96 <sup>***</sup>	.15	.66	11.09 <sup>***</sup>	.13
Friendship Conflict				-.07	1.40	.002	-.09	1.65 <sup>†</sup>	.002
Positive x Gender				.11	2.02 <sup>*</sup>	.004	.11	2.00 <sup>*</sup>	.004
Conflict x Gender				.02	.42	.000	.03	.55	.000
Friendship Expectations Composite							-.01	.17	.000
Friendship Conflict Expectations Composite							-.03	.93	.000
Standards Composite							-.03	.97	.000
Adjusted <i>R</i> <sup>2</sup>		.002			.567 <sup>***</sup>			.564 <sup>***</sup>	
$\Delta R^2$		—			.568 <sup>***</sup>			.002	

Note. Gender is dummy coded (0 = male, 1 = female); *sr*<sup>2</sup> = squared semi-partial correlation.

<sup>†</sup> *p* < .10; \* *p* < .05, \*\* *p* < .01, \*\*\* *p* < .001.

With regard to the suppression effect, a suppression effect of friendship features on the link between gender and friendship satisfaction was observed similar to that observed in Study 2. That is, the initially positive and nonsignificant effect of gender on friendship satisfaction (indicating that females reported slightly higher levels of friendship satisfaction on average than did males) became negative and statistically significant once positive friendship features and friendship conflict were included in the model ( $b_{\text{gender}}^* = -.15, t = 4.27, p < .001$ ). These findings indicate that, at statistically equated levels of positive friendship features and friendship conflict, females again reported lower levels of satisfaction with their friendships than did males.

In the third step of the analysis, feature-specific friendship expectations and feature-specific friendship standards were included in the model to test the hypothesis that gender differences in friendship expectations would explain the suppression effect observed in the link between gender and friendship satisfaction. As was the case with loneliness, neither feature-specific friendship expectations nor feature-specific friendship standards were significantly associated with friendship satisfaction in this model. In addition, the gender effect remained negative and significant in the third step of the model, indicating that, at statistically equated levels of friendship features and friendship expectations, females still reported lower levels of friendship satisfaction than did males. The results of this analysis did not provide support for the hypothesis that gender

differences in friendship expectations would explain the suppression effect of friendship features on the link between gender and friendship satisfaction.

Overall, the model including gender, positive friendship features, friendship conflict, feature-specific friendship expectations, and feature-specific friendship standards explained approximately 56.4% of the variance in friendship satisfaction ( $R^2_{\text{adj}} = .564$ ), an effect size comparable to that observed in Study 2.

*Analyses at the individual feature level.* A parallel set of analyses was conducted to examine whether (a) the suppression effect in the link between gender and friendship satisfaction would emerge at the level of individual friendship features, and (b) gender differences in friendship expectations would explain any suppression effects that are observed. Table 35 presents the results of the hierarchical multiple regression analyses at the individual subscale level. To save space and avoid redundancy, only the coefficients from the final step of the model are presented in this table.

With regard to individual friendship features, each of the eleven friendship features was significantly associated with friendship satisfaction, with higher levels of validation, emotional support, instrumental help, reliable partnership, enjoyable companionship, honest feedback, self-disclosure, forgiveness/conflict resolution, spirit of equality, and shared activities being associated with higher levels of friendship satisfaction. In addition, in this analysis at the individual feature level, higher levels of friendship conflict were associated with lower levels of friendship satisfaction.

**Table 35: Predicting Friendship Satisfaction (Squared) from Gender, Friendship Features, Feature-Specific Friendship Expectations, and Feature-Specific Friendship Standards at the Individual Subscale Level**

	Friendship Feature			Gender			Feature-Specific Expectations			Feature-Specific Standards			$R^2_{adj.}$
	$b^*$	$t$	$sr^2$	$b^*$	$t$	$sr^2$	$b^*$	$t$	$sr^2$	$b^*$	$t$	$sr^2$	
V	.49	7.59***	.09	-.14	3.31**	.02	-.02	.47	.000	-.01	.32	.000	.36***
ES	.47	7.66***	.08	-.13	3.08**	.01	.01	.13	.000	-.03	.80	.000	.41***
H	.51	8.50***	.10	-.04	.93	.001	.01	.24	.000	-.02	.55	.000	.42***
RP	.63	10.66***	.14	-.02	.58	.000	.06	1.70 <sup>†</sup>	.003	-.05	1.39	.002	.50***
EC	.52	8.21***	.10	-.05	1.31	.002	.03	.66	.001	-.08	2.13*	.006	.41***
HF	.49	6.55***	.07	-.01	.22	.000	.08	1.74 <sup>†</sup>	.005	-.09	2.19*	.008	.31***
SD	.48	6.92***	.08	-.12	2.73**	.01	.04	.90	.001	-.08	2.07*	.007	.34***
FCR	.44	6.44***	.07	-.01	.25	.000	.02	.47	.000	-.02	.45	.000	.33***
EQ	.59	9.63***	.12	-.07	1.95 <sup>†</sup>	.005	.01	.36	.000	.10	2.74**	.01	.45***
SA	.47	6.61***	.08	.05	1.17	.003	-.03	.58	.001	—	—	—	.23***
C	-.23	3.11	.02	-.02	.36	.000	-.06	1.31	.004	-.02	.40	.000	.12***

*Note.* Interaction terms capturing the interactions between gender and each of the friendship features variables were tested, and significant interaction effects are discussed in more detail in the following section. Gender is dummy coded (0 = male, 1 = female).  $sr^2$  = squared semi-partial correlation. Abbreviations for individual friendship features are as follows: V = Validation; ES = Emotional Support; H = Instrumental Help; RP = Reliable Partnership; EC = Enjoyable Companionship; HF = Honest Feedback; SD = Self-Disclosure; EQ = Spirit of Equality; FCR = Forgiveness/Conflict Resolution; C = Conflict. <sup>†</sup>  $p < .10$ ; \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ .

With regard to the suppression effect, significant or marginally significant suppression effects were observed for four of the 11 friendship features subscales. These features were validation ( $b^*_{\text{gender}} = -.14, t = 3.31, p = .001$ ), emotional support ( $b^*_{\text{gender}} = -.13, t = 3.08, p = .002$ ), self-disclosure ( $b^*_{\text{gender}} = -.12, t = 2.73, p = .007$ ), and spirit of equality ( $b^*_{\text{gender}} = -.07, t = 1.95, p = .052$ ). These results indicated that, at statistically equated levels of validation, emotional support, self-disclosure, and spirit of equality, females reported lower levels of friendship satisfaction than did males. Although coefficients for gender in the models for several other features switched from a positive direction (indicating that females were slightly higher on friendship satisfaction) to a negative direction (indicating that males were slightly higher on friendship satisfaction), these coefficients did not reach the level of statistical significance.

In the third step of the model, in contrast to the models for loneliness, four of the 11 feature-specific friendship standards subscales were significantly associated with friendship satisfaction. An interesting pattern emerged for feature-specific friendship standards such that, for enjoyable companionship, honest feedback, and self-disclosure standards, higher levels of standards were associated with *lower* levels of friendship satisfaction. That is, individuals who held higher standards for their friends in these domains were actually less satisfied with their closest friendship. For spirit of equality, however, higher levels of standards were associated with higher levels of friendship



satisfaction. This is likely because the highest levels of bar-setting for the spirit of equality domain represented a more equal distribution of resources among friends.

In addition, two of the 11 feature-specific friendship expectations subscales were marginally associated with friendship satisfaction. Specifically, higher levels of reliable partnership expectations and higher levels of honest feedback expectations were marginally associated with higher levels of friendship satisfaction.

Despite these significant and marginally significant associations between friendship expectations and friendship satisfaction, there was no evidence that gender differences in feature-specific friendship expectations or feature-specific friendship standards explained observed suppression effects in the link between gender and friendship satisfaction. That is, for each of the four features for which a suppression effect was observed, the gender effect remained negative and significant (indicating that females reported lower levels of friendship satisfaction than did males) even after friendship expectations were included in the model.

Taken together, findings from regression analyses predicting loneliness and friendship satisfaction provide evidence for the replicability of the suppression effects observed in Studies 1 and 2, but do not support the hypothesis that gender differences in feature-specific friendship expectations or feature-specific friendship standards explain these suppression effects.

*Interactions between gender and friendship features in predicting friendship satisfaction.* In addition to the main effects of gender, friendship features, feature-specific friendship expectations, and feature-specific friendship standards, interaction effects between gender and friendship features in predicting friendship satisfaction were also tested in the preceding analyses (see Table 34 for sample estimates of interaction effects in the overall composite model). Consistent with the findings of Study 2, several significant interaction effects emerged indicating that the links between friendship features and friendship satisfaction differed for males versus females. In this sample, significant interactions effects were found for validation ( $b^*_{\text{interaction}} = .18, t = 3.31, p = .001$ ), emotional support ( $b^*_{\text{interaction}} = .24, t = 4.11, p < .001$ ), instrumental help ( $b^*_{\text{interaction}} = .18, t = 3.05, p = .002$ ), enjoyable companionship ( $b^*_{\text{interaction}} = .14, t = 2.46, p = .014$ ), self-disclosure ( $b^*_{\text{interaction}} = .16, t = 2.50, p = .013$ ), forgiveness/conflict resolution ( $b^*_{\text{interaction}} = .15, t = 2.32, p = .021$ ), spirit of equality ( $b^*_{\text{interaction}} = .12, t = 2.02, p = .044$ ), conflict ( $b^*_{\text{interaction}} = -.16, t = 2.30, p = .022$ ), and the overall positive friendship features composite ( $b^*_{\text{interaction}} = .11, t = 2.00, p = .046$ ). A significant interaction effect did not emerge for the feature of shared activities, indicating that the interaction effect for this feature observed in Study 2 may have been idiosyncratic.

**Table 36: Simple Intercepts and Simple Slopes for Males and Females for the Link Between Friendship Features and Friendship Satisfaction (Squared)**

	Males		Females	
	Simple Intercept	Simple Slope	Simple Intercept	Simple Slope
V	180.97 (3.14)	24.39 (3.18)	166.95 (2.56)	37.35 (2.83)
ES	179.97 (2.94)	28.84 (3.25)	172.60 (2.33)	35.79 (2.36)
H	176.07 (2.77)	28.84 (3.25)	172.60 (2.33)	41.94 (2.77)
EC	177.31 (2.85)	34.73 (3.87)	171.69 (2.38)	47.37 (3.22)
SD	180.11 (3.14)	22.19 (2.95)	168.67 (1.90)	31.26 (2.49)
FCR	174.94 (2.98)	26.51 (3.86)	173.86 (2.51)	37.70 (3.00)
EQ	178.51 (2.76)	32.45 (3.33)	171.57 (2.30)	41.14 (2.65)
C	174.25 (3.50)	-8.75 (3.06)	173.05 (2.91)	-18.96 (2.74)
Positive Features Composite	182.34 (2.55)	41.97 (3.51)	168.31 (2.06)	51.37 (3.05)

*Note.* Simple intercepts and simple slopes are all significantly different from zero at  $p < .001$ ; slopes for males and females are significantly different from one another a  $p < .05$  (see  $p$  values for interaction effect in text above). Abbreviations for individual friendship features are as follows: V = *Validation*; ES = *Emotional Support*; H = *Instrumental Help*; EC = *Enjoyable Companionship*; SD = *Self-Disclosure*; EQ = *Spirit of Equality*; FCR = *Forgiveness/Conflict Resolution*; C = *Conflict*.

In order to probe these interactions, the online interaction utility created by Preacher et al. (2006) was used to calculate simple intercepts and simple slopes for the effects of each friendship feature on friendship satisfaction separately for males and females. The results of these tests are presented in Table 36; note that the estimates for simple intercepts and simple slopes are presented in squared friendship satisfaction units. Overall, the pattern of results for the interactions was similar across the different friendship features and was consistent with the effects observed in Study 2. Although the simple intercepts (indicating the average level of friendship satisfaction for a person at the mean on that friendship feature) for males tended to be higher, the slopes capturing the association between each friendship feature and friendship satisfaction were significantly less steep for males than for females (indicated by the statistical significance of the parameter estimate for the interaction effect). By contrast, although the simple intercepts for females were lower (indicating lower levels of friendship satisfaction at the mean on each friendship feature), the simple slopes capturing the relationship between each friendship feature and friendship satisfaction were significantly steeper for females than for males. These results indicate that, although females are likely to be less satisfied than males at a given level of a friendship feature, they also experience a greater “boost” in friendship satisfaction with each unit-increase in that friendship feature than do males.

It is important to note that, in the current sample, the interaction effect between gender and friendship conflict showed the same pattern of results as the other interaction

effects (i.e., the link between friendship conflict and friendship satisfaction was stronger for females than it was for males). This was in contrast to the findings from Study 2, which indicated a stronger link between friendship conflict and friendship satisfaction for males than for females. Indeed, in Study 2 results indicated that friendship conflict was not significantly associated with friendship satisfaction for females. Given these contrasting findings, it will be important to further investigate the link between friendship conflict and friendship satisfaction for males and females in future research.

**Hypothesis-testing goal 3: Testing hypotheses derived from the cognitive discrepancy perspective on loneliness.** Based on the predictions of the cognitive discrepancy perspective, it was hypothesized that discrepancies between friendship expectations and friendship “realities” (e.g., friendship expectations that are not fulfilled) would be associated with higher levels of loneliness and lower levels of friendship satisfaction. To test this hypothesis, a set of polynomial regression analyses was conducted predicting (separately) friendship satisfaction and feelings of loneliness from reports of friendship expectations (as assessed with the Feature-Specific Friendship Expectations measure) and reports of friendship features within participants’ current closest friendship (as assessed with the RFFQ-A). The Feature-Specific Friendship Standards measure was not used to test this hypothesis because it does not have a parallel measure of friendship “realities” that could be used to test the effect of discrepancies. Therefore, only the Feature-Specific Friendship Expectations measure and the RFFQ-

A—which were designed to very closely parallel one another—were used to test hypotheses derived from the cognitive discrepancy perspective on loneliness.

Two parallel sets of polynomial regression analyses were conducted, one set with loneliness as the dependent variable and one set with friendship satisfaction (squared) as the dependent variable. For each set of analyses, two polynomial regression analyses were conducted—one analysis using the overall positive friendship expectations composite and the overall positive friendship features composite as predictors, and a second analysis using expectations for friendship conflict and the friendship conflict subscales as predictors. In this second analysis, to ensure that reports of friendship expectations and friendship features were indeed parallel to one another, the expectations for friendship conflict subscale was reverse-scored such that higher scores indicated expectations for higher levels of conflict.

Following the recommendations outlined in Edwards (2002) and Edwards and Parry (1993), each estimated polynomial regression equation took the general form:

$$Z = b_0 + b_1X + b_2Y + b_3X^2 + b_4XY + b_5Y^2$$

with Z being the dependent variable loneliness or friendship satisfaction (squared), X representing the participant's score on the appropriate Feature-Specific Friendship Expectations scale, and Y representing the participant's score on the corresponding RFFQ-A subscale. For example, in the analysis predicting loneliness from positive

friendship expectations and positive friendship features, the estimated regression equation is:

$$\begin{aligned} \text{loneliness} = & b_0 + b_1(\text{positive expectations}) + b_2(\text{positive friendship features}) \\ & + b_3 \text{ positive expectations}^2 + b_4(\text{positive expectations}) \\ & * (\text{positive friendship features}) \\ & + b_5(\text{positive friendship features})^2 \end{aligned}$$

In this equation,  $b_1$  captures the linear effect of positive friendship expectations on feelings of loneliness,  $b_2$  captures the linear effect of positive friendship features on loneliness,  $b_3$  captures the nonlinear effect of positive friendship expectations on loneliness,  $b_4$  captures the interactive effect of positive friendship expectations and positive friendship features on loneliness, and  $b_5$  captures the nonlinear effect of positive friendship features on loneliness (e.g., Irving & Meyer, 1994). Based on the estimated regression coefficients from this analysis (if the individual coefficients and overall model explain a statistically significant proportion of variance in the outcome), a three-dimensional response surface can be characterized capturing the joint effect of friendship expectations and friendship features on loneliness (or friendship satisfaction) at different levels of friendship expectations and friendship features (for equations used to characterize response surfaces see, Edwards, 2002; Edwards & Parry, 1993).

Once the response surface has been characterized, its various features (e.g., the stationary point and principal axes of the surface) can be used to describe the joint effect

of the two predictor variables on the outcome. The stationary point of the response surface represents the point at which the slope of the response surface in all directions is equal to zero, and the two principal axes of the response surface are perpendicular lines that intersect at the stationary point. In addition to these features, the slope and curvature of the surface along different points of interest can be examined to test hypotheses about the joint effect of friendship expectations and friendship features on loneliness and friendship satisfaction. For example, one line of particular interest in the current study is the  $X = Y$  line, or the line along which friendship expectations are equal to friendship features. Using response surface methodology, both the slope and curvature of the  $X = Y$  line can be examined to see if met expectations are associated with equal levels of loneliness or friendship satisfaction at all levels of friendship expectations and friendship features, or whether the actual level of expectations and features, as well as whether expectations are met, is associated with loneliness and friendship satisfaction (e.g., are high-met expectations associated with lower levels of loneliness than are low-met expectations?). In addition, information about the curvature of the response surface can be used to examine how friendship expectations and friendship features are associated with loneliness and friendship satisfaction as friendship features begin to exceed expectations. For example, is it the case that loneliness or friendship satisfaction will “level off” as friendship features begin to exceed friendship expectations? Or will loneliness continue to decrease, and friendship satisfaction continue to increase, as



friendship features exceed friendship expectations? The use of polynomial regression analyses allows for the testing of these more nuanced questions about the effects of discrepancies between friendship expectations and friendship features. One great advantage of this type of analysis is that it allows for this more nuanced examination of the conjoint effects of friendship expectations and friendship features on friendship satisfaction and loneliness.

In order to examine the role of gender in these associations, polynomial regression models were estimated separately for males and females, and coefficients were compared across models. The sample size for males was 175, and the sample size for females was 244. Although conducting analyses separately for males and females reduces the statistical power for each analysis, it prevents the need to include an additional six terms in the polynomial regression model that would be needed to capture the linear effect of gender and any possible interaction effects between gender and the other terms in the model. Models predicting loneliness for males and females will be presented first, followed by models predicting friendship satisfaction (squared) for males and females.

***Loneliness.*** As discussed above, two separate polynomial regression analyses were conducted examining the conjoint effects of friendship features and friendship expectations on loneliness separately for males and females. For each gender two separate models were estimated. The first model included the positive friendship

expectations composite, the positive friendship features composite, the positive friendship expectations composite squared, the interactive effect between the positive friendship expectations composite and the positive friendship features composite, and the positive friendship features composite squared. This model tests the linear, nonlinear, and conjoint effects of the positive friendship expectations composite and the positive friendship features composite on loneliness, and allows for the testing of hypotheses about discrepancy effects described above. The second model included the friendship conflict expectations subscale, the friendship conflict (features) subscale, the friendship conflict expectations subscale squared, the interactive effect between the friendship conflict expectations subscale and the friendship conflict (features) subscale, and the friendship conflict (features) subscale squared. This model tests the linear, nonlinear, and conjoint effects of the friendship conflict expectations subscale and the friendship conflict (features) subscale on loneliness, and allows for the testing of hypotheses about discrepancy effects described above. To avoid potential problems with multicollinearity, variables were mean-centered prior to the creation of squared and interaction terms.

Table 37 presents model results for the polynomial regression analyses predicting loneliness for males. The first section of the table presents results for the model with the positive friendship expectations composite and the positive friendship features composite as predictors of loneliness, and the second section of the table presents results for the

model with friendship conflict expectations and reports of friendship conflict as predictors of loneliness.

**Table 37: Predicting Loneliness from Feature-Specific Friendship Expectations and Friendship Features (Males Only)**

	$b^*$	$t$ value	$sr^2$	$R^2_{adj.}$
Positive Composite Model				.004
Expectations Composite	-.05	.46	.001	
Positive Features Composite	-.11	1.10	.007	
Expectations Composite <sup>2</sup>	-.02	.26	.000	
Expectations Composite x Features Composite	-.02	.20	.000	
Positive Features Composite <sup>2</sup>	.11	1.09	.007	
Friendship Conflict Model				.000
Conflict Expectations	.09	1.08	.007	
Friendship Conflict	.12	1.39	.011	
Conflict Expectations <sup>2</sup>	.04	.40	.001	
Conflict Expectations x Friendship Conflict	-.09	.89	.005	
Friendship Conflict <sup>2</sup>	-.14	1.40	.011	

*Note.*  $sr^2$  = squared semi-partial correlation. All coefficients are nonsignificant ( $p > .10$ ).

Contrary to expectations—but consistent with the low degree of association between friendship features, friendship expectations, and loneliness observed in this sample—neither model explained a significant proportion of variance in loneliness. That is, for males, neither friendship expectations, nor friendship features, nor the conjoint effect of friendship expectations and friendship features was significantly associated with loneliness. Given this lack of significant associations, three-dimensional response surfaces were not characterized for these analyses.

Table 38 presents model results for the polynomial regression analyses predicting loneliness for females. For females, the links between friendship features and loneliness were somewhat stronger than they were for males, but the links between friendship expectations and loneliness and the joint effects of friendship features and friendship expectations on loneliness were similarly weak. For both the positive composite model and the friendship conflict model, the main effect of friendship features and the squared effect of friendship features were statistically significant. For the positive composite model, the negative nonlinear effect of positive friendship features indicates that, as positive friendship features increase, the link between friendship features and loneliness becomes stronger. For the friendship conflict model, the negative nonlinear effect of friendship conflict indicates that the link between friendship conflict and loneliness becomes *weaker* as levels of friendship conflict increases. For the positive composite

model, these significant effects translated into a significant proportion of variance explained in loneliness overall ( $R^2_{adj.} = .033$ ,  $F(5, 238) = 2.64$ ,  $p = .024$ ).

**Table 38: Predicting Loneliness from Feature-Specific Friendship Expectations and Friendship Features (Females Only)**

	$b^*$	$t$ value	$sr^2$	$R^2_{adj.}$
Positive Composite Model				.033*
Expectations Composite	.05	.64	.002	
Positive Features Composite	-.28	3.25**	.042	
Expectations Composite <sup>2</sup>	.05	.61	.001	
Expectations Composite x Features Composite	.06	.68	.002	
Positive Features Composite <sup>2</sup>	-.23	2.67**	.028	
Friendship Conflict Model				.017
Conflict Expectations	.00	.01	.000	
Friendship Conflict	.24	2.56*	.026	
Conflict Expectations <sup>2</sup>	-.07	1.12	.005	
Conflict Expectations x Friendship Conflict	.04	.55	.001	
Friendship Conflict <sup>2</sup>	-.25	2.61*	.028	

Note.  $sr^2$  = squared semi-partial correlation. \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ .

For the friendship conflict model, however, the model did not account for a significant proportion of variance in loneliness overall ( $R^2_{\text{adj.}} = .017$ ,  $F(5, 238) = 1.82$ ,  $p = .110$ ). Given the lack of significant associations between friendship expectations and loneliness and the lack of joint effects of friendship features and friendship expectations on loneliness, three-dimensional response surfaces were not characterized for these analyses.

***Friendship satisfaction.*** A parallel set of analyses to those described above was conducted with friendship satisfaction (squared) rather than loneliness as the dependent variable. Table 39 presents model results for the polynomial regression analyses predicting friendship satisfaction (squared) for males. The first section of the table presents results for the model with the positive friendship expectations composite and the positive friendship features composite as predictors of friendship satisfaction, and the second section of the table presents results for the model with friendship conflict expectations and reports of friendship conflict as predictors of friendship satisfaction.

In contrast to the models for loneliness, both the positive composite model ( $R^2_{\text{adj.}} = .458$ ,  $F(5, 169) = 30.39$ ,  $p < .001$ ), and the friendship conflict model ( $R^2_{\text{adj.}} = .042$ ,  $F(5, 169) = 2.52$ ,  $p = .032$ ) explained a significant amount of variance in friendship satisfaction. For both models, however, it was the significant main effects of friendship features that accounted for this variance, rather than any linear, nonlinear, or interactive effects involving friendship expectations. No significant linear or nonlinear effects of friendship expectations were found, nor were conjoint effects of friendship expectations

and friendship features. Therefore three-dimensional response surfaces were not characterized for these analyses.

**Table 39: Predicting Friendship Satisfaction (Squared) from Feature-Specific Friendship Expectations and Friendship Features (Males Only)**

	$b^*$	$t$ value	$sr^2$	$R^2_{adj}$
Positive Composite Model				.458***
Expectations Composite	-.01	.16	.000	
Positive Features Composite	.67	9.47***	.280	
Expectations Composite <sup>2</sup>	.07	1.07	.004	
Expectations Composite x Features Composite	-.05	.75	.002	
Positive Features Composite <sup>2</sup>	-.07	.93	.003	
Friendship Conflict Model				.042*
Conflict Expectations	-.05	.65	.002	
Friendship Conflict	-.30	3.45**	.067	
Conflict Expectations <sup>2</sup>	.01	.14	.000	
Conflict Expectations x Friendship Conflict	.00	.01	.000	
Friendship Conflict <sup>2</sup>	.14	1.42	.011	

Note.  $sr^2$  = squared semi-partial correlation. \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ .

Table 40 presents model results for the polynomial regression analyses predicting friendship satisfaction (squared) for females. Results were similar to those observed for males, although the overall model  $R^2$ s were somewhat larger for females than they were for males ( $R^2_{\text{adj., Positive}} = .627, F(5, 238) = 82.63, p < .001$ ;  $R^2_{\text{adj., Conflict}} = .166, F(5, 238) = 10.67, p < .001$ ). As in the models for males, significant linear effects of friendship features were found and these effects accounted for the bulk of the variance explained in friendship satisfaction. One unique effect emerged in the positive composite model for females that was not observed in the models for males. In the model for females, a significant nonlinear effect of overall positive friendship expectations predicting friendship satisfaction was found. This positive coefficient ( $b^*_{\text{expectations}^2} = .11, t = 2.05, p = .041$ ) indicates that the nonsignificant linear effect of positive friendship expectations on friendship satisfaction becomes significantly stronger at higher levels of positive friendship expectations. That is, for females in this sample, positive friendship expectations are significantly associated with friendship satisfaction at higher levels of friendship expectations, but not at lower levels of friendship expectations. Although interesting in that it suggests that friendship expectations may be more strongly linked to friendship satisfaction for individuals who hold higher expectations for their friends, this effect should be replicated in future research before it is considered “reliable knowledge.” No significant linear effect of friendship expectations was found, nor was a conjoint



effect of friendship expectations and friendship features. As in the previous analyses, three-dimensional response surfaces were not characterized for these analyses.

**Table 40: Predicting Friendship Satisfaction (Squared) from Feature-Specific Friendship Expectations and Friendship Features (Females Only)**

	$b^*$	$t$ value	$sr^2$	$R^2_{adj}$
Positive Composite Model				.627***
Expectations Composite	.04	.82	.001	
Positive Features Composite	.77	14.26***	.312	
Expectations Composite <sup>2</sup>	.11	2.05*	.006	
Expectations Composite x Features Composite	-.05	.88	.001	
Positive Features Composite <sup>2</sup>	-.04	.75	.001	
Friendship Conflict Model				.166***
Conflict Expectations	-.08	1.36	.006	
Friendship Conflict	-.46	5.28***	.095	
Conflict Expectations <sup>2</sup>	.08	1.32	.006	
Conflict Expectations x Friendship Conflict	.02	.32	.000	
Friendship Conflict <sup>2</sup>	.06	.63	.001	

Note.  $sr^2$  = squared semi-partial correlation. \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ .

Taken together, results of the polynomial regression analyses indicated that friendship features are important predictors of friendship satisfaction and, to some degree, loneliness, but that feature-specific friendship expectations do not appear to have consistent unique associations with loneliness or friendship satisfaction. In addition, no evidence was found for conjoint effects of friendship features and friendship expectations on loneliness or friendship satisfaction, and therefore the hypothesis that discrepancies between feature-specific friendship expectations and friendship features are an important predictor of loneliness and friendship satisfaction was not supported. As discussed previously, however, results involving associations between loneliness and friendship features should be interpreted with caution pending replication in future research.

**Hypothesis-testing goal 4: Examining the link between friendship expectations and responses to ambiguous friendship-expectation-violation situations.** The fourth and final hypothesis-testing goal of Study 3 was to examine if and how friendship expectations are related to responses to ambiguous friendship-expectation-violation situations. It was hypothesized that individuals who hold higher expectations for their friends would make more negative interpretations of a friend's behavior, experience more negative emotional responses as a result of a friend's behavior, and be less satisfied with a friend's behavior in situations that represent ambiguous violations of friendship expectations.

To test this hypothesis, 15 separate hierarchical multiple regression analyses were conducted predicting ratings of interpretations, emotions, and satisfaction in response to the Ambiguous Friendship-Expectation-Violation Vignettes measure from both feature-specific friendship expectations and feature-specific friendship standards. As a reminder, the Ambiguous Friendship-Expectation-Violations Vignettes measure presented participants with situations in which a friend did something that represented an ambiguous violation of a friendship expectation. In response to each situation, participants provided ratings (on a 7-point scale) of eight different interpretations they might make in that situation and six different emotions that they might experience in that situation. In addition, participants indicated, on a 7-point scale, how satisfied they would be with their friend's behavior in that situation. Participants were presented with 55 vignettes—5 vignettes for each of the 11 friendship features domains.

Separate analyses were conducted predicting each of the eight interpretations, each of the six emotions, and the single satisfaction rating from gender, feature-specific friendship expectations, and feature-specific friendship standards. These analyses were conducted at the overall composite level (i.e., averaging responses across the 11 friendship features domains), and at the level of the 11 individual friendship features domains. Due to space considerations and general continuity between findings at the overall composite level and the individual subscale level, only the results from analyses

at the overall composite level will be presented here. Results from analyses at the individual feature level are available from the author upon request.

For each model, gender was included as a predictor in the model to account for any possible gender differences in interpretations, emotions, or satisfaction that were not accounted for by the friendship expectations variables, and to allow for the testing of any possible interaction effects between gender and friendship expectations in predicting responses to the hypothetical situations vignettes. No significant gender x feature-specific-friendship-expectation or gender x feature-specific-friendship-standard interaction effects were found, so for space reasons coefficients for interaction effects are omitted from the following tables.

Table 41 presents the results from the regression models predicting interpretations. As a reminder, the interpretations participants rated were: “I would think my friend is being a good friend” (Good Friend), “I would think my friend did something wrong” (Wrong), “I would think my friend respects me” (Respect), “I would think my friend values me” (Value), “I would think my friend cares about me” (Care), “I would think my friend is rejecting me” (Reject), “I would think my friend is trying to push me around” (Push Around), and “I would think my friend is being weird” (Weird).

Overall, the models including gender, feature-specific friendship expectations, and feature-specific friendship standards explained between 2% and 31% of the variance in interpretations. For the Good Friend ( $R^2_{adj} = .31$ ,  $F(3, 151) = 24.27$ ,  $p < .001$ ), Respect

( $R^2_{\text{adj}} = .27$ ,  $F(3, 151) = 19.70$ ,  $p < .001$ ), Value ( $R^2_{\text{adj}} = .26$ ,  $F(3, 151) = 18.74$ ,  $p < .001$ ), and Care ( $R^2_{\text{adj}} = .24$ ,  $F(3, 151) = 17.16$ ,  $p < .001$ ) interpretations, the models explained a rather large proportion of variance. For the interpretation that the friend did something wrong ( $R^2_{\text{adj}} = .05$ ,  $F(3, 151) = 3.76$ ,  $p = .012$ ) and the rejection interpretation ( $R^2_{\text{adj}} = .04$ ,  $F(3, 151) = 3.08$ ,  $p = .029$ ), the overall model  $R^2$ s were more modest, but still statistically significant. For the interpretation that the friend was trying to push one around the overall  $R^2$  was marginal ( $R^2_{\text{adj}} = .02$ ,  $F(3, 151) = 2.17$ ,  $p = .094$ ), and for the interpretation that the friend was being weird the overall  $R^2$  was nonsignificant ( $R^2_{\text{adj}} = .02$ ,  $F(3, 151) = 2.06$ ,  $p = .107$ ).

Across the eight regression models predicting interpretations, feature-specific friendship standards emerged the strongest and most consistent predictor (as compared to feature-specific friendship expectations and gender) of interpretations made in response to ambiguous violations of friendship expectations. Participants with higher feature-specific friendship standards rated the friend's behavior more negatively in terms of the "good friend" interpretation ( $b^*_{\text{standards}} = -.57$ ,  $t = 8.38$ ,  $p < .001$ ), the interpretation that the friend had done something wrong, ( $b^*_{\text{standards}} = .27$ ,  $t = 3.35$ ,  $p = .001$ ), and the interpretations that the friend respects ( $b^*_{\text{standards}} = -.53$ ,  $t = 7.51$ ,  $p < .001$ ), values ( $b^*_{\text{standards}} = -.52$ ,  $t = 7.30$ ,  $p < .001$ ), and cares ( $b^*_{\text{standards}} = -.51$ ,  $t = 7.08$ ,  $p < .001$ ) about them.

**Table 41: Predicting Interpretations Ratings in Response to Ambiguous Friendship-Expectation-Violation Situations from Gender, Feature-Specific Friendship Expectations, and Feature-Specific Friendship Standards**

	Gender			Feature-Specific Expectations Composite			Feature-Specific Standards Composite			$R^2_{adj.}$
	$b^*$	$t$	$sr^2$	$b^*$	$t$	$sr^2$	$b^*$	$t$	$sr^2$	
Interpretations										
Good Friend	-.05	.72	.002	.12	1.73 <sup>†</sup>	.013	-.57	8.38 <sup>***</sup>	.314	.31 <sup>***</sup>
Wrong	-.02	.19	.000	-.05	.61	.002	.27	3.35 <sup>**</sup>	.069	.05 <sup>*</sup>
Respect	-.06	.80	.003	.14	2.00 <sup>*</sup>	.019	-.53	7.51 <sup>***</sup>	.268	.27 <sup>***</sup>
Value	-.06	.81	.003	.16	2.20 <sup>*</sup>	.023	-.52	7.30 <sup>***</sup>	.257	.26 <sup>***</sup>
Care	-.02	.32	.001	.14	1.89 <sup>†</sup>	.018	-.51	7.08 <sup>***</sup>	.247	.24 <sup>***</sup>
Rejection	-.07	.86	.005	-.04	.48	.001	.24	2.99 <sup>**</sup>	.056	.06 <sup>*</sup>
Push Around	-.08	.94	.006	-.14	1.73 <sup>†</sup>	.019	.14	1.74 <sup>†</sup>	.019	.02 <sup>†</sup>
Weird	.10	1.19	.009	-.02	.21	.000	.16	1.99 <sup>*</sup>	.025	.02

*Note.* Gender is dummy coded (0 = male, 1 = female).  $sr^2$  = squared semi-partial correlation.

<sup>†</sup>  $p < .10$ ; \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ .

In addition, feature-specific friendship standards were significantly associated with the rejection interpretation ( $b^*_{\text{standards}} = .24, t = 2.99, p = .003$ ), such that higher levels of feature-specific friendship standards were associated with higher levels of the rejection interpretation. Feature-specific friendship standards were also significantly associated with the interpretation that the friend was being weird ( $b^*_{\text{standards}} = .16, t = 1.99, p = .048$ ), and marginally associated with the interpretation that the friend was trying to push them around ( $b^*_{\text{standards}} = .14, t = 1.74, p = .085$ ).

Although predictions from feature-specific friendship expectations to interpretations were somewhat weaker and less consistent than were predictions from feature-specific friendship standards to interpretations, an interesting pattern of findings emerged nonetheless. That is, when feature-specific friendship expectations *were* significantly associated with interpretations, results indicated that participants with higher levels of feature-specific friendship expectations made more *positive* interpretations of their friend's behavior in response to ambiguous friendship expectation violations. Specifically, feature-specific friendship expectations were significantly associated with interpretations that the friend respects ( $b^*_{\text{expectations}} = .14, t = 2.00, p = .048$ ) and values one ( $b^*_{\text{expectations}} = .16, t = 2.20, p = .029$ ), and were marginally associated with the interpretation that the friend cares about one ( $b^*_{\text{expectations}} = .14, t = 1.89, p = .061$ ) and is trying to push one around ( $b^*_{\text{expectations}} = -.14, t = 1.73, p = .085$ ). This pattern of findings provides further support for the distinction between feature-specific friendship

expectations and feature-specific friendship standards, and suggests that feature-specific friendship expectations may be associated with more positive responses to friendship situations, whereas feature-specific friendship standards may be associated with more negative responses. Finally, gender was not significantly associated with any of the interpretations once expectations and standards were taken into account.

Table 42 presents the results from the regression models predicting emotions. As a reminder, the emotions participants rated were: “I would be disappointed in my friend” (disappointed), “My feelings would be hurt” (hurt feelings), “I would feel lonely” (lonely), “I would be mad at my friend” (mad), “I would feel happy” (happy), and “I would feel okay” (neutral).

Overall, the models including gender, feature-specific friendship expectations, and feature-specific friendship standards explained between 1% and 31% of the variance in emotions ratings. The models explained a significant proportion of variation in ratings of anger ( $R^2_{\text{adj}} = .05$ ,  $F(3, 151) = 3.83$ ,  $p = .011$ ), hurt feelings ( $R^2_{\text{adj}} = .08$ ,  $F(3, 151) = 5.46$ ,  $p = .001$ ), disappointment ( $R^2_{\text{adj}} = .13$ ,  $F(3, 151) = 8.75$ ,  $p < .001$ ), neutral ( $R^2_{\text{adj}} = .17$ ,  $F(3, 151) = 11.28$ ,  $p < .001$ ), and happiness ( $R^2_{\text{adj}} = .31$ ,  $F(3, 151) = 23.80$ ,  $p < .001$ ). The only emotion for which the model did not explain a significant proportion of variation was loneliness ( $R^2_{\text{adj}} = .01$ ,  $F(3, 151) = 1.38$ ,  $p = .251$ ).

As was the case with interpretations, feature-specific friendship standards were the strongest and most consistent predictor of emotions and satisfaction in response to an



ambiguous violation of a friendship expectation. Setting the bar higher in terms of what a friend needs to do in order to fulfill a given friendship expectation was associated with feeling more disappointed ( $b^*_{\text{standards}} = .38, t = 4.92, p < .001$ ), more hurt ( $b^*_{\text{standards}} = .27, t = 3.44, p < .001$ ), more mad ( $b^*_{\text{standards}} = .27, t = 3.31, p = .001$ ), less happy ( $b^*_{\text{standards}} = -.57, t = 8.27, p < .001$ ), and less okay ( $b^*_{\text{standards}} = -.44, t = 5.80, p < .001$ ) in response to an ambiguous friendship expectation violation. In addition, feature-specific friendship standards were associated with higher loneliness ratings, but this effect was only marginally significant ( $b^*_{\text{bar-setting}} = .16, t = 1.95, p = .053$ ).

In contrast to the findings for interpretations, feature-specific friendship standards were not associated with emotion ratings in response to ambiguous friendship expectation violations. The one exception was ratings of happiness, which were marginally associated with higher levels of feature-specific friendship expectations ( $b^*_{\text{expectations}} = .13, t = 1.85, p = .067$ ). This marginal effect is consistent with the findings for interpretations, which showed that, when feature-specific friendship expectations were significant predictors, they predicted in the direction of making more benign interpretations of the friend's behavior. Consistent with the findings for interpretations, gender did not emerge as a significant predictor of any of the emotions ratings.

**Table 42: Predicting from Gender, Feature-Specific Friendship Expectations, and Feature-Specific Friendship Standards to Emotions and Satisfaction Ratings in Response to Ambiguous Friendship-Expectation-Violation Situations**

	Gender			Feature-Specific Expectations Composite			Feature-Specific Standards Composite			$R^2_{adj.}$
	$b^*$	$t$	$sr^2$	$b^*$	$t$	$sr^2$	$b^*$	$t$	$sr^2$	
Emotions										
Disappointed	.06	.74	.003	-.04	.48	.001	.38	4.92***	.137	.13***
Hurt Feelings	.13	1.62	.016	-.03	.34	.001	.27	3.44***	.071	.08**
Lonely	-.06	.75	.004	.00	.02	.000	.16	1.95 <sup>†</sup>	.025	.01
Mad	-.06	.70	.003	-.09	1.06	.007	.27	3.31**	.067	.05*
Happy	-.06	.84	.003	.13	1.85 <sup>†</sup>	.015	-.57	8.27***	.308	.31***
Neutral	.02	.21	.000	.07	.88	.004	-.44	5.80***	.182	.17***
Satisfaction	-.13	1.92 <sup>†</sup>	.015	.02	.26	.000	-.60	9.14***	.338	.38***

Note. Gender is dummy coded (0 = male, 1 = female).  $sr^2$  = squared semi-partial correlation.

<sup>†</sup>  $p < .10$ ; \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ .

Table 42 also presents the findings with regard to satisfaction ratings. As a reminder, the satisfaction item participants responded to was: “How satisfied would you be with your friend’s behavior in this situation?” Overall, the model including gender, feature-specific friendship expectations, and feature-specific friendship standards explained approximately 38% of the variance in ratings of satisfaction with the friend’s behavior ( $F(3, 151) = 32.06, p < .001$ ).

Consistent with the findings for interpretations and emotions, feature-specific friendship standards were the strongest predictor of satisfaction ratings in response to ambiguous violations of friendship expectations ( $b^*_{\text{standards}} = -.60, t = 9.14, p < .001$ ). That is, participants who set the bar higher for friends were less satisfied with a friend’s behavior in a situation involving an ambiguous violation of a friendship expectation. Feature-specific friendship expectations were not significantly associated with satisfaction ratings. Interestingly, in contrast to the findings for interpretations and emotions, gender was a marginal predictor of satisfaction ratings, such that, females were marginally less satisfied with a friend’s behavior in response to an ambiguous violation of a friendship expectation ( $b^*_{\text{gender}} = -.13, t = 1.92, p = .010$ ). Although only marginally significant, this finding is consistent with the interaction effects observed between gender and friendship features in predicting friendship satisfaction in Studies 2 and 3, and with the gender x bar level interaction effects for the Feature-Specific Friendship Standards measure observed in the current study.

Taken together, findings from the Ambiguous Friendship-Expectation-Violation Vignettes measure provided partial support for the hypothesis that individuals who hold higher expectations for friends respond more negatively to situations in which a friend does something mildly disappointing. Interestingly, this hypothesis was supported for feature-specific friendship standards but not for feature-specific friendship expectations. Although feature-specific friendship expectations were only occasionally related to interpretations ratings and emotions ratings, when they were related findings indicated that higher levels of feature-specific friendship expectations were associated with more *positive* responses to ambiguous friendship-expectation-violation situations. Although these findings are only suggestive about the differential role that feature-specific friendship expectations and feature-specific friendship standards may play in predicting responses to everyday friendship situations, they highlight the importance of examining friendship expectations from this more nuanced perspective.

## **Discussion**

Findings from Study 3 further documented the suppression effect in the link between gender and loneliness observed in Studies 1 and 2, and the suppression effect in the link between gender and friendship satisfaction first examined in Study 2. Although the association between friendship features and loneliness observed in the current study was significantly lower than the associations observed in Studies 1 and 2, significant gender differences in loneliness still emerged, such that females reported higher levels of loneliness than did males once friendship features were taken into account. With regard

to friendship satisfaction, gender differences emerged such that, when friendship features were statistically controlled, females reported lower levels of satisfaction than did males.

In addition, the paradoxical pattern of small and nonsignificant gender differences in loneliness coupled with significant gender differences in friendship features was once again observed, with the caveat that in Study 3 friendship features were less strongly linked to loneliness than was expected. The parallel paradoxical pattern of findings with regard to friendship satisfaction was once again observed in Study 3, but, in contrast to Study 2, the gender difference in friendship satisfaction did not reach the level of statistical significance. This can be attributed to the smaller sample size in the current study, since the effect sizes for the gender difference in friendship satisfaction in Study 2 ( $d = -.17$ ) and Study 3 ( $d = -.13$ ) were quite similar.

A major focus of Study 3 was on the role of friendship expectations in explaining the paradox and suppression effects observed in Studies 1 and 2. An important contribution of Study 3 was the development of two new measures assessing distinct facets of the friendship expectations construct—feature-specific friendship expectations and feature-specific friendship standards. Results indicated that both feature-specific friendship expectations and feature-specific friendship standards were reliably assessed. For the 55-item Feature-Specific Friendship Expectations measure, internal reliabilities ranged from .76 to .90 at the individual subscale level, and up to .96 at the level of the overall positive friendship expectations composite. For the Feature-Specific Friendship Standards measure, participants' responses to each level of standards were internally

consistent across the 11 friendship features domains ( $\alpha$ s ranging from .75 to .89), and the composite feature-specific friendship standards score showed an adequate level of internal consistency ( $\alpha = .74$ ). In addition, correlations between feature-specific friendship expectations and feature-specific friendship standards were quite low, ranging in magnitude from  $|.01|$  to  $|.18|$ , suggesting that feature-specific friendship expectations and feature-specific friendship standards are distinct facets of the friendship expectations construct. Also, correlations between corresponding RFFQ-A and Feature-Specific Friendship Expectations subscales were modest (ranging from  $|.16|$  for conflict to  $|.42|$  for honest feedback), suggesting that feature-specific friendship expectations and reports of friendship features represent distinct constructs.

Consistent with hypotheses and with previous research (Hall, 2011), relatively large and consistent gender differences emerged in feature-specific friendship expectations at the individual feature level and in the overall positive friendship expectations composite. Females reported higher expectations for validation, emotional support, reliable partnership, enjoyable companionship, honest feedback, self-disclosure, and spirit of equality than did males. Interestingly, males reported higher expectations for instrumental help than did females. For feature-specific friendship standards, gender differences were smaller and less widespread across subscales when the single bar-setting score assigned to participants in each domain was considered. Although females set the bar higher than did males for validation, emotional support, reliable partnership, enjoyable companionship, and self-disclosure, males and females set the bar similarly for

instrumental help, honest feedback, spirit of equality, forgiveness, conflict resolution, and conflict.

Analyses of the Feature-Specific Friendship Standards measure showed that participants rated the five friendship behaviors presented in each feature domain differently and generally in a stepwise fashion, with the intended lower levels of expectation fulfillment being rated as less satisfying, and the intended higher levels of expectation fulfillment being rated as more satisfying. In the context of this general stepwise pattern, there were significant individual differences in the degree to which participants rated each behavior as fulfilling of expectations. When responses to these five behaviors within each friendship feature were considered, gender differences were more widespread. Interestingly, for eight of the 11 friendship features domains assessed, significant bar level x gender interactions effects were observed, which showed that gender differences emerged in different directions depending on the level of the bar. Specifically, these analyses indicated that males were often just as satisfied as females or were even more satisfied than were females with a friend's behavior at the lower end of the bar-setting spectrum, but that females were consistently more satisfied with a friend's behavior than were males at the higher end of the bar-setting spectrum. These interaction effects were consistent with findings from Study 2 showing that the link between friendship features and friendship satisfaction was stronger for females than for males (a finding that was replicated in Study 3). These interaction effects also suggest that

females may be more “sensitive” to subtle variations in friendship features than are males.

With regard to associations with loneliness, both feature-specific friendship expectations and feature-specific friendship standards were weakly associated with loneliness. This finding is perhaps not surprising, as study hypotheses predicted associations between *discrepancies* and loneliness rather than associations between the average levels of feature-specific friendship expectations, or feature-specific friendship standards, and loneliness, per se. For friendship satisfaction, each of the 11 feature-specific friendship expectations subscales were modestly and significantly associated with friendship satisfaction (*r*s ranging from .15 to .29), such that higher levels of expectations were associated with higher levels friendship satisfaction. This finding is consistent with Hall and colleagues (2011), who found that ratings of friendship expectations were significantly associated with daily ratings of expectation fulfillment.

In contrast, feature-specific friendship standards were minimally correlated with friendship satisfaction, with significant associations emerging only for the features of instrumental help, enjoyable companionship, and honest feedback (*r*s ranging from -.10 to -.12). Interestingly, feature-specific friendship standards in these domains were *negatively* correlated with friendship satisfaction, such that individuals who set the bar higher for their friends in these domains reported lower levels of satisfaction with their closest friendship. Taken together, associations between the two newly-developed assessments of friendship expectations and friendship satisfaction suggest that higher



levels of feature-specific friendship expectations may be beneficial in terms of friendship satisfaction, whereas higher levels of feature-specific friendship standards or bar-setting may in fact be detrimental.

This interesting pattern of associations was further borne out in the links between friendship expectations and responses to situations involving ambiguous violations of friendship expectations. In analyses predicting ratings of interpretations, emotions, and satisfaction in response to ambiguous violations of friendship expectations from gender, feature-specific friendship expectations, and feature-specific friendship standards, feature-specific friendship standards/bar-setting emerged as a consistent and robust predictor. Specifically, higher levels of bar-setting were associated with more negative interpretations of a friend's behavior in ambiguous friendship-expectation-violation situations, including higher endorsements of the interpretations that the friend did something wrong, that the friend is being rejecting, and that the friend is being weird, and lower endorsement of the interpretations that the friend values, respects, and cares about one. In addition, higher levels of bar-setting were associated with higher ratings of negative emotions including disappointment, hurt feelings, and anger, and with lower ratings of happiness and "feeling okay." Finally, higher levels of bar-setting were associated with lower levels of satisfaction with the friend's behavior in response to ambiguous violations of friendship expectations.

Feature-specific friendship expectations were much less consistently associated with responses to ambiguous friendship-expectation-violation situations than were

feature-specific friendship standards. However, when significant associations did emerge they were in the opposite direction to those observed for feature-specific friendship standards. That is, participants who reported higher levels of feature-specific friendship expectations also reported making some more positive interpretations of their friend's behavior in response to ambiguous friendship-expectation-violations, and reported marginally higher levels of happiness in these situations.

Although the findings regarding links between feature-specific friendship expectations and responses to ambiguous violations of friendship expectations are perhaps not compelling on their own, the picture that emerges holistically from the two newly-developed measures of friendship expectations is intriguing. The current study provides ample evidence of discriminant validity between the two measures, and beyond that shows that higher levels of feature-specific friendship expectations may be adaptive in terms of associations with friendship features, friendship satisfaction, and responses to everyday friendship situations, whereas higher levels of feature-specific friendship standards, or bar-setting, may be more problematic, especially in terms of responses to everyday friendship situations. Although constructs similar to feature-specific friendship expectations have been examined in previous research (see, for example, Demir & Orthel, 2011; Fehr, 2004; Hall et al., 2011; Kupersmidt et al., 1999), the construct of feature-specific friendship standards has not previously been assessed. Results from the current study demonstrate the utility of taking this more nuanced perspective in future research.

In addition to the development of the Feature-Specific Friendship Expectations and Feature-Specific Friendship Standards measures, a third contribution of Study 3 was the development of the Ambiguous Friendship-Expectation-Violation Vignettes measure. A set of 55 hypothetical situations vignettes was developed depicting ambiguous violations of friendship expectations across 11 different friendship features domains. Participants' ratings of interpretations, emotions, and satisfaction in response to the friend's behavior were highly internally consistent at the composite level across the 11 friendship features ( $\alpha \geq .94$ ). The fact that individuals with different levels of friendship standards responded differently to these situations is not only conceptually interesting, but also provides evidence for the validity of the ambiguous friendship-expectation-violation vignettes manipulation.

One key hypothesis of Study 3 was that gender differences in friendship expectations, if observed, would explain the suppression effects observed in the link between gender and loneliness and in the link between gender and friendship satisfaction. Contrary to hypotheses, however, gender differences in feature-specific friendship expectations and feature-specific friendship standards did *not* explain the suppression effects observed in the links between gender and loneliness and between gender and friendship satisfaction. Although similar suppression effects were observed in Study 3 as in Studies 1 and 2, these effects were *not* diminished by the inclusion of feature-specific friendship expectations or feature-specific friendship standards in the statistical model. These findings suggest that, statistically controlling for friendship features and friendship

expectations and standards, females still experience higher levels of loneliness and lower levels of friendship satisfaction than do males. If these suppression effects are not the result of gender differences in expectations, what could explain this pattern of findings? One possible explanation lies in the greater importance and salience of the relationship domain for females (e.g., Maccoby, 1998; Rose & Rudolph, 2006), which implies some potential for stronger links between relationship features and socioemotional outcomes for females than for males. Based on the interaction effects observed between gender and friendship features and between gender and feature-specific friendship standards in the current study, there is evidence that relationship features are indeed more strongly linked to friendship satisfaction for females than for males.

With regard to loneliness, however, there is little evidence in the current set of studies or in the literature more broadly that associations between relationship features and loneliness vary across gender. One small hint that relationship features may be more strongly related to loneliness for females than for males comes from the findings of the polynomial regression analyses predicting loneliness in the current study. Specifically, in the model for males, there was no evidence that friendship features or feature-specific friendship expectations were significantly associated with loneliness. In the models for females, however, both the linear and the nonlinear effects of friendship features were significant predictors of loneliness. These significant effects for females but not for males suggest that there may be some difference between males and females in the link between friendship features and loneliness, but given the minimal degree of association

between friendship features and loneliness in the current sample, the smaller sample size for males versus females, and the lack of significant interaction effects between gender and friendship features in predicting loneliness across the three studies these results should be interpreted cautiously. These findings are suggestive at best, but do point to the importance of considering this question in future research.

Another possible explanation for the remaining gender differences in loneliness and friendship satisfaction at statistically equated levels of friendship features and friendship expectations has to do with the *flexibility* of the expectations and standards held by males versus females. Previous research on the topic of perfectionism has shown that other-oriented perfectionism (a type of perfectionism that involves holding very high standards for other people) is associated with interpersonally aversive characteristics such as narcissism and entitlement (e.g. Hewitt & Flett, 1991). This research provides a hint that inflexibility in expectations and standards may be associated with difficulties in the social domain.

Cognitive flexibility—the ability to adjust one’s expectations and behaviors in light of experience—is generally thought of as a hallmark of adaptive functioning (see, for example, Davis & Nolen-Hoeksema, 2000; Scott, 1962). In the domain of friendship expectations and standards, cognitive flexibility could be construed in at least three different ways. One construal could pertain to the flexibility of one’s expectations and standards over time. This could mean, for example, modifying expectations or standards

based on accumulated experiences with many different friends over an extended period of time (for a related discussion pertaining to attachment-related scripts see, Fivush, 2006).

A second construal could pertain to the flexibility of expectations and standards for a particular person at a particular point in time. This could mean, for example, that a person would be willing to adjust his or her expectations for a friend due to current circumstances (e.g., recognizing that a friend who is going through a tough time might not be available for companionship or to provide very much emotional support during that period). This second construal refers to a temporary, person-specific flexibility in expectations or standards, rather than a modification of one's general expectations or standards as was the case in the first construal.

Finally, a third construal of flexibility could pertain to the modification of expectations or standards for a particular friend permanently rather than temporarily. This type of flexibility would involve modifying expectations for a particular friend based on what is known about his or her personal characteristics, capabilities, and past behavior as a friend. One could imagine, for example, a friend who is very supportive and enjoyable to be around, but who is not very reliable (e.g., often cancels plans). An individual might have relatively high expectations for emotional support, enjoyable companionship, and reliable partnership for close friends in general, but, based on experiences with this particular friend, the individual has learned to scale back expectations for a certain kind of dependability in the context of this specific friendship. Someone who does not or is

not able to flexibly adjust friendship expectations and standards in this manner will likely be set up for frequent disappointment.

This third manifestation of inflexibility seems most relevant to the question of why gender differences in friendship satisfaction and loneliness remain even after friendship expectations are taken into account. It is possible that females' expectations for their friends are more inflexible than males' from this third perspective, and therefore they are more likely to consistently experience disappointment with a friend who does not live up their standards. This possibility should be examined in future research.

A second hypothesis involving friendship expectations that was tested but not supported in the current study was the hypothesis that discrepancies between friendship features and friendship expectations would be an important predictor of loneliness and friendship satisfaction. Contrary to prominent theoretical perspectives on loneliness, discrepancies between feature-specific friendship expectations and friendship features were not found to be associated with loneliness. This finding is inconsistent with some previous research, which has found evidence for a modest link between discrepancies and loneliness (Archibald et al., 1995; Kupersmidt et al., 1999; Russell et al., 2012). One potential explanation for the lack of concordance between the findings of the current study and the findings of previous research on this topic is the use in the current study of a highly focused assessment of loneliness. Previous research has tended to employ assessments of loneliness that overlap with assessments of relationship features, which could artificially inflate associations observed between discrepancies and loneliness.

Specifically, the inclusion of similar items in assessments of loneliness and in assessments of relationship features used to create discrepancy scores would lead to correlations between loneliness and discrepancy scores caused by overlapping item content between the two measures, rather than by any “true” association between constructs.

Another potential explanation for this finding is that the current study employed a more appropriate statistical method to test hypotheses about the link between discrepancies and outcomes—polynomial regression analysis. Past research has tended to employ discrepancy scores as predictors of friendship satisfaction and loneliness, which have significant problems in terms of reliability and interpretation (e.g., Edwards, 2002). It is possible that discrepancy effects observed in previous research are primarily artifacts of the statistical analysis, rather than representing “real” effects of discrepancies on outcomes. Since discrepancy scores are created by subtracting one component variable (e.g., friendship features) from another component variable (e.g., friendship expectations), associations between either of the component variables and the criterion variable could drive the association between the discrepancy score and the criterion variable, rather than an effect of the discrepancy on the criterion variable per se (see Edwards, 2001; 2002). For example, an association between loneliness scores and a discrepancy score created by subtracting friendship features from friendship expectations could be driven by a simple association between loneliness and friendship features, rather than an association between loneliness and the discrepancy between friendship features



and friendship expectations. With regard to loneliness, it is hard to draw a firm conclusion one way or another given the lower-than-anticipated degree of association between friendship features and loneliness observed in Study 3. For friendship satisfaction, however, this is a plausible explanation since friendship features and satisfaction were significantly correlated.

Another possible explanation for the lack of association between discrepancies and loneliness is that, by focusing specifically on participants' closest friendships, important relationships in participants' lives may have been overlooked. As individuals move out of high school and college and into the broader world, their social world expands and there is a greater diversity of relationships that may influence their feelings of loneliness. At the same time it is likely that for some people friendship becomes a less "central" relationship as many individuals develop long-term romantic relationships and may even have children and start families of their own. In this stage of life, friendship may take more of a back seat to other relationships and responsibilities and become somewhat less of an influence on well-being. Given the diversity and variability of relationships, relationship-related responsibilities, and work-related responsibilities that are important in young adulthood and beyond, future research on this topic should take a broader perspective on the important relationships (see, for example, Carbery & Buhrmester, 1998; Furman & Buhrmester, 1985) and roles (see, for example, Arnett, 2000) in people's lives.

Although evidence of discrepancy effects was not found in polynomial regression analyses examining the joint effects of feature-specific friendship expectations and friendship features on loneliness and friendship satisfaction, some indirect support for the discrepancy hypothesis was found in responses to the ambiguous friendship-expectation-violation situations. Specifically, results showed that individuals who had higher standards for friends made more negative interpretations, experienced more negative emotions, and were less satisfied with the friend's behavior in response to ambiguous friendship expectation violations. These results are consistent with the idea that individuals with higher standards for their friends experienced greater discrepancies in response to the ambiguous friendship-expectation-violation situations than did individuals with lower standards. These findings suggest that the "action" in terms of discrepancy effects may be better captured at the more fine-grained level of feature-specific friendship standards and at the more situation-specific level of responses to ambiguous friendship-expectation-violations, which have not been employed in previous research on this topic. It is important to note that although associations between feature-specific friendship standards and ratings of interpretations, emotions, and satisfaction in response to ambiguous friendship-expectation-violations were relatively consistent, one exception was the association between feature-specific friendship standards and ratings of loneliness in response to the ambiguous friendship-expectation-violation situations. This association was only marginally significant, suggesting that, even at the level of feature-

specific friendship standards, friendship-related discrepancies may not be a strong predictor of loneliness.

An unexpected and puzzling finding emerged in Study 3 that has been alluded to throughout this discussion. This finding was the comparatively weak associations observed between friendship features and loneliness. For space reasons, extensive follow-up analyses were not reported that examined the strength of associations between friendship features and loneliness across different subsets of the sample and for each specific item on each measure. These supplemental analyses did not provide any clues as to why these weaker-than-expected associations occurred. One potential explanation for the Study 3 finding is a difference in study procedures between Studies 1 and 2, and Study 3. In Study 3, the assessment of friendship features and the assessment of loneliness were administered approximately five to seven days apart, in contrast to Studies 1 and 2 where assessments of friendship features and loneliness were administered in a single session. It is possible that administering the measures one week apart could explain the relatively low correlations between friendship features and loneliness observed in Study 3. If this is the case, it would imply that the correlations observed in Studies 1 and 2 are artificially high, possibly due to a priming effect of asking about friendship features and loneliness close together in time, rather than due to “real” associations between friendship features and loneliness. This temporal explanation does not seem likely, however, as previous research has administered assessments of friendship features and loneliness in separate sessions several weeks apart and still found

robust associations (e.g., Parker & Asher, 1993). Still, to be able to fully evaluate the role of the timing of assessment of each construct, further research is needed comparing the strength of the association between friendship features and loneliness across different configurations of study procedures.

The findings from the three studies reported in this dissertation suggest several important directions for future research. First, given the unusually weak associations between friendship features and loneliness observed in Study 3, hypotheses involving links between friendship features and loneliness should be tested in an independent sample. Specifically, the hypotheses that require further test are: (1) the hypothesis that gender differences in friendship expectations will explain the suppression effect observed in the link between gender and loneliness, and (2) the hypothesis that discrepancies between friendship expectations and friendship features are an important predictor of loneliness. Further research is needed to provide a clearer picture of whether or not these hypotheses are supported by data. In addition, future research needs to focus on further refining the Feature-Specific Friendship Standards and Ambiguous Friendship-Expectation-Violations Vignettes measures to improve the internal reliability of responses at the individual subscale level, and to add additional items to capture the omitted feature of shared activities.

Second, the intriguing pattern of interaction effects observed between gender and friendship features in predicting friendship satisfaction should be further examined. These interaction effects suggested that males and females may be differentially

“sensitive” to subtle variations in friendship features. Future research could examine this possibility by presenting men and women with friendship situations, perhaps in a videotaped format, varying in the degree to which various friendship features are present. Participants could be trained to “code” these situations for the presence of various friendship provisions and processes. If it is the case that males are less sensitive to subtle variations in friendship features than are females, then they should be less accurate at coding these types of friendship situations. This kind of research could provide insight into the mechanisms driving the gender-by-friendship-feature interaction effects predicting friendship satisfaction that were observed in Studies 2 and 3 of this dissertation.

A third important direction for future research is to investigate the role of flexibility/inflexibility in friendship expectations and friendship standards. One method for addressing hypotheses about flexibility/inflexibility in friendship expectations and friendship standards could involve asking participants to report on feature-specific friendship expectations and feature-specific friendship standards for friends in general (as was done in Study 3), and then to report on feature-specific friendship expectations and feature-specific friendship standards with regard to specific friends. Variability in expectations across different specific friends would likely indicate expectation flexibility, and could be associated with friendship satisfaction and loneliness.

A second method for addressing hypotheses about flexibility/inflexibility in friendship expectations and friendship standards could involve experimentally

manipulating the behavior of a friend over time (perhaps through stories, films, or vignettes) and examining whether and how individuals adjust their expectations for the friend based on the history of the friend's behavior. This research will provide further insight into the role of friendship expectations in the links among gender, friendship, and emotional well-being, and perhaps help explain the suppression effects observed in this research.

### **Conclusion**

Findings from the three studies reported in this dissertation make both substantive and measurement development contributions that will hopefully help advance research on gender, friendship, and emotional well-being. First, these studies identified and documented a paradox that has not been discussed in previous research regarding the links between gender, friendship features, and loneliness, and between gender, friendship features, and friendship satisfaction. This paradox was observed with a previously existing assessment of friendship features, and was replicated using the substantially revised and expanded assessment of friendship features developed in Study 2.

Second, these studies provided evidence for the existence of a suppression effect in the link between gender and loneliness, such that significant gender differences in loneliness emerged once friendship features were taken into account. This pattern of findings was also replicated with the significantly revised and expanded assessment of friendship features developed in Study 2. Evidence for a suppression effect in the link between gender and friendship satisfaction was also found, such that gender differences

in friendship satisfaction emerged (in Study 3) or even reversed (in Study 2) once friendship features were taken into account.

It was hypothesized that gender differences in friendship expectations would explain this paradox and the observed suppression effects. Before this hypothesis could be tested, however, it was important to develop new, feature-specific measures of friendship expectations. In Study 3, two distinct facets of the friendship expectations construct were identified, and measures were developed to assess each facet. Both the Feature-Specific Friendship Expectations measure and the Feature-Specific Friendship Standards measure showed promising psychometric properties, and were found to relate in distinct ways to responses to situations involving ambiguous violations of friendship expectations, as well as to overall friendship satisfaction. A set of hypothetical situations vignettes also was developed, and was found to reliably assess participants' responses to ambiguous friendship-expectation-violation situations across 11 friendship features domains. In addition, participants' feature-specific friendship expectations and feature-specific friendship standards were found to be predictive of their responses to these ambiguous friendship-expectation-violation situations.

The hypothesis that gender differences in friendship expectations would explain the suppression effects observed in the link between gender and loneliness and in the link between gender and friendship satisfaction was not supported. That is, gender differences in loneliness and friendship satisfaction remained even after feature-specific friendship expectations and feature-specific friendship standards were taken into account.

The hypothesis that discrepancies between friendship expectations and friendship features would be associated with loneliness and friendship satisfaction was not supported at the level of discrepancies between feature-specific friendship expectations and self-reports of friendship features. However, findings with the ambiguous friendship-expectation-violation vignettes measure are consistent with the idea that discrepancies must exist between feature-specific friendship standards and friend's behaviors in these everyday friendship situations. Findings linking feature-specific friendship standards to responses to ambiguous friendship-expectation-violation situations suggest that discrepancies at the level of feature-specific friendship standards are important in terms of predicting interpretations and emotional responses in these situations, as well as in predicting satisfaction with the friend's behavior in these situations. As such, the findings pointed to the utility of taking a more nuanced approach to the assessment of friendship expectations than has been done in previous research, and to examining discrepancies at a more situation-specific level.

With regard to contributions to assessment, Studies 2 and 3 provided evidence for the validity of new measures of friendship features, feature-specific friendship expectations, feature-specific friendship standards, and responses to everyday situations in which friendship expectations can be violated. Also in Study 2, a highly-focused measure of loneliness was adapted for use with a general adult population. Together with the substantive findings, these new measures provide a foundation for a program of



research dedicated to understanding the interactions among gender, social cognition, and social experience in contributing to emotional well-being for young adults.

## APPENDIX A

### Loneliness in Context Measure for College Students (Asher, Weeks, & McDonald, 2010)

1. Class is a lonely place for me.
2. I am lonely in the evening.
3. My place of residence is a lonely place for me.
4. My free time is a lonely time for me.
5. I feel sad and alone on weekends.
6. I am lonely with other people.
7. I feel sad and alone at social events.
8. I am lonely during meal times.
9. I feel sad and alone when I am studying.
10. Bed time is a lonely time for me.

*Note.* Participants respond to items on a 5-point scale, 1 = *never*, 5 = *always*.

## APPENDIX B

Friendship Quality Questionnaire for Adults (Simpkins & Parke, 2001; adapted from Parker & Asher, 1993)

Please think about a person that you consider a close or “best friend” at Duke. Be sure to think of a best friend and not someone who you are in a romantic relationship with.

Gender of close friend?

Age of close friend?

How long have you known this person?

Please indicate how true each statement is about your relationship with this person (participants respond to items on a 5-point scale, 1 = *not at all true*, 5 = *really true*).

Item	Intended Subscale	Final Subscale
My friend tells me I’m good at things that I do.	VC	V
If my friend hurts my feelings, he/she always apologizes.	VC	—
If someone were talking about me behind my back, my friend would stick up for me.	VC	RA
My friend compliments me a lot.	VC	V
My friend would still like me no matter what.	VC	RA
My friend makes me feel important.	VC	—
My friend cares about my feelings.	VC	—
If my friend and I get mad at one another, we will always talk about things and get them resolved.	CR	—

Item	Intended Subscale	Final Subscale
My friend and I always make up easily if we have an argument.	CR	—
My friend and I help each other out with errands or other favors.	HG	—
I can always count on my friend for good advice when I have a problem.	HG	—
My friend and I loan each other items from time to time.	HG	—
My friend sometimes helps me out with tasks that I need to get done.	HG	—
When I'm having trouble figuring something out, I can go to my friend for help and advice.	HG	—
My friend and I find time to do lots of recreational activities together.	Comp	C
My friend and I get together often.	Comp	C
My friend and I socialize together frequently.	Comp	C
My friend and I tell each other about our problems.	IE	SD
When I'm upset about something that happened to me, I can always talk to my friend about it.	IE	SD
My friend and I are able to tell each other private things.	IE	SD
I can think of lots of secrets that my friend and I have told each other.	IE	SD
My friend and I get irritated with one another a lot.	CB	Con
My friend and I disagree with one another a lot.	CB	Con
I can always count on my friend to keep promises.*	CB	RA

Item	Intended Subscale	Final Subscale
My friend doesn't seem to listen to me.	CB	Con
If I told my friend a secret, my friend would keep it.*	CB	RA
My friend brings up little things that bug me.	CB	Con

*Note.* Subscale abbreviations are as follows: VC=*Validation and Caring*; CR=*Conflict Resolution*; HG=*Help and Guidance*; Comp=*Companionship and Recreation*; IE=*Intimate Exchange*; CB=*Conflict and Betrayal*; V= *Validation*; RA=*Reliable Alliance*; C=*Companionship*; SD=*Self-Disclosure*; Con=*Conflict*; a dash indicates that the item was dropped from the measure; items marked with an asterisk were intended to be reverse-scored on their intended subscales; these items were not reverse-scored in the calculation of reliable alliance subscale scores.

## APPENDIX C

### Miscellaneous Questions About Use of MTurk (administered to MTurk participants only)

This last set of questions asks about your experiences with Amazon Mechanical Turk.

In what capacity do you use Amazon Mechanical Turk (MTurk)? (As a worker only; As a worker and a requester)

How long have you been a worker on MTurk? (Less than 1 month; 1 to 6 months; 7 to 12 months; more than 12 months)

How much time per week do you spend on MTurk? (Less than 1 hour; 1 to 5 hours; 6 to 10 hours; 10 to 15 hours; 16 to 20 hours; 21 to 25 hours; 26 to 30 hours; 31 to 35 hours; 36 to 40 hours; more than 40 hours)

Below are a number of reasons why you might use Amazon Mechanical Turk. For each item, indicate how true each statement is for you (1 = *not at all true for me*, 7 = *really true for me*).

I use MTurk to make money.

I use MTurk because I enjoy doing interesting tasks.

I use MTurk to kill time when I am bored.

I use MTurk to have fun.

I use MTurk to learn more about research.

Other (open-ended)

## APPENDIX D

Revised Friendship Features Questionnaire for Adults (RFFQ-A; adapted from Bukowski, Hoza, & Boivin, 1994; Fehr, 2004; Furman & Buhrmester, 1985; Mendelson & Aboud, 1999; Parker & Asher, 1993; Sharabany, 1974; Simpkins & Parke, 2001)

Please think about a person of the same sex who you consider a close or “best” friend. Be sure to think of a friend and not someone who you are in a romantic relationship with.

First name of close friend \_\_\_\_\_ (pipe name into measure in place of “My friend” through Qualtrics)

How long have you known this person? \_\_\_\_\_

Please indicate how true each statement is about your relationship with this person (response format ranges from 1 = *not at all true*, 7 = *really true*).

### ***Validation/Enhancement of Worth***

- My friend compliments me about things.
- My friend makes me feel good about my ideas.
- My friend makes me feel important and special.
- My friend cares about me.
- My friend criticizes me a lot.\*
- My friend makes me feel worthless.\*
- My friend rarely says anything positive about me.\*

### ***Comfort/Security/Safety***

- I feel uncomfortable when I am with my friend.\*
- I feel at ease with my friend.
- I can really be myself with my friend.
- I can really trust my friend.
- My friend likes me just the way I am.
- My friend is judgmental of me.\*
- My friend makes me feel insecure.\*

### ***Emotional Support***

If I am going through a tough time my friend doesn't provide much emotional support.\*  
My friend is there for me when I need emotional support.  
If I am upset about something, my friend will reassure me.  
My friend cheers me up when I am feeling down.  
If I am worried about something my friend will help me get through it.  
My friend is not emotionally supportive.\*  
When I am feeling stressed I can go to my friend for emotional support.

### ***Instrumental Help***

If I needed to borrow something my friend would lend it to me.  
If I had a task that needed to get done, my friend would not be very helpful.\*  
I don't go to my friend for help when I have a problem that needs to be solved.\*  
If I have a problem my friend will help me solve it.  
My friend has good ideas for how to get things done.  
My friend does favors for me when I need help with something.  
If I don't know how to do something my friend will help me figure it out.

### ***Reliable Alliance***

If someone were talking about me behind my back, my friend would stick up for me.  
I know I can really rely on my friend.  
My friend breaks promises that he/she makes to me.\*  
If I told my friend a secret, he/she might not keep it.\*  
No matter what happens, I can count on my friend to be there for me.  
My friend is unreliable when it comes to our friendship.\*  
My friend will always be there for me.

### ***Shared Activities***

My friend and I get together for food or drink.  
I rarely spend time with my friend.\*  
My friend and I engage in activities together.  
My friend and I hang out together.  
My friend and I rarely spend time together doing things.\*  
My friend and I often do things together.  
My friend and I hardly ever go places together.\*



### ***Enjoyable Companionship***

My friend and I don't have much fun when we are together.\*  
My friend and I make each other laugh.  
When I am spending time with my friend I feel happy.  
My friend and I can be silly or goofy together.  
My friend is not very enjoyable to be around.\*  
I have a lot of fun when I am with my friend.  
My friend and I enjoy spending time together.

### ***Honest Feedback***

My friend gives me honest advice.  
Sometimes my friend doesn't tell me the truth about something I did, even when I ask him/her to.\*  
I know my friend will be honest with me, even if he/she has something unpleasant to say.  
If my friend thought I was making a mistake, he/she would tell me.  
My friend will give me his/her honest opinion if I ask for it.  
If I need an honest opinion about something my friend will provide it.  
Sometimes I think my friend is not being honest with me when I ask for advice.\*

### ***Self-Disclosure***

My friend and I talk to each other about private or personal things.  
My friend and I talk to each other about things that are going on in our lives.  
My friend and I don't talk to each other about things that are bothering us.\*  
My friend and I talk to each other about our thoughts and feelings.  
My friend and I tell each other things that we wouldn't tell other people.  
My friend and I talk to each other about our interests and ideas.  
My friend and I rarely talk to each other when something is going wrong in our lives.\*

### ***Forgiveness***

My friend is understanding if I make a mistake.  
If my friend makes a mistake, I would not be able to forgive him/her.\*  
My friend and I are willing to forgive each other if one of us does something wrong.  
If I let my friend down, he/she would forgive me.  
My friend and I hold grudges against each other.\*  
If I do something wrong my friend won't forget it.\*  
My friend and I are forgiving of each other.

### ***Spirit of Equality/Balance***

My friend and I share equally in deciding things to do.  
In our friendship one of us has more say about things than the other. \*  
In my friendship with my friend, one of us is dominant over the other. \*  
My friend and I are equal partners in the friendship.  
There is a spirit of fairness in my friendship with my friend.  
My friend and I take each other's wishes and feelings into account.  
My friendship with my friend is one-sided. \*

### ***Conflict***

My friend and I get irritated with one another a lot.  
My friend and I disagree with one another a lot.  
My friend and I get into fights with each other.  
It seems like my friend and I disagree with each other all of the time.  
There is a lot of conflict in my friendship with my friend.  
My friend and I rarely have arguments. \*  
My friend and I are good at making decisions together. \*  
My friend and I get along very well. \*  
My friend and I usually agree about things. \*

### ***Conflict Resolution***

If my friend and I get into an argument, we are good at getting over it.  
If my friend and I get into a fight we do not make up easily. \*  
My friend and I are good at resolving conflicts with one another.  
If my friend and I get into an argument we stay mad at each other for a long time. \*  
My friend and I can easily manage disagreements.  
If my friend and I have a disagreement we have trouble working it out. \*  
My friend and I compromise with each other when we disagree about what to do.

Friendship Satisfaction (adapted from Parker & Asher, 1993)

How is this friendship going? (1 = *very poorly*, 15 = *very well*)

How happy are you with this friendship? (1 = *very unhappy*, 15 = *very happy*)

Friendship Closeness (adapted from Austin, 2010)

Relative to all of your other relationships (including friendships, family relationships, romantic relationships, etc.), how would you characterize your friendship with your friend? (1 = *least close of all my relationships*, 15 = *closest of all my relationships*)

Relative to what you know about other people's relationships, how would you characterize your relationship with your friend? (1 = *not at all close*, 15 = *really close*)

## APPENDIX E

### Loneliness in Context Questionnaire for Adults (adapted from Asher et al., 2010)

Sometimes people can feel lonely in their day-to-day lives. The items on this form ask about your feelings in different contexts. On the scale directly below each item indicate the number that indicates how often you feel the way the item describes. There are no right or wrong answers because people can feel very differently from one another. Just describe how you feel in these contexts (response options range from 1 = *never* to 5 = *always*).

1. Mornings are a lonely time for me.
2. I am lonely in the evening.
3. My place of residence is a lonely place for me.
4. My free time is a lonely time for me.
5. I feel sad and alone on weekends.
6. I am lonely with other people.
7. I feel sad and alone at social events.
8. I am lonely during meal times.
9. I feel sad and alone when I am running errands.
10. Bed time is a lonely time for me.

## APPENDIX F

Demographic Prescreen Questionnaire (presented at the beginning of the study for MTurk participants; presented at the end of the study for participant pool participants)

What is your age? (Under 18 through 100+)

What is your gender? (Male, Female, Transgender)

What country do you live in? (Open-ended)

What is your native language? (Arabic, English, French, German, Hindi, Mandarin, Portuguese, Russian, Spanish, Other)

Additional Demographics (presented at the end of the study for all participants)

Are you currently a student? (Yes, No)

If so, what type of school do you attend? (High School, Two-Year College, Four-Year College/University, Vocational School/Technical School, Graduate School/Professional School, Other)

If you are currently a student, do you attend school full-time or part-time? (Full-time, Part-time)

Are you currently employed? (Yes, No)

If yes, what is your current job? (Open-ended)

What is your race/ethnicity? (Open-ended)

## APPENDIX G

### Feature-Specific Friendship Expectations Measure

For this questionnaire, we would like you to think about what you would expect out of someone who is a close or best friend of the same gender as you. Do not think of one of your particular close or best friends, but rather what a hypothetical close or best same-gender friend should be like. For each item, indicate how much you would expect a close or best same-gender friend to behave in the way the item describes (response format ranges from 1=*strongly disagree*, to 7=*strongly agree*).

#### ***Validation***

- A best friend should compliment you about things.
- A best friend should make you feel good about your ideas.
- A best friend should make you feel important and special.
- A best friend should care about you.
- A best friend should make you feel good about yourself.

#### ***Emotional Support***

- A best friend should be there for you when you need emotional support.
- A best friend should reassure you if you are upset about something.
- A best friend should cheer you up when you are feeling down.
- A best friend should help you cope with your worries.
- A best friend should provide emotional support when you are feeling stressed.

#### ***Instrumental Help***

- If you need to borrow something a best friend should lend it to you.
- If you have a problem a best friend should help you solve it.
- A best friend should have good ideas for how to get things done.
- A best friend should do favors for you when you need help with something.
- If you don't know how to do something a best friend should help you figure it out.

#### ***Reliable Partner***

- You should really be able to rely on a best friend.
- A best friend should not break promises that he/she makes to you.
- No matter what happens, you should be able to count on a best friend to be there for you.
- A best friend should be reliable.
- A best friend should always be there for you.

### ***Shared Activities***

- A best friend should spend time with you.
- A best friend should hang out with you.
- A best friend should spend time doing things with you.
- A best friend should do things with you often.
- A best friend should go places with you.

### ***Enjoyable Companionship***

- You should have fun when you are with your best friend.
- A best friend should make you laugh.
- You should feel happy when you are spending time with your best friend.
- You should have a lot of fun with your best friend.
- You should enjoy spending time with your best friend.

### ***Honest Feedback***

- A best friend should give you honest advice.
- A best friend should be honest with you, even if he/she has something unpleasant to say.
- A best friend should tell you if he/she thinks you are making a mistake.
- A best friend should give you his/her honest opinion if you ask for it.
- If you need an honest opinion about something a best friend should provide it.

### ***Self-Disclosure***

- Best friends should talk to each other about private or personal things.
- Best friends should talk to each other about things that are going on in their lives.
- Best friends should talk to each other about things that are bothering them.
- Best friends should talk to each other about their thoughts and feelings.
- Best friends should talk to each other when something is going wrong in one of their lives.

### ***Forgiveness/Conflict Resolution***

- Best friends should be understanding if one of them makes a mistake.
- Best friends should be willing to forgive each other if one of them does something wrong.
- Best friends should be forgiving of each other.
- Best friends should be good at resolving conflicts with one another.
- Best friends should easily manage disagreements.

### *Spirit of Equality*

Best friends should share equally in deciding things to do.

Best friends should be equal partners in the friendship.

Best friendships should have a spirit of fairness.

Best friends should take each other's wishes and feelings into account.

Best friendships should not be one-sided.

### *Conflict*

Best friends shouldn't get irritated with one another a lot.

Best friends shouldn't disagree with one another a lot.

Best friends should agree with each other most of the time.

Best friendships shouldn't have a lot of conflict.

Best friends should have few arguments.



## APPENDIX H

### Feature-Specific Friendship Standards Measure

In this section you will be asked about different situations that could happen with a friend.

Read each situation carefully and imagine that you are really in that situation with a close friend who is the same gender as you (e.g., if you are male, imagine you are in that situation with a close male friend; if you are female, imagine you are in that situation with a close female friend).

After reading each situation, you will be presented with five different things that a friend might do in that situation. For each option, imagine that you are really in that situation with a close friend of the same gender. You will be asked to indicate how much you agree with the statement: "I would think my friend is being a good friend." Indicate how much you agree or disagree that your friend is being a good friend in that situation on a scale from 1 (strongly disagree) to 15 (strongly agree).

As you are rating each statement, try your best to imagine that the story is describing a situation that you are actually in with a close friend of the same gender.

Here is an example.

Situation: It is your birthday and your friend invites you over to his/her place for dinner.

1. When you get there your friend says he/she forgot about your birthday dinner.
2. When you get there your friend is cooking a frozen pizza for your birthday dinner.
3. When you get there your friend has ordered your favorite take-out food for dinner.
4. When you get there your friend is cooking your favorite meal for your birthday dinner.
5. When you get there your friend says he/she is going to take you out to your favorite restaurant for your birthday dinner.

After you rate each option, you will be asked to rank the five different options in descending order from what you would MOST like your friend to do in that situation to what you would LEAST like your friend to do in that situation. There are no right or wrong answers and people may feel very differently about what they would most like their friends to do. Just rank the options as best you can think about what you would most and least like a close same-gender friend to do in that situation.

The list of options presented represents a sampling of possible things that a friend might do, and it might not include what you would actually most like your friend to do in that

situation. That is ok. Just create your rankings based on the five options that are available here.

Here is an example.

Now that you have rated each different option, please rank order the different options starting from what you would MOST like your friend to do at the top of the list to what you would LEAST like your friend to do at the bottom of the list.

Situation: It is your birthday and your friend invites you over to his/her place for dinner.

1. When you get there your friend says he/she forgot about your birthday dinner.
2. When you get there your friend is cooking a frozen pizza for your birthday dinner.
3. When you get there your friend has ordered your favorite take-out food for dinner.
4. When you get there your friend is cooking your favorite meal for your birthday dinner.
5. When you get there your friend says he/she is going to take you out to your favorite restaurant for your birthday dinner.

Now that you have completed the example you are ready to start the questionnaire. You will be presented with 11 different situations and asked to rate five different options for each situation. After you rate the five options, you will be asked to rank them in descending order from what you would MOST like your friend to do in that situation to what you would LEAST like your friend to do in that situation. Remember there are no right or wrong answers and people may feel very differently from one another. Just respond to each question as honestly as you can.

### ***Validation***

Situation: You have been working really hard to become more organized. You ask your friend what he/she thinks about your improved organizational skills.

1. Your friend says that he/she hasn't noticed a difference in your organizational skills.
2. Your friend says that you are still pretty disorganized but he/she can tell that you are trying to get better.
3. Your friend says that you are still a little bit disorganized but he/she can tell that you are really trying to get better.
4. Your friend says that you are still a little bit disorganized but that you have been trying really hard and have gotten a lot better.
5. Your friend says that he/she thinks you are now a much more organized person and he/she is really proud of you for all of your hard work.

### ***Emotional Support***

Situation: You have an important project due at work and you are feeling really stressed out about it. The project is due in one week and you are worried that you might lose your job if you don't do well on the project. You tell your friend that you are feeling really stressed.

1. Your friend just kind of grunts and doesn't really reply.
2. Your friend says, "Oh yeah? That's too bad!" and then changes the subject to ask you about something else unrelated to work.
3. Your friend says he/she is sorry that you are stressed but he/she is sure that you will do a good job with the project.
4. Your friend says he/she is sorry you are stressed and asks if there is anything he/she can do to help.
5. Your friend says he/she is sorry you are stressed and asks if there is anything he/she can do to help. He/she checks in with you again over the course of the week to see how things are going and how you are feeling about the project.

### ***Instrumental Help***

Situation: You are moving to a new place and you ask your friend if he/she can help you move.

1. Your friend says that he/she can't help you move because he/she is really busy.
2. Your friend says that he/she can only help you move for a little while because he/she is really busy.
3. Your friend says he/she can only help you move half of your stuff because he/she is really busy.
4. Even though your friend is really busy he/she says he/she can help all day until all of the moving is finished.
5. Even though your friend is really busy he/she says he/she can help you pack up your old place, move to your new place, and unpack at your new place over the weekend.

### ***Reliable Partner***

Situation: You and your friend are out having dinner with a group of acquaintances. One of your acquaintances makes a joke that you find really offensive and you are upset. Your friend can tell that you are upset.

1. Your friend laughs at the joke.
2. Your friend just ignores the joke.
3. Your friend says to you in an undertone that the joke is not funny.
4. Your friend says to you in an undertone, "What a jerk! I can't believe he/she said that!"
5. Your friend turns to the person and tells him/her that his/her joke is not funny and that he/she should apologize.

### ***Enjoyable Companionship***

Situation: You and your friend are watching your favorite TV show together on Friday night.

1. Just after the show starts your friend receives a phone call and spends 20 minutes talking on the phone in the other room.
2. Your friend mostly pays attention to the show but also spends a good bit of time on his/her phone texting and checking e-mail.
3. You and your friend sit together and watch the show but your friend isn't very talkative when you try to engage him/her in conversation.
4. You and your friend sit together and watch the show and have good conversation during the commercial breaks.
5. You and your friend sit together and watch the show and have good conversation during the commercial breaks. Afterward you continue the conversation over dinner.

### ***Honest Feedback***

Situation: You have been having trouble with your romantic partner and you can't figure out what the problem is. You have had similar problems in your past several romantic relationships so you are pretty sure there is something that you are doing wrong. Your friend has been around you and your previous romantic partners a lot and has spent a lot of time with you and your current romantic partner as well. Since your friend knows you so well and has seen you around your various romantic partners you think your friend might have a good idea about what you might be doing wrong. You really want your friend to be honest with you so you can try to fix the problem. You ask your friend if he/she has any idea what you might be doing wrong in the relationship.

1. Your friend says that he/she can't imagine what you are doing wrong and that the problem is probably with your romantic partner.
2. Your friend says that he/she can't imagine what you might be doing wrong.
3. Your friend says that you are probably not doing anything wrong but suggests one small thing that you might work on that could help with the relationship.
4. Your friend suggests two relatively minor things that you could work on to help with the relationship.
5. Your friend suggests two more significant things that you could work on to help with the relationship.

### ***Self-Disclosure***

Situation: Your friend just got engaged.

1. A few days later you find out on Facebook that your friend got engaged.
2. The next time you and your friend get together he/she mentions in passing that he/she got engaged.
3. The next time you and your friend get together he/she tells you that he/she got engaged and tells you a little bit about how it happened.
4. The morning after your friend got engaged he/she calls to tell you that he/she got engaged and to tell you all the details.
5. An hour after the proposal your friend calls to tell you that he/she got engaged and to tell you all the details.

### ***Forgiveness***

Situation: You are supposed to meet your best friend and some other friends for dinner. You are really busy at work and you aren't able to make it to the dinner. You call your friend to say you are sorry for not being able to make it to the dinner and for not calling ahead to let him/her know that you weren't going to be there.

1. Your friend gets mad and says that he/she doesn't want to be friends with you anymore.
2. Your friend gets mad and doesn't talk to you for a week.
3. Your friend says that he/she is mad that you didn't show up for dinner and didn't call.
4. Your friend says that he/she is disappointed that you didn't show up for dinner and didn't call, but that he/she understands that you were busy at work.
5. Your friend says that he/she was disappointed but he/she understands that you were busy at work and forgives you for not calling to let him/her know you were not going to be at the dinner.

### ***Conflict Resolution***

Situation: You want to go out for Indian food but your friend wants to go out for Greek food. You say that you would really like to have Indian food if your friend doesn't mind.

1. Your friend says that you should just forget about it and not go out for dinner at all.
2. Your friend says that you should go out for Greek food and forget about Indian food.
3. Your friend says that you should just go out for Greek food tonight and go out for Indian food next week.
4. Your friend says you both should think of some other type of food to have for dinner so you will both be happy.
5. Your friend says that you should flip a coin to decide where to go for dinner.

### ***Spirit of Equality***

Situation: You and your friend work close to one another and work similar hours, so you have decided to carpool and take turns driving to work.

1. You pick up your friend and drive him/her to work eight out of the first ten days. Your friend picks up and drives the other two days.
2. You pick up your friend and drive him/her to work six out of the first ten days. Your friend picks up and drives the other four days.
3. Your friend picks you up and drives you to work six out of the first ten days. You pick up and drive your friend to work the other four days.
4. Your friend picks you up and drives you to work eight out of the first ten days. You pick up and drive your friend to work the other two days.
5. You and your friend alternate picking up and driving every other day.

### ***Level of Conflict***

Situation: You and your friend have very different political beliefs.

1. You and your friend often engage in discussions about politics, and you frequently end up not speaking to each other as a result.
2. You and your friend often engage in discussions about politics and things often get heated.
3. You and your friend find other things to talk about and don't really discuss politics.
4. You and your friend find other things to talk about and agree to disagree about politics.
5. You and your friend often engage in discussions about politics, but you always remain civil.

## APPENDIX I

### Revised Friendship Features Questionnaire for Adults

Please think about a person of the same gender as yourself who you consider your closest friend. Be sure to think of someone who is a friend and not someone who is a romantic partner.

First name of close friend \_\_\_\_\_

How long have you known this person? \_\_\_\_\_ (years) \_\_\_\_\_ (months)

Please indicate how true each statement is about your relationship with this person (response format ranges from 1 = *not at all true*, 7 = *really true*).

#### ***Validation***

My friend compliments me about things.  
My friend makes me feel good about my ideas.  
My friend makes me feel important and special.  
My friend cares about me.  
My friend makes me feel good about myself.

#### ***Emotional Support***

My friend is there for me when I need emotional support.  
If I am upset about something, my friend will reassure me.  
My friend cheers me up when I am feeling down.  
If I am worried about something my friend will help me get through it.  
When I am feeling stressed I can go to my friend for emotional support.

#### ***Instrumental Help***

If I needed to borrow something my friend would lend it to me.  
If I have a problem my friend will help me solve it.  
My friend has good ideas for how to get things done.  
My friend does favors for me when I need help with something.  
If I don't know how to do something my friend will help me figure it out.



### ***Reliable Partnership***

I know I can really rely on my friend.  
My friend breaks promises that he/she makes to me.\*  
No matter what happens, I can count on my friend to be there for me.  
My friend is unreliable when it comes to our friendship.\*  
My friend will always be there for me.

### ***Shared Activities***

I rarely spend time with my friend.\*  
My friend and I hang out together.  
My friend and I rarely spend time together doing things.\*  
My friend and I often do things together.  
My friend and I hardly ever go places together.\*

### ***Enjoyable Companionship***

My friend and I don't have much fun when we are together.\*  
My friend and I make each other laugh.  
When I am spending time with my friend I feel happy.  
I have a lot of fun when I am with my friend.  
My friend and I enjoy spending time together.

### ***Honest Feedback***

My friend gives me honest advice.  
I know my friend will be honest with me, even if he/she has something unpleasant to say.  
If my friend thought I was making a mistake, he/she would tell me.  
My friend will give me his/her honest opinion if I ask for it.  
If I need an honest opinion about something my friend will provide it.

### ***Self-Disclosure***

My friend and I talk to each other about private or personal things.  
My friend and I talk to each other about things that are going on in our lives.  
My friend and I don't talk to each other about things that are bothering us.\*  
My friend and I talk to each other about our thoughts and feelings.  
My friend and I rarely talk to each other when something is going wrong in our lives.\*

### ***Forgiveness/Conflict Resolution***

My friend is understanding if I make a mistake.  
My friend and I are willing to forgive each other if one of us does something wrong.  
My friend and I are forgiving of each other.  
My friend and I are good at resolving conflicts with one another.  
My friend and I can easily manage disagreements.

### ***Spirit of Equality***

My friend and I share equally in deciding things to do.  
My friend and I are equal partners in the friendship.  
There is a spirit of fairness in my friendship with my friend.  
My friend and I take each other's wishes and feelings into account.  
My friendship with my friend is one-sided.\*

### ***Conflict***

My friend and I get irritated with one another a lot.  
My friend and I disagree with one another a lot.  
It seems like my friend and I disagree with each other all of the time.  
There is a lot of conflict in my friendship with my friend.  
My friend and I rarely have arguments about our friendship.\*

## APPENDIX J

### Hypothetical Ambiguous Friendship-Expectation-Violation Vignettes Measure

Please read all of the directions before proceeding.

In this part of the study, you will be asked about different situations you might be in with a close friend of the same gender. Read each situation carefully and imagine that you are really in that situation. After reading each situation, you will be asked to rate how much you agree with three different sets of statements.

One set of statements will ask you to indicate how you would interpret the situation described.

Another set of statements will ask you to indicate how you would feel in the situation described.

Another set of statements will ask you how satisfied you would be with your friend in the situation described.

Please make each rating without thinking about your other ratings.

#### ***Validation***

You have been working really hard for the past few months trying to learn a new language. You are really excited and proud when you finally complete your language course. You tell your friend that you completed your course and that you received the highest grade possible. Your friend says “congratulations!” and then asks how your family is doing.

You just got a promotion at work and it comes with a lot of additional responsibility. You are excited about the promotion but a little bit nervous too. After your first day in your new position your boss tells you that you did a really good job. You tell your friend that your boss congratulated you on your performance and your friend says that you must really like your new boss.

After thinking about it for a long time you have decided to go back to school to finish your degree. When you tell your friend about your decision he/she points out that it is going to cost a lot of money and be a lot of hard work, but that you can probably do it.

You have been working really hard exercising and eating healthy, and you have lost 10 pounds. Your friend tells you that you look really good and then asks you how much more weight you are planning to lose on your program.

You have been working really hard and putting aside all of your extra money so you can pay off your credit card debt. When you tell your friend that you paid off your debt he/she says, “Good work, but why did you need to pay it off all at once like that?”

### ***Reliable Partner***

You are waiting in line at the lunch counter with your friend and you slip and fall in front of everybody there. You are really embarrassed because everyone at the lunch counter is laughing at you. Your friend helps you up but you can see that he/she was laughing too.

You just had an argument with your mom and you think she was being really unfair to you. You tell your friend about the argument hoping he/she will take your side, but he/she doesn't really commit one way or the other.

You send your friend a text to see if he/she can meet you for dinner in a few hours. Your friend doesn't text back until 11:00 pm after you have already had dinner.

You and your friend have plans to go and see a movie. A few hours before the movie is supposed to start your friend calls to ask if you can reschedule because he/she has a lot of work to do.

You are out with your best friend and some other people and you express an opinion that others disagree with. You are hoping that your friend will take your side in the disagreement, but your friend remains neutral.

### ***Enjoyable Companionship***

You and your friend have tickets to go and see your favorite band. When you pick up your friend for the concert he/she says that he/she had a bad day at work and complains about his/her boss all the way to the concert. Once you get to the concert your friend cheers up a little, but you can tell that he/she is still in a bad mood about his/her bad day.

You and your friend usually play tennis together on Tuesday nights. This week your friend says that he/she doesn't feel much like playing, but will try his/her best. He/she plays but you can tell that he/she is not really enjoying himself/herself.

Your friend had a fight with his/her romantic partner recently and he/she is really upset about it. You have spent a lot of time talking to your friend about the fight and trying to make him/her feel better. The next time you hang out with your friend all he/she wants to do is talk about the fight he/she had with his/her romantic partner.

You are really excited to see a new movie that is coming out and your friend agrees to go with you to the midnight showing. About 20 minutes after the movie starts you look over and see that your friend has fallen asleep.

You and your friend go to your favorite sports bar to watch a sports game. Your friend is kind of paying attention to the game but also spending a lot of time checking e-mail and Facebook on his/her phone.

### ***Instrumental Help***

You are trying to put together a new shelving unit for your apartment and you are having a difficult time putting it together on your own. You ask your friend if he/she can come over and help you. Your friend comes over and helps for a little while, but then spends the rest of the time talking to his/her mom on the phone and you have to finish putting together the shelves by yourself.

You just bought a new chair and it is too big to fit in to your car. You ask your friend if he/she can come and help you move the chair with his/her SUV/truck. Your friend says he/she is busy doing work right now and asks if you can ask one of your other friends to help instead.

You are going out of town for six days and ask your friend if he/she can come over to your apartment each evening to feed your pet. Your friend says he/she has a busy week but could feed your pet two of the six nights.

You are having some friends over for dinner and right before they are supposed to arrive, you remember that you forgot to pick up the appetizers from the grocery store. You call your friend to ask if he/she can pick up the appetizers on the way over. Your friend says he/she will pick up the appetizers as soon as he/she can but he/she will probably be about 30 minutes late for your party.

You have a weekend job making deliveries for a store. You can't work one weekend six weeks from now because of a family obligation. Your boss says it is ok for you to find a friend who can fill in for you making deliveries that day. You ask your friend if he/she can work for you that weekend, but he/she says that that is a bad weekend for him/her because he/she has a course paper due the following Monday.

### ***Honest Feedback***

You have just started dating someone who you really like, and you ask your friend to give you his/her honest opinion about the person. Your friend says that he/she likes your new romantic partner a lot and he/she thinks you are a good match. Later, after you have broken up with the person, you find out that your friend didn't really like your romantic partner very much after all, but he/she didn't want to hurt your feelings by telling you that.

You are going to buy a new pair of glasses and you ask your friend to come with you to help you pick them out. You have narrowed it down to three pairs that you really like and you ask your friend to tell you which one he/she likes best. He/she says he/she likes them all and it is up to you which ones you pick.

You just got a new pair of jeans and you're not sure whether they look good on you or not. You ask your friend for his/her opinion and he/she says that they look good. A week or so later you wear the jeans out with your friend and he/she says that he/she doesn't really like them.

You are thinking about quitting your job and trying to start your own business. When you ask your friend what he/she thinks about the idea he/she just shrugs and says "It's up to you."

Your brother is getting married soon and you have to give a speech at the wedding. You ask your friend to read the speech and tell you if your jokes are funny. Your friend says that the speech sounds good and that your jokes are really funny. When you give the speech at the wedding no one laughs at your jokes, including your friend who is at the wedding.

### ***Self-Disclosure***

You and your friend go out for dinner and he/she tells you that he/she heard two weeks ago that he/she had been offered a job at a company that he/she has wanted to work at for a long time.

You call your friend to catch up and your friend sounds a bit sad. When you ask your friend what is wrong he/she says, "Nothing" and changes the subject.

You tell your friend about something that your romantic partner did that upset you. Your friend says “I can’t believe he/she did that!” Your friend then tells you about something annoying that his/her romantic partner did the other day and you don’t really get to talk about your problem at all.

You find out from a mutual friend that your best friend’s parents are getting a divorce.

You just started dating somebody new and you are really excited to tell your friend about it. Your friend is so busy that you don’t get an opportunity to tell him/her about your new romantic partner until the weekend.

### ***Forgiveness***

You feel really bad because you had to cancel plans with your friend last week because you were sick. Now you are feeling better and you and your friend have plans to go and see the movie you were supposed to see last week. When your friend picks you up for the movie, he/she seems to be acting kind of cold and distant toward you. He/she starts to warm up after a while, but you can tell that he/she is mad at you for cancelling plans the week before.

A few months ago you were angry with your friend and said something that hurt his/her feelings. You apologized to your friend and he/she said that he/she forgave you, but every once in a while he/she still brings it up and it makes you feel pretty bad.

You were supposed to pick your friend up from work today but you had to stay late at your own job. Since you had to stay late you were 45 minutes late to pick up your friend. When you pick up your friend you apologize for being late and explain what happened at work, but he/she says he/she is mad at you for being late.

You and your friend got in an argument last week when you said something negative about your friend’s romantic partner. You can tell that your friend is upset with you about what you said, but when you ask him/her about it he/she just pretends like nothing is wrong.

You forgot that you had plans to go out for dinner with your friend and made plans to go out with your family instead. As soon as you realize your mistake you tell your friend that you are really sorry and ask if you can go out for dinner together another night instead. Your friend says that he/she is busy and can’t have dinner another night.

### ***Conflict Resolution***

You and your friend are watching TV together and an advertisement for a political candidate comes on TV. You say that you are really looking forward to voting for that candidate in the upcoming election, but your friend says that he/she is going to vote for the other candidate. After arguing about the relative merits of the two candidates, your friend says “Let’s just change the subject.”

You and your friend are going to the movies. You want to see the new action movie but your friend wants to see the new drama. After discussing it for a few minutes your friend says, “Ok, fine. Let’s just go see your movie then!”

You and your friend are at the gym and you are planning to go to an exercise class together. You want to go to a spinning class but your friend wants to go to a toning class. Your friend says “You can do what you want but I’m going to the toning class.”

You and your friend are planning a party together and you want to invite your new friend from work. Your friend says that he/she wants a smaller gathering with just your usual group of friends. You say that you would really like your friend to meet your new friend from work, but your friend says, “Let’s just talk about it later.”

You and your friend are at the grocery store trying to pick out something to have for dinner. You suggest pizza but your friend wants chicken fingers. You suggest that you get both pizza and chicken fingers so you can share. Your friend says, “No, let’s just get chicken fingers.”

### ***Spirit of Equality***

You and your friend have standing plans to go to dinner together on Friday nights. The past few weeks, your friend has picked the restaurant. This week, you really want to try the new Italian restaurant that has opened up in your neighborhood. Your friend says he/she has already made reservations at his/her favorite Mexican restaurant, but that you two can go to the Italian restaurant together next week.

Your friend asks if you can help him/her move to a new apartment. Your friend has moved a number of times over the past few years and you have helped every time. Last time you moved your friend was not available to help you.



You and your friend live about 20 minutes away from each other. You are planning to get together to watch a movie, and you suggest watching it at your place since you have gone over to your friend's place several times already this month. Your friend asks if you can come over to his/her place instead.

You and your friend really enjoy going out to eat together, and sometimes one of you pays for the other. Your friend has been paying for you a lot recently and this time you offer to pay. Your friend says, "Don't worry about it – this one's on me!"

You and your friend usually care for each other's pets when one of you goes out of town. You have to go out of town this weekend, but your friend says that he/she cannot watch your pet because his/her parents are in town.

### ***Emotional Support***

You just found out that your family pet has died and you are really upset. You tell your friend about it and he/she says that he/she is really sorry to hear that. You talk about it for a few minutes and then your friend asks if you want to go out to a movie next week.

You just broke up with your romantic partner and you are feeling pretty bad about it. You call your friend to ask if he/she can hang out and help you take your mind off of things, but he/she says he/she can't hang out until tomorrow.

You are feeling kind of down because you found out that someone else was offered a job that you really wanted. You tell your friend that you don't really want to talk about it because you are kind of embarrassed that you didn't get the job. While you are hanging out together your friend asks you a few times if you want to talk about it.

Your boss said something rude to you in a staff meeting the other day and you are really angry about it. You tell your friend about what happened, and he/she says that you should not get so bent out of shape over such a small thing.

You have an important presentation coming up and you are really nervous about it. You ask your friend if he/she thinks it will be alright and he/she says that as long as you make sure to practice a lot you will be fine.

### ***Conflict***

You are really excited to watch your favorite TV show with your friend on Saturday night. When you go over to your friend's house he/she says he/she really wants to watch a movie instead, but you still really want to watch the TV show.

You are watching TV with your friend when you get a call from your boss. You ask your friend to put the show on pause while you talk to your boss but your friend says that he/she wants to keep watching the show.

Your friend wants to order Chinese food for dinner but you want to order pizza. When you tell your friend that you are in the mood for pizza your friend says he/she is really craving Chinese.

You have driven your friend to a party and your friend is having a really great time. You are ready to leave because you have to get up really early in the morning. Your friend says that he/she is not ready to leave and just wants to stay one more hour.

You and your friend usually get together to hang out on Friday nights, but you can't go this week because your mom is in town visiting. When you tell your friend that you can't hang out he/she gets really mad at you.

## Vignette Response Options

### Interpretations

On a scale of 1=*strongly disagree* to 7=*strongly agree*, please rate how much you agree with the following statements. You can give more than one statement a high or low rating if you wish.

I would think my friend is being a good friend.

I would think my friend did something wrong.

I would think my friend respects me.

I would think my friend values me.

I would think my friend cares about me.

I would think my friend is rejecting me.

I would think my friend is trying to push me around.

I would think my friend is being weird.

### Emotions

On a scale of 1=*strongly disagree* to 7=*strongly agree*, please rate how you would feel in this situation. You can give more than one statement a high or low rating if you wish.

I would be disappointed in my friend.

I would feel happy.

I would feel okay.

My feelings would be hurt.

I would feel lonely.

I would be mad at my friend.

### Satisfaction

On a scale from 1=*very dissatisfied* to 7=*very satisfied*, how satisfied would you be with your friend's behavior in this situation?

APPENDIX K

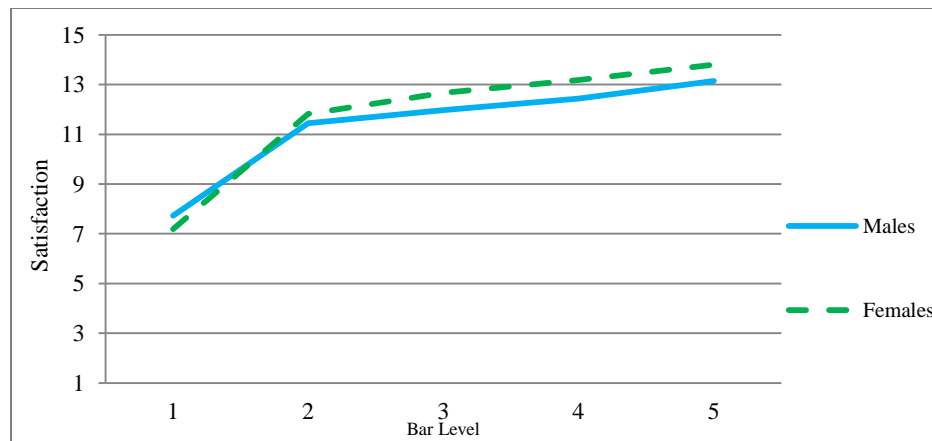
**Table K1: Gender Differences in Feature-Specific Friendship Standards for Validation**

	Wilks's $\lambda$	Multivariate $F(4, 414)$	Within-Subjects $F(2.33, 970.55)$
Bar Level	.322	217.52***	521.49***
Bar Level x Gender	.972	3.00*	6.62**

	Males	Females	$F_{gender}(1, 417)$	$d$
	Mean (SE)			
Level 1	7.73 (.28)	7.18 (.23)	2.24	.15
Level 2	11.40 (.20)	11.82 (.17)	2.09	-.14
Level 3	11.97 (.18)	12.66 (.15)	8.55**	-.29
Level 4	12.44 (.16)	13.18 (.14)	12.04**	-.34
Level 5	13.14 (.15)	13.80 (.12)	12.09**	-.34

*Note.* Means are estimated marginal means from a Gender (2) x Bar Level (5) repeated measures analysis of variance. Within-subjects  $F$  is Greenhouse-Geisser corrected for violation of the assumption of sphericity;  $F_{gender}$  is from univariate follow-up tests of the effect of gender within each level of the Bar factor. †  $p < .10$ ; \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ .



**Figure K1: Graphical Representation of Gender Differences in Feature-Specific Friendship Standards for Validation**

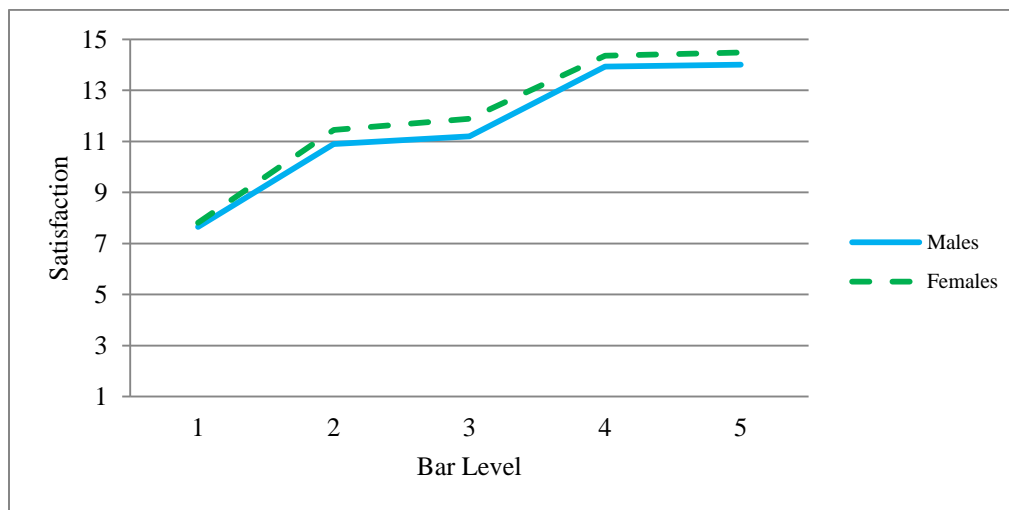
**Table K2: Gender Differences in Feature-Specific Friendship Standards for Instrumental Help**

	Wilks's $\lambda$	Multivariate $F(4, 414)$	Within-Subjects $F(2.16, 900.59)$
Bar Level	.284	260.33***	646.24***
Bar Level x Gender	.991	.97	.82

	Males	Females	$F_{gender}(1, 417)$	$d$
	Mean (SE)			
Level 1	7.65 (.28)	7.82 (.24)	6.45*	-.04
Level 2	10.90 (.22)	11.44 (.19)		-.13
Level 3	11.20 (.20)	11.89 (.17)		-.17
Level 4	13.93 (.12)	14.36 (.10)		-.10
Level 5	14.01 (.13)	14.48 (.11)		-.12

*Note.* Means are estimated marginal means from a Gender (2) x Bar Level (5) repeated measures analysis of variance. Within-subjects  $F$  is Greenhouse-Geisser corrected for violation of the assumption of sphericity;  $F_{gender}$  is from the omnibus between-subjects analysis of variance. †  $p < .10$ ; \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ .



**Figure K2: Graphical Representation of Gender Differences in Feature-Specific Friendship Standards for Instrumental Help**

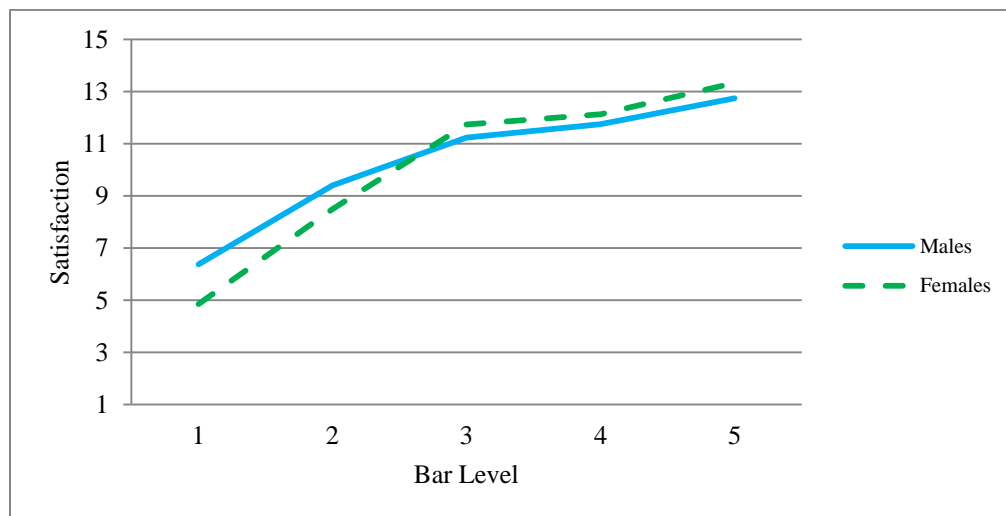
**Table K3: Gender Differences in Feature-Specific Friendship Standards for Reliable Partnership**

	Wilks's $\lambda$	Multivariate $F(4, 414)$	Within-Subjects $F(2.70, 1124.95)$
Bar Level	.276	271.75***	535.26***
Bar Level x Gender	.936	7.03***	14.13**

	Males	Females	$F_{gender}(1, 417)$	$d$
	Mean (SE)			
Level 1	6.37 (.27)	4.86 (.23)	18.06***	.42
Level 2	9.41 (.27)	8.49 (.22)	7.00**	.26
Level 3	11.23 (.20)	11.74 (.17)	3.80 <sup>†</sup>	-.19
Level 4	11.74 (.20)	12.13 (.17)	2.29	-.15
Level 5	12.74 (.17)	13.33 (.15)	6.90**	-.26

*Note.* Means are estimated marginal means from a Gender (2) x Bar Level (5) repeated measures analysis of variance. Within-subjects  $F$  is Greenhouse-Geisser corrected for violation of the assumption of sphericity;  $F_{gender}$  is from univariate follow-up tests of the effect of gender within each level of the Bar factor. <sup>†</sup>  $p < .10$ ; \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ .



**Figure K3: Graphical Representation of Gender Differences in Feature-Specific Friendship Standards for Reliable Partnership**

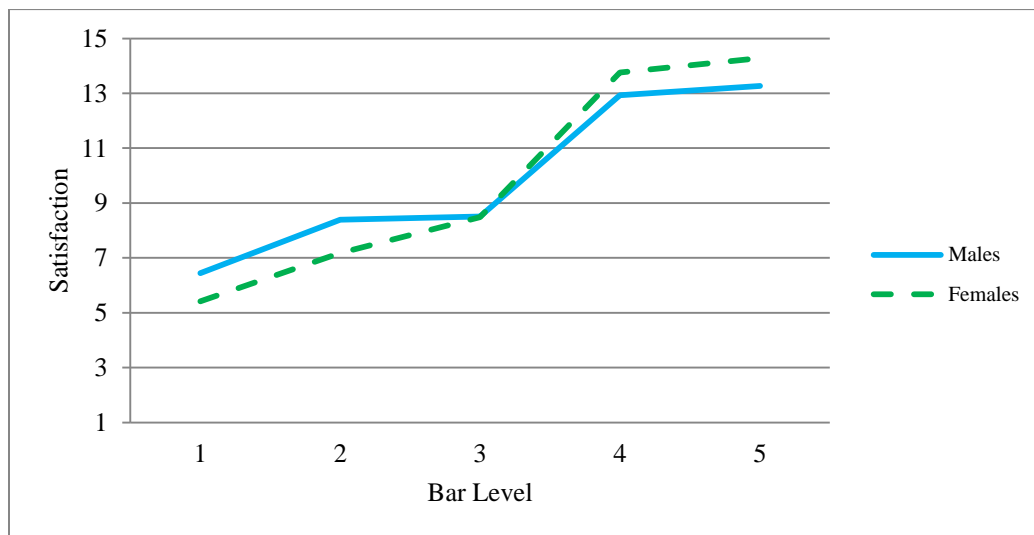
**Table K4: Gender Differences in Feature-Specific Friendship Standards for Enjoyable Companionship**

	Wilks's $\lambda$	Multivariate $F(4, 414)$	Within-Subjects $F(2.79, 1161.71)$
Bar Level	.194	430.75***	798.29***
Bar Level x Gender	.923	8.65***	17.04***

	Males	Females	$F_{gender}(1, 417)$	$d$
	Mean (SE)			
Level 1	6.44 (.27)	5.42 (.23)	8.33**	.29
Level 2	8.40 (.28)	7.18 (.23)	11.28**	.33
Level 3	8.50 (.24)	8.48 (.21)	.01	.01
Level 4	12.93 (.14)	13.76 (.12)	21.74***	-.46
Level 5	13.27 (.13)	14.29 (.11)	33.19***	-.57

*Note.* Means are estimated marginal means from a Gender (2) x Bar Level (5) repeated measures analysis of variance. Within-subjects  $F$  is Greenhouse-Geisser corrected for violation of the assumption of sphericity;  $F_{gender}$  is from univariate follow-up tests of the effect of gender within each level of the Bar factor. <sup>†</sup>  $p < .10$ ; \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ .



**Figure K4: Graphical Representation of Gender Differences in Feature-Specific Friendship Standards for Enjoyable Companionship**

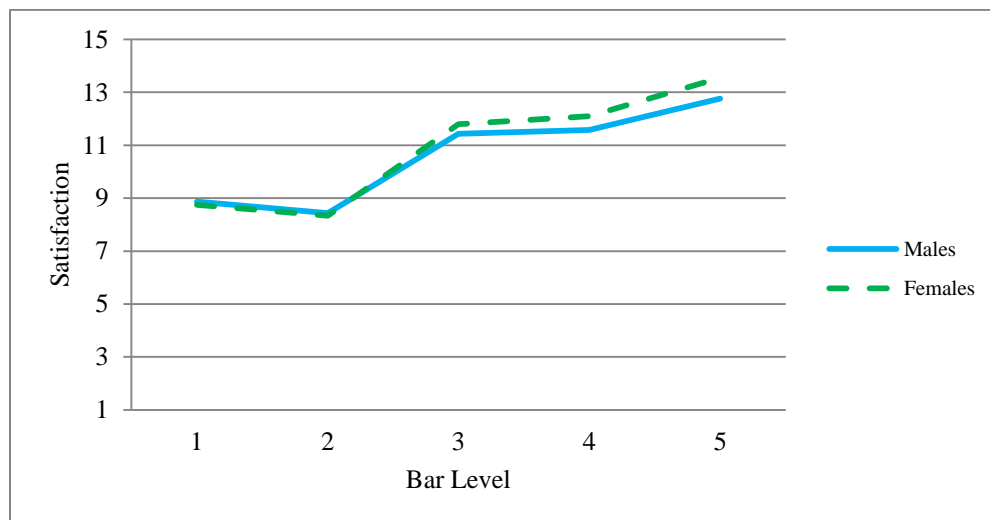
**Table K5: Gender Differences in Feature-Specific Friendship Standards for Honest Feedback**

	Wilks's $\lambda$	Multivariate $F(4, 414)$	Within-Subjects $F(2.87, 1196.158)$
Bar Level	.359	184.99***	367.53***
Bar Level x Gender	.984	1.68	3.27*

	Males	Females	$F_{gender}(1, 417)$	$d$
	Mean (SE)			
Level 1	8.87 (.26)	8.75 (.22)	1.80	.03
Level 2	8.43 (.27)	8.34 (.23)		.02
Level 3	11.43 (.21)	11.79 (.17)		-.07
Level 4	11.58 (.19)	12.09 (.16)		-.11
Level 5	12.76 (.15)	13.54 (.12)		-.16

*Note.* Means are estimated marginal means from a Gender (2) x Bar Level (5) repeated measures analysis of variance. Within-subjects  $F$  is Greenhouse-Geisser corrected for violation of the assumption of sphericity;  $F_{gender}$  is from the omnibus between-subjects analysis of variance. <sup>†</sup>  $p < .10$ ; \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ .



**Figure K5: Graphical Representation of Gender Differences in Feature-Specific Friendship Standards for Honest Feedback**



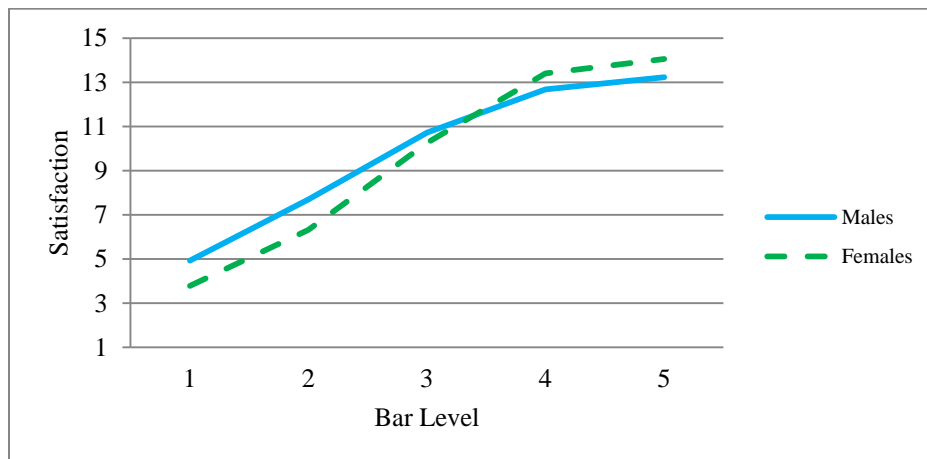
**Table K6: Gender Differences in Feature-Specific Friendship Standards for Self-Disclosure**

	Wilks's $\lambda$	Multivariate $F(4, 414)$	Within-Subjects $F(2.90, 1207.20)$
Bar Level	.159	546.17***	967.47***
Bar Level x Gender	.925	8.40***	16.17***

	Males	Females	$F_{gender}(1, 417)$	$d$
	Mean (SE)			
Level 1	4.93 (.25)	3.79 (.21)	12.10**	.34
Level 2	7.70 (.28)	6.32 (.24)	13.80***	.37
Level 3	10.73 (.26)	10.25 (.22)	1.94	.14
Level 4	12.67 (.17)	13.40 (.15)	10.34**	-.32
Level 5	13.22 (.15)	14.05 (.12)	18.80***	-.43

*Note.* Means are estimated marginal means from a Gender (2) x Bar Level (5) repeated measures analysis of variance. Within-subjects  $F$  is Greenhouse-Geisser corrected for violation of the assumption of sphericity;  $F_{gender}$  is from univariate follow-up tests of the effect of gender within each level of the Bar factor. †  $p < .10$ ; \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ .



**Figure K6: Graphical Representation of Gender Differences in Feature-Specific Friendship Standards for Self-Disclosure**

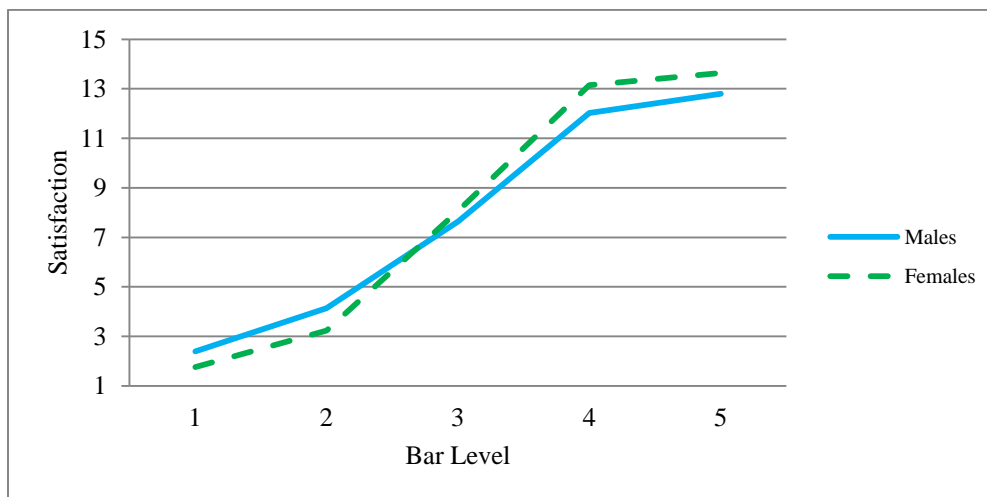
**Table K7: Gender Differences in Feature-Specific Friendship Standards for Forgiveness**

	Wilks's $\lambda$	Multivariate $F(4, 414)$	Within-Subjects $F(2.98, 1244.37)$	
Bar Level	.080	1197.41***	1788.69***	
Bar Level x Gender	.919	9.14***	14.20***	

	Males	Females	$F_{gender}(1, 417)$	$d$
	Mean (SE)			
Level 1	2.40 (.17)	1.76 (.14)	8.34**	.29
Level 2	4.14 (.20)	3.23 (.17)	11.46***	.34
Level 3	7.64 (.28)	8.07 (.24)	1.36	-.12
Level 4	12.03 (.18)	13.15 (.16)	21.51***	-.46
Level 5	12.80 (.16)	13.64 (.13)	17.05***	-.41

*Note.* Means are estimated marginal means from a Gender (2) x Bar Level (5) repeated measures analysis of variance. Within-subjects  $F$  is Greenhouse-Geisser corrected for violation of the assumption of sphericity;  $F_{gender}$  is from univariate follow-up tests of the effect of gender within each level of the Bar factor. <sup>†</sup>  $p < .10$ ; \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ .



**Figure K7: Graphical Representation of Gender Differences in Feature-Specific Friendship Standards for Forgiveness**

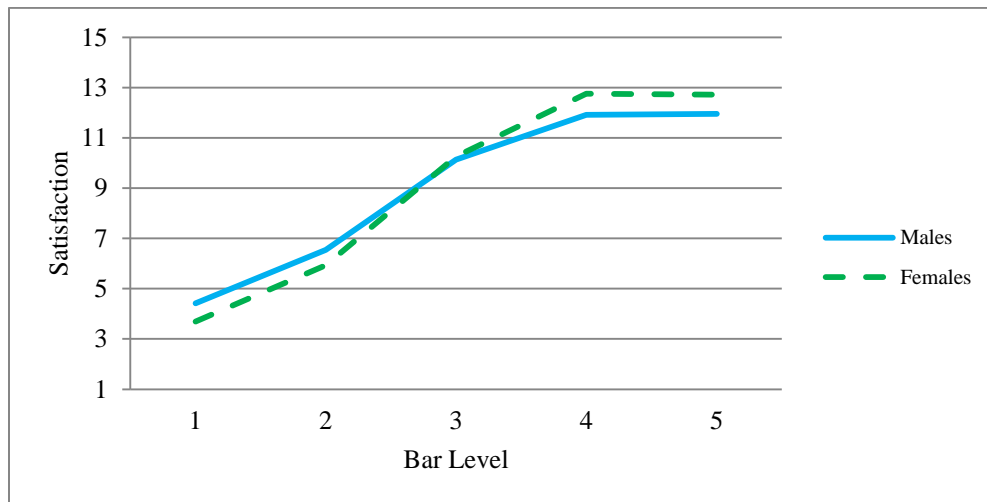
**Table K8: Gender Differences in Feature-Specific Friendship Standards for Conflict Resolution**

	Wilks's $\lambda$	Multivariate $F(4, 414)$	Within-Subjects $F(3.28, 1368.25)$
Bar Level	.164	526.69***	838.12***
Bar Level x Gender	.953	5.12***	8.27***

	Males	Females	$F_{gender}(1, 417)$	$d$
	Mean (SE)			
Level 1	4.42 (.23)	3.69 (.20)	5.69*	.24
Level 2	6.55 (.27)	5.94 (.23)	2.91 <sup>†</sup>	.17
Level 3	10.13 (.24)	10.26 (.21)	.15	-.04
Level 4	11.91 (.20)	12.76 (.17)	10.95**	-.33
Level 5	11.95 (.19)	12.72 (.16)	9.44**	-.30

*Note.* Means are estimated marginal means from a Gender (2) x Bar Level (5) repeated measures analysis of variance. Within-subjects  $F$  is Greenhouse-Geisser corrected for violation of the assumption of sphericity;  $F_{gender}$  is from univariate follow-up tests of the effect of gender within each level of the Bar factor. <sup>†</sup>  $p < .10$ ; \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ .



**Figure K8: Graphical Representation of Gender Differences in Feature-Specific Friendship Standards for Conflict Resolution**

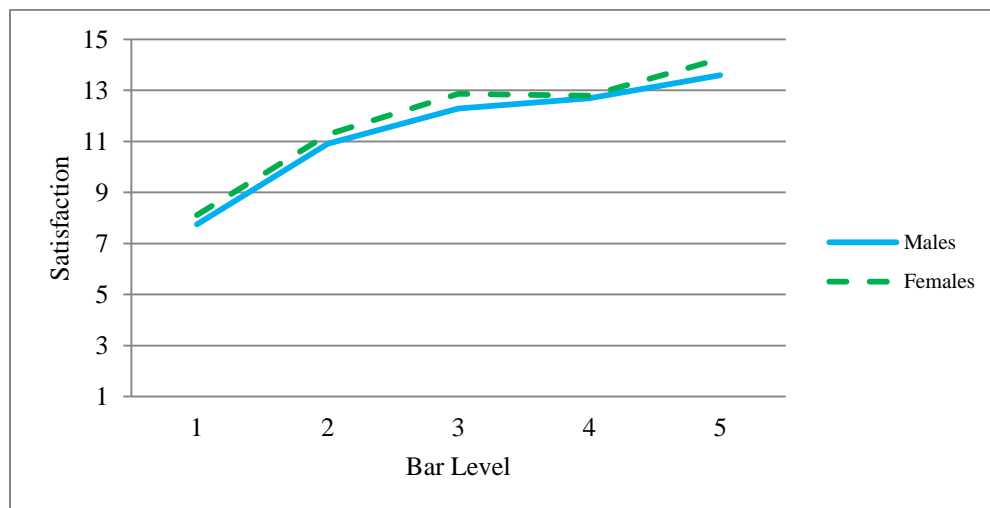
**Table K9: Gender Differences in Feature-Specific Friendship Standards for Spirit of Equality**

	Wilks's $\lambda$	Multivariate $F(4, 414)$	Within-Subjects $F(2.81, 1172.38)$	
Bar Level	.321	218.67***	411.83***	
Bar Level x Gender	.987	1.32	.90	

	Males	Females	$F_{gender}(1, 417)$	$d$
	Mean (SE)			
Level 1	7.75 (.28)	8.12 (.24)	4.45*	-.08
Level 2	10.91 (.21)	11.28 (.18)		-.08
Level 3	12.29 (.19)	12.87 (.16)		-.13
Level 4	12.69 (.23)	12.79 (.19)		-.02
Level 5	13.59 (.13)	14.23 (.11)		-.15

*Note.* Means are estimated marginal means from a Gender (2) x Bar Level (5) repeated measures analysis of variance. Within-subjects  $F$  is Greenhouse-Geisser corrected for violation of the assumption of sphericity;  $F_{gender}$  is from the omnibus between-subjects analysis of variance. †  $p < .10$ ; \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ .



**Figure K9: Graphical Representation of Gender Differences in Feature-Specific Friendship Standards for Spirit of Equality**

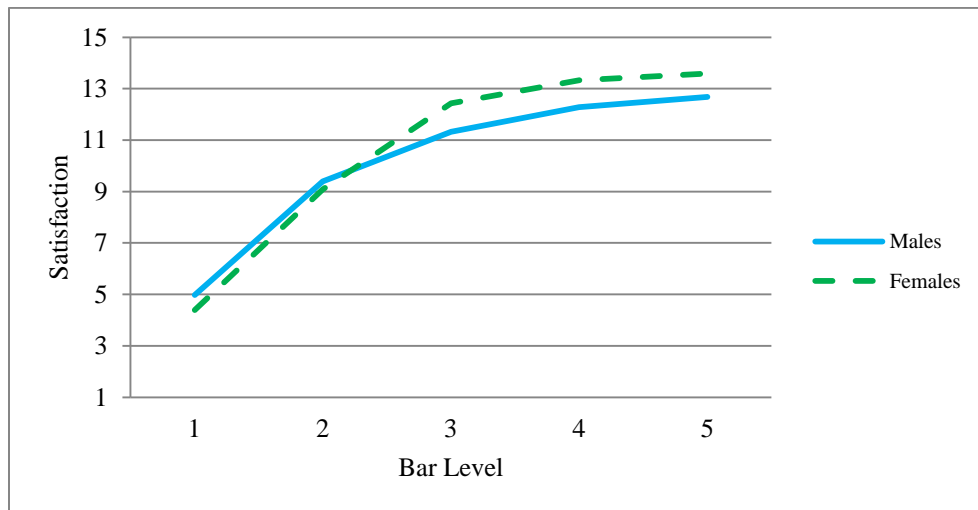
**Table K10: Gender Differences in Feature-Specific Friendship Standards for Conflict**

	Wilks's $\lambda$	Multivariate $F(4, 414)$	Within-Subjects $F(2.73, 1136.73)$
Bar Level	.179	476.29***	689.94***
Bar Level x Gender	.956	4.74**	9.13***

	Males	Females	$F_{gender}(1, 417)$	$d$
	Mean (SE)			
Level 1	4.97 (.24)	4.39 (.21)	3.28 <sup>†</sup>	.18
Level 2	9.39 (.27)	9.09 (.23)	.77	.09
Level 3	11.33 (.23)	12.43 (.19)	14.12***	-.37
Level 4	12.29 (.18)	13.32 (.15)	18.95***	-.43
Level 5	12.68 (.16)	13.59 (.14)	19.30***	-.44

*Note.* Means are estimated marginal means from a Gender (2) x Bar Level (5) repeated measures analysis of variance. Within-subjects  $F$  is Greenhouse-Geisser corrected for violation of the assumption of sphericity;  $F_{gender}$  is from univariate follow-up tests of the effect of gender within each level of the Bar factor. <sup>†</sup>  $p < .10$ ; \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ .



**Figure K10: Graphical Representation of Gender Differences in Feature-Specific Friendship Standards for Conflict**

## REFERENCES

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### Publications

Asher, S. R., & Weeks, M. S. (in press). Loneliness and belongingness in the college context. In R. J. Coplan & J. C. Bowker (Eds.) *Wiley-Blackwell handbook of solitude: Psychological perspectives on social isolation, social withdrawal, and being alone*. Hoboken, NJ: Wiley-Blackwell.

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### First-Authored Conference Presentations

Weeks, M. S., & Asher, S. R. (2013, April). Distinguishing loneliness from belonging: Conceptualization, assessment, and links with social experience. In J. Vanhalst (Chair), *Addressing two fundamental issues in loneliness research*. Symposium conducted at the meeting of the Society for Research in Child Development, Seattle, WA.

Weeks, M. S., Putallaz, M., Kupersmidt, J. B., & Coie, J. D. (2013, April). *The features and functions of preadolescent girls' talk about boys with friends*. Poster presented at the meeting of the Society for Research in Child Development, Seattle, WA.

Weeks, M. S., & Asher, S. R. (2012, July). Evidence for a suppression effect on the link between gender and loneliness. In S. R. Asher & M. S. Weeks (Chairs), *Gender and close friendships in childhood, adolescence, and early adulthood: New discoveries and advances in assessment*. Symposium conducted at the meeting of the International Association for Relationship Research, Chicago, IL.

Weeks, M. S., Asher, S. R., & McDonald, K. L. (2012, February). *Assessing feelings of belonging in school: Addressing the problem of confounding content*. Poster presented at the Society for Research in Child Development Developmental Methodology Conference, Tampa, FL.

Stroud, M. K., Asher, S. R., & McDonald, K. L. (2009, April). *Assessing school belongingness and its associations with loneliness, peer acceptance, and perceived popularity*. Poster presented at the meeting of the Society for Research in Child Development, Denver, CO.

#### Graduate Fellowships and Scholarships

2013	Student Travel Award, Society for Research in Child Development
2012-2013	Myra and William Waldo Boone Fellowship, Duke University
2012	Summer Research Fellowship, Duke University
2011, 2012	Conference Travel Award, Duke University
2009	Vertical Integration Grant, Duke University
2008-2010	Claire Hamilton Student Conference Travel Award, Duke University