

PARENTING AND PARENT-CHILD RELATIONSHIP QUALITY AS PREDICTORS  
OF FRIENDSHIP DISSOLUTION IN LATE CHILDHOOD AND EARLY  
ADOLESCENCE

by

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This dissertation was prepared under the direction of the candidate's dissertation advisor, Dr. Brett Laursen, Department of Psychology, and has been approved by all members of supervisory committee. It was submitted to the faculty of the Charles E. Schmidt College of Science and was accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy.

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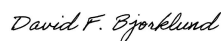
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## ABSTRACT

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Friendships convey developmental advantages. Adolescents without friends suffer from a host of difficulties. Much more is known about which friendships are likely to be stable over time, than about maternal contributions to friendship stability. To this end, the current study examines characteristics of mother-child relationship quality (i.e., child reported social support, negativity and relationship importance) and maternal parenting practices (i.e., child-reported behavioral control and psychological control) that predict the dissolution of children's friendships in a sample of primary school (ages 10 to 11) and middle school (ages 11 to 14) students attending seven public schools in Lithuania. A total of 574 participants (290 female, 284 male) completed identical surveys at six time points across two consecutive school years. Peer nominations provided an index of peer status (i.e., acceptance or liking and rejection or disliking), which were also included as predictors in order to control the contribution of peer status. *Friendships* were defined as dyads in which both partners nominated each other as friends. *Dissolved Friendships*

were defined as dyads that were reciprocated at Time 1 but one or both partners failed to nominate the other as a friend as a subsequent time point.

Discrete time survival analyses were conducted to predict friendship dissolution from maternal parenting practices variables, mother-child relationship quality variables, peer status variables, and demographic variables (sex, dyad sex, nutrition, household structure, relationship rank). Two sets of analyses were conducted. The individual model explored the degree to which individual scores on each variable predicted friendship dissolution. The dyadic model the degree to which dyadic differences (i.e., the absolute difference between friend scores) on each variable predicted friendship dissolution.

In terms of the individual model, results indicated that maternal psychological control predicted friendship dissolution, such that as maternal psychological control increased so did the odds of friendship dissolution. In addition, peer acceptance was inversely related to friendship dissolution, such that lower peer acceptance predicted a greater rate of friendship dissolution. In terms of the dyadic model, results indicated that differences between friends on mother-child relationship were inversely related to friendship dissolution, such that as differences increased so did the odds of friendship dissolution. In addition, differences in peer rejection and peer acceptance also predicted friendship dissolution, such that as differences increased so did the odds of friendship dissolution. There were main effects of dyad sex and household structure.

Moderated findings also emerged. In the individual model, there were no significant findings. In the dyadic model, differences in maternal behavioral control mother-child relationship support were qualified by sex. Differences in maternal behavioral control predicted friendship dissolution for girls but not for boys. Greater

differences in mother-child relationship support predicted increasing rates of friendship dissolution for females, whereas greater differences in mother-child relationship support predicted decreasing rates of friendship dissolution for males.

These findings suggest that perceptions of maternal behavior and differences between friends in these perceptions anticipate friendship instability during early adolescence. The evidence implicates mothers as an important influence to the friendships of adolescents. Psychologically controlling mothers as well as negative mother-child relationship quality both impact the peer social world in ways that can negatively impact adolescent social development.

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## INTRODUCTION

Children need friends. Friends are an important source of companionship and support during late childhood and early adolescence (Bukowski et al., 2009; Hartup, 1993). Many youths report that friendships are their closest relationships; as a consequence, the loss of a friendship can have detrimental social and emotional effects (Bowker, 2011; Wojslawowicz Bowker et al., 2006). Yet despite the potential cost of losing friends, friendship dissolution is a normative event. Approximately 50% of adolescent best friendships dissolve during a school year (Bowker, 2004). We are only beginning to understand why friendships dissolve. Differences between friends foreshadow friendship dissolution; undesirable characteristics of individual participants do not (Laursen, 2017).

Do mothers contribute to friendship instability? We know that mothers play an important role in the interpersonal lives of their children, shaping peer relationships directly and indirectly (Parke, MacDonald, Beitel, & Bhavnagri, 1988). Mothers model and reinforce positive social skills, offer advice on peer problems, and create opportunities for peer social interactions. It is not clear, however, whether mother contributions to peer relationships extend to the stability of friendships. The current study is designed to identify characteristics of mothers and mother-child relationships that predict friendship dissolution during late childhood and early adolescent years. To this end, I conducted a discrete-time survival analysis to identify the degree to which mother-child relationship qualities (e.g., support, negativity, and relationship rank) and maternal



parenting practices (e.g., behavioral control, psychological control) predicted friendship dissolution across two consecutive school years. Two sets of predictors were considered: (1) characteristics of mothers and mother-child relationships, and (2) differences between friends on the characteristics of their mothers and their mother-child relationships.

### **Friendship Definitions and Measurement**

In this section, I review definitions of and strategies for measuring friendship. First, I discuss how mutual liking forms the core of these close, voluntary relationships. Then, I review peer nomination procedures for identifying friends.

#### ***Defining Friendships***

A friendship is a voluntary, dyadic relationship consisting of two individuals who have reciprocated feelings of affection for one another (Hartup, 1993). The expectations for a friendship vary somewhat across the lifespan (Hartup & Stevens, 1997). Among young children, friendships tend to be defined by shared activities. When children enter school, friendships are defined by interests, beliefs, and a willingness to self-disclose. As is the case among the very young, friendships among early primary school children tend to be ephemeral, easily dissolved and (for most) easily replaced. Older children perceive friendships as important sources of support from someone dependable who shares similar values. Friendships become increasingly important during the transition into adolescence when a premium is placed on loyalty and intimacy. The loss of a friend during late childhood and early adolescence is more keenly felt than it is during earlier ages because the emotional ties during this later period tend to be stronger and the needs for instrumental support greater.

Friendships are voluntary affiliations (Laursen & Bukowski, 1997; Laursen, Hartup, & Koplas, 1996; Palsi & Ransford, 1987). In this sense, friendships during childhood and adolescence differ from obligatory or prescribed relationships, such as those with parents or siblings, where dissolution is difficult or impossible. In a friendship, either partner can dissolve the affiliation should they become dissatisfied. Equitable exchanges are expected; the rewards and costs of affiliation should be shared equally between participants. According to the social exchange view, relationship dissatisfaction arises from an imbalance of rewards and costs, which leads to conflict. This, in turn, can lead to relationship dissolution (Levinger, 1979). Individuals continually balance the costs and benefits of a relationship to ensure that balance is achieved (Laursen & Hartup, 2002). Among adolescents, there is an expectation of reciprocity; partners should be responsive to each other's needs and to the needs of the relationship.

### ***Identifying Friendships***

Peer nominations are traditionally used to measure friendships. The usual practice is to simply ask all children in a class or grade to identify their friends (e.g., "Who is your friend?"). The earliest measures of friendship were similarly direct: "these boys and girls are my best friends" and "these are the ones I play with most of the time" (Neugarten, 1946). A rank ordering of friends identified may also be requested (Frankel & Potashin, 1944). Some researchers have used liking nominations to identify friendships, on the logic that friendships are based on affection (e.g., "Who do you like in class?"). Although liking nominations do not perfectly align with friend nominations, they are quite similar, close enough that scholars have concluded that the two provide nearly interchangeable

results in the identification of friends, particularly in the identification of best friends (Guimond et al., 2022).

Nominations yield two types of friendships: (1) unilateral (i.e., either incoming or outgoing friend nominations that are not returned) or (2) reciprocal (both children nominate each other as friends). In one study of U.S. 7<sup>th</sup> grade students, researchers found that only about 55% of adolescent friend nominations were reciprocated (Bowker, 2004). There are many reasons why an outgoing nomination may not be reciprocated. An individual may overestimate the strength of a relationship, selecting another as a friend who does not reciprocate the feeling. An individual may select someone that they want to be friends with (i.e., a desired friend) rather than someone with whom they are friends. In the absence of unlimited nominations, lower ranked friends may not be mentioned. Reciprocated friendships tend to be closer and more important than unilateral friendships (Bowker, 2004). In the current study, I examine the dissolution of reciprocated friendships, that is, where both members of a dyad nominate one another as friends.

### **Significance of Friendship**

In this section I review the developmental importance of friendships, their function, and the consequences of their dissolution. First, I review the changes of friendships during late childhood and early adolescence. Next, I outline the functional importance of friendships, reviewing conceptual models and empirical research. Lastly, I review the consequences of friendship dissolution.

### ***Developmental Changes in Friendship during Late Childhood and Early Adolescence***

Friends often overtake mothers as the primary socialization vehicle during late childhood and early adolescence (Collins & Laursen, 2004; Hay, Payne, & Chadwick,

2004). There are multiple reasons why peers eclipse mothers in importance: time spent with mothers decreases, emotional ties in friendships grow, and adolescents engage in more activities away from home in the company of peers. Across childhood and early adolescence, free time spent with family dramatically decreases (Larson & Richards, 1991). Across this same period, time spent with friends increases. By mid-to-late adolescence, romantic relationships begin to replace friends in terms of significance (Laursen & Williams, 1997), although friendships remain an important source of support, particularly for those who do not have romantic partners.

Throughout the transition into adolescence, youth increasingly tie their self-worth to social exchanges and experiences with peers. Peer interactions also become an important source of identity exploration. The reference group for an adolescent's social experience changes. Early adolescents may spend weekends with mothers, but by mid-adolescence most weekends and many weekday evenings are spent with peer groups. Adolescents seek to establish an identity distinct from their parents, capitalizing on the growing autonomy they acquire with age. The first step to this new identity is separating physically and socially from parents and centering the self in the peer social world (Collins & Laursen, 2000). Friendships are central to this transition. Friends provide an avenue to spend time away from parents—an outlet for new hobbies, experiences, and unfamiliar social interaction.

### ***Consequences of Friendlessness***

Enduring high-quality friendships are positively linked to prosociality and popularity, and negatively tied to loneliness and victimization (Wojslawowicz Bowker et al., 2006; Lodder et al., 2017; Meter & Card, 2016). Friendlessness confers numerous

risks. Being friendless in adolescence is tied to feelings of distress, increasing victimization, increasing internalizing difficulties, declining self-esteem, and increased feelings of isolation (Goldstein, Young, & Boyd, 2008; Kuperminc, Leadbeater, & Blatt, 2001). Adolescents who remain friendless across the transition into a new and larger middle school environment are particularly vulnerable due to the need for support and assistance in navigating a new social world dominated by peers. At the same time, brain maturation prompts heightened social sensitivity to input from peers (Blakemore & Mills, 2014). The effects of friendship loss can be so significant that children who fail to find new friends will eventually experience similar levels of maladjustment as children who are consistently friendless (Wojslawowicz Bowker et al., 2006; Bukowski, Laursen, & Hoza, 2010).

### **Friendship Dissolution**

In this section, I define friendship dissolution. Then I outline the conceptual models related to friendship dissolution. Lastly, I review the available empirical research on friendship dissolution.

#### ***Defining Friendship Dissolution***

Friendships are voluntary affiliations (Laursen & Hartup, 2002). Either partner can terminate the relationship at any time. Dissolution occurs when one friend, or both, become unsatisfied and discontinue the affiliation. Typically, this is not a product of a disagreement or unpleasant event, but rather because friends drift apart (Faur et al., in press). The definition of friendship dissolution depends on how the friendship was initially measured. In a reciprocally nominated relationship, dissolution occurs when one or both partners no longer nominate the other as a friend. In a unilateral nominated

relationship, dissolution arises when the partner who initially nominated a friend no longer does so. Despite the measurement of friendship dissolution often being binary, it is important to note that ending a relationship is not a single event but a process (Sprecher, Zimmerman, & Abrahams, 2010). This process tends to begin for a relationship when both individuals recognize the existence of an issue. One or both partners then begin to enact behaviors that can lead to a disengagement.

Despite their significance, many friendships are often transitory. In one study, approximately one-third of early adolescent friendships dissolved over a five-month period (Chan & Poulin, 2009). Another study found that 76% of reciprocated friendships initiated in the 7<sup>th</sup> grade dissolved by the 8<sup>th</sup> grade (Hartl et al., 2015). Similarly, another study of middle and high school students found that only about 50% of adolescent friendships survive a year (Degirmencioglu et al., 1998). For reasons not well-understood by researchers, early adolescent friendships tend to be less stable than late adolescent friendships. Roughly half of early adolescent friendships tend to dissolve over the course of a year (Bowker, 2004). Conceptual theory has outpaced research on the topic of the causes of friendship dissolution.

### **Conceptual Models of Friendship Dissolution**

There are three major conceptual models that address the reasons behind friend dissolution: dissimilarity, competition arising from similarity, and off-putting individual characteristics. Each are described below.

#### ***Dissimilarity Friendship Dissolution Model***

Some scholars argue that dissimilarity propagates conflict within a relationship, which undermines the friendship. These models start from the premise that similarity

promotes friendship stability because it enhances compatibility (Byrne, 1961; Laursen & Veenstra, 2021). In this perspective, similarity fosters friendship because it makes it easy to identify activities to share and enjoy, which results in more time spent together. Further, the likelihood of conflict decreases as similarity increases because friends have fewer differences over which to disagree (Laursen, 2017). Dissimilar behaviors and activities may limit time spent together, weakening relationship quality to the point of dissatisfaction. Dissimilarities are also a source of disagreement, which can also leave partners dissatisfied with their affiliation. Dissatisfied friends are likely to replace partners with more similar and rewarding friendships (Duck, 2011). In this model, more conflict and dissatisfaction results in withdrawal from the relationship until it finally dissolves.

Dissimilarity also destabilizes friendships by hindering reciprocal exchanges. Social exchange theory posits that individuals constantly evaluate the costs and benefits of participating in a friendship (Thibaut & Kelly, 1959). Reciprocity is the primary method through which friends ensure that a relationship is satisfying and beneficial (Laursen & Hartup, 2002). Reciprocity is defined as mutually equivalent exchanges. Both friends in a relationship dyad expect equal participation and contributions. Due to dissimilarity, the cost of a relationship may become higher for one friend, potentially resulting in feelings of imbalance within the friendship. Consider friends with differing levels of popularity; the unpopular friend benefits from the rewards attached to affiliating with the more popular friend, but the more popular friend does not gain the same social resources and may even suffer negative consequences to their own reputation (Berger & Dijkstra, 2013). Dissimilarity can occur with other traits as well, such as academic

achievement, where a lower achiever will benefit more from academic instruction and guidance than the higher achieving friend (Tudge, 1992). Finally, friends who differ in their social skills may experience different benefits (Thomas & Bowker, 2013). Friends who are popular are seen by their peers as fun and exciting, sometimes leading unpopular friends to seek them out to receive better social rewards.

### ***Competition Arising from Similarity Friendship Dissolution Model***

In contrast to the views just described, some scholars argue that similarity is a cause of friendship dissolution because it leads to competition and rivalry (Tajifel & Turner, 1979). Groups are known to differentiate themselves from one another if they are perceived to be too similar. Social identity theory posits that individuals attempt to establish an identity that is distinct from others (Hogg & Reid, 2006; Hogg, 2006). Close ties between similar individuals may threaten unique identities. Similarity, therefore, may lead to conflict over identity differentiation and overlapping roles.

Similarity may also produce conflict arising from threats to resources. Limited resources can cause competition, which can strain social relations. Consider two similarly popular friends. These friends will most likely compete for social resources and attention within the group. The clash may affect their friendship quality and satisfaction, with conflict increasing until dissolution is inevitable. Two friends who are dissatisfied because of their competition and rivalry may seek less similar partners as friends to avoid competition (Duck, 2011; Schneider et al., 2005). In contrast, friends with complementary traits are assumed to avoid conflict arising from competition. Complementary traits are traits where differences facilitate social engagement rather than inhibit it. For example, the more sociable friend can assist the less sociable friend in



social situations (Güroğlu et al., 2007). In this view, complementary friends do not directly compete and are able to contribute to the relationship with their own specialties.

### ***Undesirable or Off-Putting Individual Characteristics Friendship Dissolution Model***

Children with unpleasant attributes may have a difficult time keeping friends. Repulsion theory holds that off-putting individual attributes put a strain on relationships because they elicit uncomfortable internal states in others (Rosenbaum, 1986). Put simply, there are costs that arise from affiliating with unpleasant others. Unpleasant children are also unlikely to be rewarding interaction partners. There are many undesirable attributes that could conceivably increase the risk of friendship dissolution. Characteristics such as externalizing problems and internalizing problems can make friendships unstable, particularly when manifested in unpleasant interpersonal behaviors. Aggression, quarrelsomeness, and disruptiveness may also make an individual difficult to relate to (Hartl et al., 2015; Piehler & Dishion, 2007).

Another avenue whereby undesirable individual characteristics result in friendship dissolution is through undermining support, intimacy, and reciprocity (Laursen & Richmond, 2014). Consider an individual with limited social skills. Socially awkward children and children with poor perspective-taking skills may fail to support friends and may be unaware of or poor at gauging reciprocity. Maladjusted behaviors tend to elicit dislike from the peer group (Card, 2010). Peer rejection and similar traits may undermine friendship stability because they increase the costs of affiliation (Prinstein et al., 2018). Maladjusted children lose well-adjusted friends, which forces them to make friends with other maladjusted children who are difficult to get along with, which ultimately contributes to increased instability in their social circle.

### ***Empirical Research on Friendship Dissolution***

Next, I review the literature on adolescent friendship dissolution according to the three conceptual frameworks just described: (1) dissimilarity friendship dissolution model; (2) similarity friendship dissolution model; (3) undesirable individual characteristics friendship dissolution model.

#### **Empirical Research on Dissimilarity as a Predictor of Friendship Dissolution.**

There is a sizeable literature that explores the role of dissimilarity on friendship stability during childhood and adolescence. Most studies indicate that similar individuals have more stable friendships than dissimilar individuals (Laursen, 2017). These studies start from the premise that similarity promotes friendship formation. Friendships are built on common ground. Elementary school children are more likely to form friendships when they are similar in terms of gender, attitudes, aggression, withdrawal, sociometric status, and academic achievement (e.g., Kupersmidt, DeRosier, & Patterson, 1995).

Consistent with the idea that similarity predicts friendship formation, strong evidence indicates that dissimilarity predicts friendship dissolution. In one study of 11- to 18-year-old individuals, researchers investigated similarity among stable and unstable friends before and after the friendship was established (Hafen et al., 2011). Stable friendships were more similar than unstable friendships in delinquency, alcohol use, achievement motivation, and self-worth, before and after the establishment of the friendship. Other studies have found that differences in peer acceptance, physical aggression, and school competence predict friendship dissolution across the middle and high school years (Hartl et al., 2015). Other-sex and other-ethnicity friendships have also been shown to dissolve faster than same-sex or same-ethnicity friendships (Aboud,

Mendelson, & Purdy, 2003). Dissimilarity on academic achievement (Flashman, 2012) and problematic behaviors (McDonald et al., 2013) has also been linked to friendship instability in middle school children.

### **Empirical Research on Similarity as a Predictor of Friendship Dissolution.**

Friend similarity is hypothesized to be linked to competition. According to this view, competition should predict rivalry and conflict, thereby predicting friendship dissolution. There is sparse evidence supporting this similarity-dissolution model. In one study, male adolescents were found to have elevated conflict with those who were similar (Schneider et al., 2005). Higher levels of observed competition between friends were associated with friendship dissolution six months later. Avoidance of competition predicted friendship stability. There are no other studies that examine competition and rivalry as sources of friendship dissolution.

More common are studies (most involving adults) that explore the role of similarity and complementarity in relationship quality. Some studies report that dissimilarity has a positive influence on friendships, assisting in the avoidance of rivalries and competition. For example, extroverted adults prefer to collaborate with introverts (Kristof-Brown et al., 2005). Complementary collaboration was more effective than interactions between extroverts. In another study, friends with complementary approaches to conflict resolution, such as one child being provocative while the other disengages, were more likely to resolve disputes in an amicable manner (Hartup et al., 1993). When both friends were similarly provocative, compromising conflict resolutions were unlikely to occur. Similar findings emerged in a study with research confederates trained to act submissive or dominant (Dryer & Horowitz, 1997). Participants got along

better with a confederate with complementary behaviors as opposed to those adopting similar collaboration strategies. Thus, in some circumstances, it appears that dissimilarity, rather than similarity, is a source of satisfaction.

### **Empirical Research on Undesirable Characteristics as Predictors of**

**Friendship Dissolution.** Several studies have examined whether the possession of undesirable attributes places children at risk for unstable friendships. There is some evidence that they do. Externalizing problems (e.g., aggression, antisocial behavior) have been linked to friendship dissolution. Adolescents who present high levels of overt aggression (Ellis & Zaratany, 2007; Parker & Seal, 1996), hyperactivity (Blachman & Hinshaw, 2002), and antisocial behaviors (Dishion, Andrews, & Crosby, 1995) tend to have fewer stable friendships than children who do not present these behaviors. Internalizing problems (e.g., depression, social anxiety) have also been linked to friendship dissolution. In one study, higher levels of depressive symptoms among adolescents anticipated greater friendship dissolution over the course of a month (Chan & Poulin, 2009). In another study, low peer acceptance and high victimization were risk factors for friendship loss over the course of an academic year (Wojslawowicz Bowker et al., 2006; Ellis & Zaratany, 2007). In regards to gender, it has been found that friendships between girls are less likely to dissolve than friendships between boys (Nielson et al., 2020). However, one large study that tracked the friendships of 8<sup>th</sup> grade students through to the end of high school failed to replicate findings concerning off-putting attributes (Hartl et al., 2015). In this longitudinal study, individual characteristics such as physical aggression, school competence, sex, and peer acceptance failed to predict subsequent friendship dissolution.

The affective risk model holds that internalizing problems can lead adolescents to construct stressful interpersonal environments that drive friendships apart (Hammen, 2009). Thus, adolescents with internalizing symptoms may have difficulty keeping friends because they create a difficult interpersonal social environment (Rudolph et al., 2016). The similarity-attraction model holds that similarity leads to compatibility, which both motivates and organizes friendships. The distinction between these two models is important. The affective risk model argues that friendship dissolution is caused by individual maladjustment, whereas the similarity-attraction model argues that maladjustment does not cause friendship dissolution so long as both members of the dyad share similar adjustment difficulties.

### **Conceptual Models of Maternal Contributions to Friend Relationships**

In this section I review the conceptual models related to the maternal contributions to friendships. Specifically, I discuss the hypothesized effects of mother-child relationship quality and parenting practices on peer relationships.

#### ***Direct and Indirect Pathways of Maternal Influence on Peer Relationships***

Mothers influence the friendships of their children through two avenues: direct and indirect (Parke, MacDonald, Beitel, & Bhavnagri, 1988). Direct pathways describe parenting strategies that control and monitor a child's experience with peers (Ladd & Pettit, 2019). Direct pathways are defined as parent behaviors that impact the child's relations with peers. Mothers serve as designers, supervisors, and advisors to children's activities. Direct parent management behaviors include things like arranging time to spend with other children, creating activities for children to do with peers, and establishing rules for interacting with peers in and out of the home.

Direct parental monitoring is straightforward when children are young; however, parent involvement and oversight decrease with age. Even so, adolescents are still influenced by the direct parent management of peer relations, that is, parents still shape and manage behaviors with peers. During adolescence, parenting practices may serve as a proxy for parent management of peer relationships. Behavioral control may interfere with the maintenance of friendships (Ladd & Pettit, 2019). Parents can restrict opportunities for social engagement or prohibit social activities with a particular peer. Psychological control may interfere with the maintenance of friendships, such as making a child feel guilty for going out with friends. Finally, the relationship rank or rank of parents vis-à-vis peers may have an impact the stability of friend relationships. Previous studies have not explored the topic within friendships, but we know that the stability of romantic relationships is lower among adolescents who report that parental influence is important (Lee, Swenson, & Niehuis, 2010). Applied to friendships, it follows that children may invest less time and effort in friendships the more important they regard relationships with parents. Thus, when children place greater importance on their relationships with parents, the stability of their friendships should diminish.

Indirect pathways describe parental behaviors that adversely impact the child's adjustment and social skills, which then hamper the development of emotional and social resources that could be used to maintain a friendship (Parke, MacDonald, Beitel, & Bhavnagri, 1988). Indirect parent management behaviors such as parental connectedness improve self-esteem of children, and parent psychological control which negatively impacts the child's peer relations through emotional dysregulation (Dickson et al., 2019; Huey et al., 2020). For instance, a depressed mother can transmit negative emotions to

her child, which in turn can carry over to interactions with peers (Eisenberg et al., 1993). Depressed and neglectful mothers are unlikely to be sensitive to a child's needs, which can impede the child's psychological functioning (Ladd & Pettit, 2019). Parent-child relationship quality may also be considered a proxy for indirect parent management of peer relationships. Low parental support describes minimal involvement from parents in lives of children, whereas high parental support encompasses companionship, instrumental assistance, and affection (Barber, Stotz, & Olsen, 2005). High parental negativity indicates hostility in a relationship. A low-quality relationship may fail to transmit the interpersonal skills needed to properly maintain a friendship.

### ***Direct maternal influence on peer relations***

The literature is thin on the effects of direct parenting practices on the management of friendships. One known direct practice involves restricting or prohibiting access to specific peers (Tilton-Weaver & Galambos, 2003). Longitudinal studies have found mixed results for this type of maternal influence. There is some evidence that parental management of this sort leads to increased delinquency and conduct problems (Mounts, 2001; Kaniušonytė et al., 2022). Another type of direct management is called behavioral control. Behavioral control is defined as parenting practices designed to set clear rules and monitor activity. Behavioral control is characterized by regulation restrictions, monitoring and knowledge of a child's whereabouts, activities, and companions (Dishion & McMahon, 1998; Stattin & Kerr, 2000). Behavioral control is based on cognitive rationales, which involve an explanation for rules so that children foster an internal locus of control. Behavioral control may enhance the social

development of a child through the creation of a structured routine or boundaries (Bean et al., 2003).

### ***Indirect maternal influence on peer relations***

Positive interactions with mothers have several beneficial outcomes for child development, some of which should, in turn, improve the child's ability to get along with peers (e.g., Ladd & Pettit, 2019). In contrast, negative parent-adolescent interactions can have detrimental outcomes for child development, some of which should, in turn, interfere with the child's ability to get along with peers. A two-step process is proposed. First, the quality of parent-child relationships can impact the child's social development and adjustment, for better or for worse. Second, changes in the child's adjustment drive changes in the child's peer relations. For instance, in a positive supportive relationship, a mother can bolster a child's self-esteem with encouragement, which provides the child with confidence when engaging with other peers. A mother who has a negative mother-child relationship may yell at her child and be prone to outbursts, which results in the child being prone to outbursts themselves, driving friends away.

Psychological control is a form of discipline that involves the manipulation of the parent-child bond as a means of controlling the child (Aunola & Nurmi 2005; Barber et al., 2012). Psychological control is characterized by guilt and intrusiveness (Schaefer, 1965). Parents who use psychological control discount the feelings of their child, withdraw affection, or undermine feelings of trust to gain compliance. Psychological control is assumed to inhibit the psychological development of a child (Bean, Bush, McKenry, & Wilson, 2003; Barber, Stolz, & Olsen, 2005). Scholars agree that excessive control and exploitation of the parent-child bond results in negative consequences



(Barber, 1996). Instances of psychological control may increase reliance on parents and create guilt for closeness with peers, inhibiting the emotional development of a child.

Conceptually, parental support should improve positive outcomes for their children thus affecting peer relationships. There are few studies that investigate the association with peer relationships. Parental support fosters a supportive relationship providing intimacy, nurturance, instrumental aid and affection (Furman, & Buhrmester, 1985). Supportive parents are believed to contribute to a child's self-efficacy and self-acceptance (Stice, Barrera, & Chassin, 1993); outcomes that can indirectly influence peer relationships.

Negative interactions with parents have several detrimental outcomes for child development, which are expected to hinder the child's ability to get along with peers (e.g., Ladd & Pettit, 2019). Negative interactions include quarrelling, criticism, and annoying behaviors (Furman, & Buhrmester, 1985). Parent-adolescent relationships that are characterized by more frequent negative and hostile interactions have been tied to greater social and behavioral difficulties (Shomaker & Furman, 2009). Mother-child relationships with a high negativity can have a detrimental impact on the development of social skills. A mother-child relationship that is highly negative and rife with conflict is not conducive to learning social skills. In addition, children are unlikely to ask mothers they don't get along with for advice or guidance. Poor social skills and poor adjustment are the consequences. These detrimental social outcomes can strain existing peer relationships and make it difficult to create new friendships.

### **Empirical Research on Maternal Contributions to Friend Relations**

In this section, I describe the limited empirical work on parenting and its impact on peer relationships. Because research regarding maternal effects on friendship dissolution is scarce, I review studies that explore the impact of mothers on friendship quality, with the logic that poor quality friendships are at risk for dissolution and good quality friendships are not. Unless otherwise indicated, the studies reviewed involve main effects models, wherein parenting or parent-child relationships impact peer relationships.

### *Parenting Practices*

Parenting practices have been linked to child friendship dissolution and poor-quality friendships. Only one longitudinal study has specifically examined the direct effects of parenting practices on friendship stability. Maternal psychological control (but not behavioral control) was associated with friendship dissolution over a period of six years in a sample of Finnish primary school children, such that higher levels of psychological control (and higher levels of maternal depression) predicted subsequent child friendship dissolution (Dickson et al., 2018). To my knowledge, no longitudinal studies have explored whether parent-child relationship quality predicts friendship dissolution.

Most studies on the topic have examined how parenting practices impact other aspects of peer relationships, such as friendship quality and styles of interaction. For instance, one longitudinal study focused on whether hostile, warm, and problem-solving parental styles shape adolescents' close friendships (Flynn et al., 2018). Results revealed that teens recreated their parent interaction styles when interacting with close friends. In a cross-sectional study of college students, parent psychological control was associated with poor friendship quality (Baumgardner & Boyatzis, 2018). This association was

moderated by perceived parental warmth, such that psychologically controlling parents with lower parental warmth resulted in lower friendship quality in college students. Longitudinal findings indicate that parent willingness to spend time with their adolescent child's friends was linked to participation in high quality friendships (Updegraff et al., 2001). Results from the National Longitudinal Study of Adolescent Health indicate that parent behavioral control was negatively associated with child involvement in delinquent friendships (Knoester, Haynie, & Stephens, 2006). Taken together, the findings suggest that parenting practices have a great deal of influence on adolescent friendships.

### ***Parent-Child Relationship Quality***

There is evidence that parent-child relationship quality, both positive and negative, are associated with characteristics of peer relationships, although only one longitudinal study has investigated the association between parent-child relationship quality and friendship dissolution. Maternal depression was associated with friendship dissolution over a six-year period in a sample of Finnish primary school children, such that higher levels of depression in mothers predicted subsequent child friendship dissolution (Dickson et al., 2018).

Most studies on the topic have examined how parent-child relationship quality impacts other aspects of peer relationships, such as friendship quality and styles of interaction. One cross-sectional study found that negative mother-adolescent interactions were associated with greater conflict with friends, poorer communication skills, and difficulty focusing on joint tasks (Shoemaker & Furman, 2009). In a longitudinal study, the quality of mother-child relationships during adulthood was linked to characteristics of romantic relationships, such that support from parents predicted the stability of their

relationships (Sprecher & Felmlee, 1992). Longitudinal results from the Iowa Youth and Family project indicated that mother-child relationship negativity was associated with diminished friendship quality (Cui et al., 2002). In another longitudinal study, perceived maternal support was associated with positive friendship quality, with associations stronger for mothers who supported adolescent autonomy (Xiang & Sun, 2023). Girls were more affected by mother-adolescent relationship quality than boys. Taken together, the findings suggest that both parent-child relationship negativity and support influence peer relationships.

### **Methodological Approaches to the Study of Friendship Dissolution**

Previous studies of friendship dissolution tend to cover a short period of time, typically only a few months during a school year. The friendships described in these studies are typically defined as stable or unstable across two time points. No distinction is made between friendships that last a few days that last a few months or years. Relationships regardless of length are pooled, with new friendships combined with existing friendships. Survival analyses remedy these pooling issues, as a starting point and ending point are indicated for each relationship.

More recently, scholars have applied survival analysis to the topic of friendship dissolution. Unlike logistic regressions, which only explore events across a single time interval and therefore cannot examine the overall probability of when an event occurs, discrete-time survival analyses allow researchers to examine the probability that an event will occur across successive time points. A survival analysis involves an array of logistic regressions to measure the timing and occurrence of an event (Graham, Willet, & Singer, 2013). Discrete-time survival analyses can incorporate multiple predictors of an outcome,

assessing the relative impact of each. Survival analyses can measure dissolution at several distinct points in time to pinpoint both the occurrence and the timing of dissolution. This strategy, employed in several studies of friendship dissolution (e.g., Hartl et al., 2016; Dickson et al., 2018), has important advantages over alternative approaches. Survival analyses include both the occurrence and timing of relationship dissolution; thus, dissolution can be investigated and evaluated at several distinct points within a time frame.

### **The Current Study**

The current study examines maternal contributions to child friendship dissolution. My primary goal is to examine whether characteristics of parents and parent-child relationships predict the rate and timing of child friendship dissolution. I also explore the possibility that differences between friends on characteristics of parents and parent-child relationships are responsible for friendship dissolution. The rationale for focusing on the transition into adolescence concerns important structural changes that occur in the child's social world, such as a growing independence from parents and improved ability to navigate a complex social world. Others have looked at parental impact on peer relationships during earlier age periods, but no one has looked at parental impact during the transition into adolescence. During this time peer relationships become more important, but many children still report that they are closest to a parent (Laursen & Williams, 1997).

The study involves a discrete-time survival analysis with a community sample of Lithuanian children, ages 10-14 at the outset. Children who were friends at the start of the school year were tracked across six timepoints over the course of two years to identify

the point at which their friendship dissolved. Child reports of parenting practices and parent-child relationship quality were used to predict the rate and timing of friendship dissolution. Predictors of friendship dissolution included three maternal quality measures: relationship support, relationship negativity, and relationship rank. In addition, predictors of friendship dissolution include two parenting style measures: behavioral control and psychological control. The analyses also included two peer status variables, peer acceptance and peer rejection, known to be related to friendship dissolution (see Chan & Poulin, 2009). The study was designed to address three research questions.

***Research question 1: Do individual differences in child perceptions of maternal parenting practices and mother-child relationship quality predict friendship***

***dissolution?*** To answer this question, a survival analysis was conducted using child perceptions of relationships with mothers (i.e., child reports of maternal psychological control, maternal behavioral control, mother-child relationship support, and mother-child relationship negativity) as predictors of friendship dissolution. I hypothesized that higher maternal psychological control would be associated with an increased risk for friendship dissolution. Psychologically controlling parents tend to model coercive interaction styles and create unpleasant home environments, thus increasing the risk of friendship dissolution (Lovejoy et al., 2000). Although behavioral control is considered a constructive form of parenting, it is worth investigating if behavioral restrictions influence dissolution because of their potential to limit opportunities for peer engagement. In a similar study with young children (Dickson et al., 2018), behavioral control did not increase the risk of friendship dissolution. As a consequence, no hypotheses for behavioral control were advanced. Additionally, I hypothesized that

mother-child relationship quality, both negativity and support, would influence friendship dissolution; negativity should increase the chances of friendship dissolution, whereas support should decrease it. Poor quality mother-child relationships may signal that the child's emotional needs are unmet. Maternal support may signal that a child's emotional needs are met, which may aid them in socializing with other peers. Finally, additional factors were expected to predict friendship dissolution. I hypothesized that adolescents with high peer acceptance would predict lower friend dissolution, whereas adolescents with high peer rejection would predict friend dissolution. I included peer status variables in these models because they are known to be confounded with parenting characteristic variables (Hartup & Stevens, 1997; Wojslawowicz Bowker et al., 2006). I hypothesized that adolescents from divorced or remarried households would be more likely to experience dissolution compared to adolescents from two biological parents' household. Evidence shows that indirect effects from parents can influence friendships (Trzesniewski et al., 2006). I hypothesized that adolescents who rank mothers as more important than peers will have greater levels of friendship dissolution because these affiliations may receive less time and attention than those that are of primary importance.

***Research question 2: Do dyadic differences in child perceptions of maternal parenting practices and mother-child relationship quality predict friendship***

***dissolution?*** To answer this question, a survival analysis was conducted with dyadic difference scores (i.e., friend differences on child reports of maternal psychological control, maternal behavioral control, mother-child relationship support, mother-child relationship negativity, and mother relationship rank) as predictors of friendship dissolution. I hypothesized that dyadic dissimilarity on maternal parenting practices, both

psychological and behavioral, would predict friendship dissolution. The prediction is consistent with the similarity-attraction model, in that dissimilarity can lead to dissolution. An individual with a less controlling mother may feel limited by a friend's highly controlling mother. The less controlled partner may not like being limited by their friend's mothers. Additionally, I hypothesized that dyadic dissimilarity on mother-child relationship quality would predict friendship dissolution. For both support and negativity, larger differences should lead to instability due to the differences in home environments that make friends uncomfortable. Differences between friends can strain reciprocity and weaken the relationship (Laursen, 2017). I hypothesized that greater differences between peer acceptance and peer rejection would result in greater friend instability. Conceptual models indicate that friends with differing levels of peer status should have higher levels of dissolution than friends with similar levels of peer status. Differences in the relationship rank of maternal relationships are hypothesized to predict friendship turnover because they signal differences between friends in the ranking of their relationship. For demographics variables, I expect results consistent with previous findings (Guimond et al., 2019).

***Research question 3: Do the predictors of friendship dissolution vary due to child sex or age?*** To answer this research question, individual and dyadic models examined grade and sex as potential moderators of the predictors of friendship dissolution. Given the lack of consistent findings concerning sex differences in rates of friendship dissolution I have no hypotheses for the individual model concerning sex as a moderator of mother-child relationship quality or maternal parenting practices on friendship dissolution (Chan & Poulin, 2009). However, I hypothesized that age



differences would factor into the association between individual maternal parenting practices and friendship dissolution. I assumed that expectations of acceptable parent behavior would change as children grow older. Younger adolescents were presumed to be more influenced by maternal parenting practices on friendship dissolution.

In terms of differences between friends, I hypothesized that differences in maternal relationship quality is a stronger predictor of dissolution for the friendships of girls than the friendships of boys. Specifically, I hypothesized that sex would interact with greater differences in maternal negativity such that girl friendships experience increased odds of friendship dissolution compared to boy friendships. In addition, I hypothesized that mother-child relationship quality would be a stronger predictor of friendship dissolution for girl friendships than boy friendships. Girls, on average, are more sensitive to social situations than boys, and so girls may be more aware of differences in how their parents treat them than boys are (Benenson et al., 2013).

Age was also expected to moderate differences between maternal parenting practices and friendship dissolution. Expectations of relationships with parents change as children grow older. Younger children have closer relationships with mothers and are more closely supervised than older children. As a consequence, I hypothesized that the differences between friends in maternal behavioral control would vary as a function of the child's age. I assumed that expectations of acceptable parent behavior would change as children grow older, supposing that mothers would have less influence on friend dissolution as adolescents grow older. I also hypothesized that differences in behavioral control would be a stronger predictor of friendship dissolution among older compared to younger participants because adolescents increasingly expect autonomy. Associations

between behavioral control and friendship dissolution is expected to be stronger for younger individuals than older individuals because adolescents increasingly expect autonomy as they grow older. They may resent friends whose mothers still tell them what to do.

## METHOD

### **Participants**

Participants included 574 participants (290 female, 284 male) who attended five different Lithuanian schools. The total included 147 4<sup>th</sup> graders (10-11 years-old) in primary school, 150 5<sup>th</sup> graders (11-12 years-old) in middle school, 123 6<sup>th</sup> graders (12-13 years-old) in middle school, and 154 7<sup>th</sup> graders (13-14 years-old) in middle school. Near all participants were ethnic Lithuanian. Most participants lived with two biological parents (71.95%); the remainder lived with a biological mother and step-father (12.37%), with biological mothers only (12.37%), with a biological father and step mother (0.69%), with a biological father only (1.39%), or with guardians or grandparents (1.22%). A total of 9.20% of participants received free meals at school.

### **Procedure**

All 4<sup>th</sup> to 7<sup>th</sup> graders from 33 classrooms in a small Lithuanian city were invited to participate in the study. Written parent consent and student assent were required to participate. Student participation rates averaged 69.54% ( $SD = 11.71$ , range = 42.31% to 92.00%). Trained research assistants administered surveys in classrooms to students on computer tablets. Instructions and questionnaires were administered and read aloud by researchers as students followed along. The university ethics committee (Nr. 6/202) approved this study.

Participant responses were collected across two academic years, with three waves of data collection each year. Time 1 data were collected from September 2021 to October

2021; Time 2 data were collected in February 2022; Time 3 data were collected in May 2022; Time 4 data were collected in September 2022; Time 5 data were collected from January 2023 to February 2023; Time 6 data were collected in May 2023. The average length between Time 1 and Time 2 was 15.57 weeks ( $SD = 5.34$ ). The average length between Time 2 and Time 3 was 10.43 weeks ( $SD = 1.29$ ). The average length between Time 3 and Time 4 (the end of one academic year and the start of the next) was 19.00 weeks ( $SD = 1.58$ ). The average length between Time 4 and Time 5 was 17.43 weeks ( $SD = 1.29$ ). The average length between Time 5 and Time 6 was 13.57 weeks ( $SD = 1.63$ ).

There were no statistically significant differences on any study or demographic variables between students who participated at all six time points and those who did not. A bilingual team of research assistance translated measures from English to Lithuanian; they were back translated by a separate team. Differences were resolved by discussion. See appendices A, B, and C for the wording of all items in English.

## **Measures**

**Peer nominations.** Participants completed a standard peer nomination survey consisting of a roster of classmates from which students identified participants who best fit each description. Unlimited same- and other-sex nominations were permitted. Self-nominations were not. For each variable, the number of nominations an individual received were summed. Scores were standardized to adjust for the number of participants in a class using a regression-based procedure that accounts for potential biases in scores due to variations in the size of the group (Velásquez, Bukowski, & Saldarriaga, 2013). The current study focuses on two peer nomination variables: *Peer acceptance* (a measure of liking) and *Peer rejection* (a measure of disliking).

**Friend nominations.** At each time point, participants identified and rank-ordered up to five friends from a roster of classmates. *Reciprocated friends* were defined as dyads in which both partners nominated each other as friends. A total of 574 participants were involved in 627 reciprocated friend dyads at Time 1. *Dissolved Friendships* were defined as dyads that were reciprocated friends at Time 1 but one or both partners failed to nominate the other as a friend at a subsequent time point. Of the 546 friendships that dissolved over the course of the study, 15.93% became unilateral friends (one participant nominated the other, which was not reciprocated) and 84.06% involved neither participant nominating the other as a friend. Of those who became unilateral friends, 15.93% later involved neither participant nominating the other as a friend. Of the 546 friendships that dissolved over the course of the study, 18.18% later reconstituted at a later time point. Given the nature of survival analyses these reconstituted friendships were not considered in analyses.

*Number of friends* describes the number of reciprocated friendships a participant had at Time 1 (*range*=1 to 5; *M*=1.89, *SD*=1.05). *Friend rank* describes the order in which friends were nominated (*range* = 1-5; *M*= 2.62, *SD*=1.36).

**Maternal parenting practices.** Participants completed measures related to parenting practices. Items were rated from 1 (*Never*) to 5 (*Always*). Three items measured child perceptions of *maternal behavioral control* ( $\alpha = 0.74$ ) (Kerr et al., 2010). Five items measured child perceptions of *maternal psychological control* ( $\alpha = 0.74$ ) (Barber et al., 2005).

**Mother-child relationship quality.** Participants completed the Network of Relationships Inventory (Furman, & Buhrmester, 1985), describing perceptions of

relationships with mothers. Items were rated from 1 (*Never*) to 5 (*Always*). Eight items measured *perceived social support* ( $\alpha = 0.88$ ). Four items measured *perceived negativity* ( $\alpha = 0.85$ ).

**Relationship rank.** Participants completed a single item in which they described the *relative importance of the mother-child relationship*, ranking mothers in relation to best friends, fathers, siblings, grandparents, teachers, and romantic partners. Scores ranged from most important (1) to least important (7) ( $M=2.54$ ,  $SD=1.38$ ). Ties were possible.

### **Plan of Analysis**

Discrete-time survival analyses were conducted in a latent variable framework using Mplus v8 (Muthén & Muthén, 2017). The analyses predict the rate and timing of friendship dissolution from characteristics of mother-child relationships, and from differences between members of a friend dyad on characteristics of mother-child relationships. The analyses also included sociometric ratings of acceptance and rejection, to distinguish the effects of parenting from those that overlap with peer social status.

The analyses focus on reciprocated friendships that existed at the start of the study (i.e., the beginning of the Fall school year). Friend dyads that formed after the first data collection period (i.e., Time 1) were not considered. The likelihood of a friendship ending at a specific time point is depicted by the hazard curve. The discrete-time hazard rate describes the conditional probability that a friendship ends at a specific time point, given that it did not end at a previous time point. Among those who remain friends, what is the likelihood of a friendship dissolving during the next time interval? The survival curve describes the probability that a reciprocated friendship at Time 1 will continue at each

successive time point. Among those who remain friends, what is the likelihood that the friendship will continue to the next time point? The discrete-time-survival rate portrays the proportion of undissolved friend dyads that remain friends at each subsequent time point.

Model construction followed a three-step procedure. Figure 1 depicts a single-class latent class analysis with binary time-specific event indicators that approximate a conventional discrete-time survival analysis (Muthén & Masyn, 2005). For each dyad in the sample, six binary time-specific event indicators were included, one for each of the six time points. For each dyad at each interval, the event indicator is coded as 0 (*reciprocated*), 1 (*newly dissolved*), censored (*previously dissolved*), or censored (*unavailable*). Dyads that were not friends at Time 1 were censored at all time points. Dyads newly dissolved at one time point (e.g., Time 2) were censored at all subsequent time points (e.g., Time 3, Time 4, Time 5, and Time 6) (Graham et al., 2013). Right-censored data were data marked as missing due to either being unavailable or because they represented the event of interest (i.e., prior friendship dissolution). When dissolution occurred, that friendship was marked as dissolved (censored) at all subsequent time points. Students with missing data at one wave who participated at the next were included in the analyses; their data were censored only during the wave with missing friend reports. Friends who were no longer in the same class were censored, in 4<sup>th</sup> grade 16 dyads were censored, 5<sup>th</sup> grade 1 dyad was censored, 6<sup>th</sup> grade 8 dyads were censored, 7<sup>th</sup> grade 1 was censored. There were 19 that moved classrooms together, all were located within 4<sup>th</sup> grade.

In the first step of model construction, I evaluated the constant hazard assumption to determine if the probability of friendship dissolution varied across time points. Two models were contrasted. Hazard rates were constrained to be equal across time points in a conditional survival model. Hazard rates were allowed to vary freely across time points in an unconditional model. A likelihood-ratio test compared the fit of the conditional and unconditional survival models (Graham et al., 2013). A nonsignificant likelihood-ratio test indicates that the hazard rate does not differ significantly across timepoints. A statistically significant result indicates that the hazard rate differs across time points and should be allowed to vary.

The second step of model construction evaluates the proportionality assumption for each Time 1 predictor to determine whether the predictor's effect is equivalent across time points. An unconditional survival model was estimated for each predictor, with the predictor allowed to vary across timepoints (i.e., time varying predictors). A conditional model was also estimated for each predictor, with the predictor constrained to be equal across timepoints (i.e., time invariant predictors). A likelihood-ratio test was used to compare the fit of conditional and unconditional models. A statistically significant result indicates that effects of a predictor differs across time points and so should be allowed to vary (i.e., each predictor variables at each time point should be included in the model predicting dissolution at the same time point). A nonsignificant result indicates that the effect of a predictor does not differ across time-points and so should not be allowed to vary (i.e., only Time 1 predictor variables should be included in the model predicting dissolution at every time point).



Two models were tested in the third step of the analysis, each with a different set of predictors (i.e., individual scores and dyadic difference scores). In each model, predictors were standardized to reduce collinearity and to ease interpretation. The first model in step 3 included individual level scores that describe children and their mothers, as well sociometric scores for each participant. Demographic variables include *sex* (0=male, 1=female), *age* (in years), *nutrition* (0=no free lunch; 1=yes free lunch), and *household structure* (“Who do you share your home with?” 0=all other, 1= biological mother and biological father). Maternal parenting practice variables include *mother psychological control* and *mother behavioral control*. Mother-child relationships quality variables include *perceived social support* and *perceived relationship negativity*. Peer relations variables include *peer rejection* and *peer acceptance*.

The second model in step 3 included dyadic level scores that describe differences between friends, calculated as absolute value of the difference between the standardized scores of each pair of participants on reports about mothers and peer relations variables. Model 2 included the same variables as model 1 but with dyadic difference scores instead of individual scores. Demographic variables include *dyad sex* (same-gender=0; other-gender=1), *nutrition* (0=same score on free nutrition variable; 1=different score on free nutrition variable), and *household structure* (0=same household structure; 1=different household structure). Parenting practices variables include dyadic differences scores for *maternal psychological control* and *maternal behavioral control*. Mother-child relationship quality variables include dyadic difference scores for *perceived social support* and *perceived relationship negativity*. Peer relations variables include dyadic difference scores for *peer rejection* and *peer acceptance*.

The fourth step of model construction involves the addition of interaction terms to the individual model and the dyadic difference model (described in step 3) to test the hypothesis that the effects of mother-child relationship quality and maternal parenting practices in the prediction of friend dissolution vary as a function of sex, age, and household structure. Maternal Behavioral Control, Maternal Psychological Control, Mother-child Relationship Support, Mother-child Relationship Negativity, Relationship Rank, Peer Rejection, and Peer Acceptance. The variables in the fourth and final models are otherwise identical to those included in the dyadic and individual models. Each model was conducted separately. Covariances between predictors are included but are not depicted.

Survival analysis results are reported in terms of odds-ratio associations between predictor variables and the hazard function. An odds-ratio greater than 1 indicates that higher levels of a predictor variable increase the risk of friendship dissolution. The risk of friendship dissolution is interpreted in terms of changes in the standard deviation (*SD*) logit units of the predictor variable. For example, an odds ratio of 1.20 corresponds to a 20% increase in the risk of friendship dissolution at each time interval, for every one standard deviation increase in the predictor variable. An odds ratio of 0.80 corresponds to a 20% decrease in the risk of friendship dissolution at each time interval, for every one standard deviation increase in the predictor variable.

Monte Carlo simulations (Muthén and Muthén, 2017) were conducted with 1000 replications to determine the number of dyads required for adequate power (i.e., 80%) to detect a statistically significant small ( $b=.3$ ), medium ( $b=.5$ ) and large ( $b=.7$ ) effects. The results indicated that all analyses were adequately powered. A minimum sample of 1620

dyads was necessary to detect a small effect, a minimum sample of 620 dyads was necessary to detect medium effects, and a minimum sample of 340 dyads was necessary to detect large effect.

***Research question 1: Do individual differences in child perceptions of maternal parenting practices and mother child relationship quality predict friendship***

***dissolution?*** The first research question will be addressed with the individual-level characteristics model (see step 3). I hypothesize that higher maternal psychological control will be associated with an increased risk for friendship dissolution. The prediction is consistent with findings from young children indicating that maternal psychological control (but not behavioral control or affection) anticipated friendship dissolution across the primary school years (Dickson et al., 2018). Additionally, I predict that high maternal negativity and low maternal support will be associated with an increased risk of friendship dissolution. The prediction is consistent with conceptual models where poor-quality relationships with mothers lead to negative peer outcomes (Barber, Stolz, & Olsen, 2005; Eisenberg et al., 1993). I hypothesized that adolescents who rank mothers as more important than peers will have greater levels of friendship dissolution because these affiliations may receive less time and attention than those that are of primary importance. Better liked children tend to have more successful friendships than do children who are less liked by their peers (Laursen & Hartup, 2002). Therefore, I hypothesize that adolescents higher in rejection will have greater levels of friendship dissolution whereas adolescents higher in acceptance will have lower levels of friendship dissolution.

***Research question 2: Do dyadic differences in child perceptions of maternal parenting practices and mother child relationship quality predict friendship***

*dissolution?* The second research question is addressed with the dyadic differences model (see step 3). I hypothesized that dyadic dissimilarity on maternal parenting practices and on mother-child relationship quality should predict friendship dissolution. Additionally, I hypothesized that dissimilarity on both peer status variables, rejection and acceptance, would predict friend dissolution. These predictions are consistent with the similarity-attraction model, which asserts that similarity fosters compatibility which decreases the chances of relationship dissolution (Laursen, 2017). Differences in the relationship rank of maternal relationships were hypothesized to predict friendship turnover because they signal differences between friends in the ranking of their relationship. For other demographics variables, I expect results consistent with previous findings (Guimond et al., 2019).

*Research question 3: Do the predictors of friendship dissolution vary as a function of child sex or age?* The third research question is addressed within the individual traits and the dyadic differences models with the inclusion of interaction terms involving sex and age. In the dyadic differences model, I hypothesized that sex would moderate the association from behavioral control to friendship dissolution such that the association should be stronger for girls than boys. Additionally, I hypothesized that differences in mother-child relationship quality will vary due to sex because boys are often given more autonomy than girls (Dowdy Kliewer, 1998; Seiffge-Krenke, & Pakalniskiene, 2011). Differences in parenting practices and less autonomy may result in instability and resentment between friends particularly in friendships between girls. I hypothesize that individual and dyadic differences in relationship qualities, such as for behavioral control, will vary due to sex such that friendships between girls are less likely

to dissolve than friendships between boys. This prediction is consistent with findings that point to the more intimate, and thus, close ties found in female friendships (Nielson et al., 2020; Jalma, 2008; Dean et al., 2017). I hypothesized that the differences between friends in maternal behavioral control would vary as a function of the child's age. I assumed that expectations of acceptable parent behavior would change as children grow older, supposing that mothers would have less influence on friend dissolution as adolescents grow older.

**Missing data.** All participants who participated in data collection received friend nominations; there was no item-level missingness. Missing wave-level data came from absences and attrition. For this study wave-level missingness is missing at random by definition and thus not missing by design. Little's MCAR test (Little & Rubin, 1987) revealed that the data were missing completely at random,  $\chi^2(32) = 60.64, p = .89$ . Discrete-time survival analysis cannot readily account for bias that may arise from nested data, but these concerns can be reduced by the use of the COMPLEX function in Mplus (Asparouhov, 2006). The complex function corrects standard errors based on the degree of nonindependence of observations arising from sample clustering (e.g., children nested within friend dyads and friend dyads nested within classrooms). All analyses were conducted using the COMPLEX function in Mplus.

## RESULTS

### **Preliminary Analyses**

Table 1 presents descriptive statistics and correlations between Time 1 variables. Bivariate correlations ( $p < .05$ ) between individual score variables revealed that behavioral control was positively correlated with psychological control, relationship support, and relationship negativity. Similarly, psychological control was positively correlated with relationship negativity. For the dyadic difference score variables, behavioral control was positively correlated with relationship support and relationship negativity. Dyadic differences in psychological control was positively correlated with relationship support and relationship negativity. Lastly, dyadic differences in relationship support was positively correlated with relationship negativity and relationship rank.

Separate 2 (sex) by 4 (grade: primary vs. middle school) by 6 (time) repeated measures ANOVAs were conducted with maternal behavioral control, maternal psychological control, mother-child relationship support, relationship rank, mother-child relationship negativity, peer acceptance, and peer rejection as dependent variables. There were no significant findings for psychological control, relationship rank, mother-child relationship support, and mother-child negativity.

Results for maternal behavioral control revealed a significant main effect of sex,  $F(1, 284) = 16.54, p < .001$ , and time  $F(4, 1238) = 3.778, p = .004$ . Behavioral control increased over time ( $\eta^2 = .013$ ). Girls ( $M = 3.89$ ) reported more maternal behavioral

control than boys ( $M=3.35$ ) ( $d=0.417$ ). There was a significant interaction of sex and time,  $F(4,1238) = 2.552$ ,  $p=.031$   $\eta^2 = .009$ . Follow-up one-way ANOVAs indicated that behavioral control declined for boys ( $\eta^2 = .053$ ) but not for girls ( $\eta^2 = .032$ ). There was a significant interaction of time and grade,  $F(4,1245) = 3.673$ ,  $p= .004$   $\eta^2 = .052$ . Follow-up one-way ANOVAs indicated that behavioral control declined for boys ( $\eta^2 = .075$ ) but not for girls ( $\eta^2 = .02$ ).

Results for peer rejection revealed a significant main effect of time,  $F(4,2471) = 14.606$ ,  $p<.001$  Peer rejection decreased over time ( $\eta^2 = .026$ ). There was a significant interaction of sex and time,  $F(9,2471) = 4.534$ ,  $p<.001$   $\eta^2 = .008$ . Follow-up one-way ANOVAs indicated that peer rejection increased for girls ( $\eta^2 = .014$ ) but not for boys ( $\eta^2 = .02$ ). Finally, there was a significant interaction with grade and time,  $F(4,2471) = 4.932$ ,  $p<.001$   $\eta^2 = .009$ . Follow-up one-way ANOVAs indicated that peer rejection declined for primary schoolers ( $\eta^2 = .002$ ) but not for middle-schoolers ( $\eta^2 = .003$ ).

Results for peer acceptance revealed a significant main effect of time,  $F(4,2454) = 3.889$ ,  $p<.002$ , and grade  $F(1,551) = 4.332$ ,  $p=.038$ . Peer acceptance decreased over time ( $\eta^2 = .007$ ). Middle school children (5<sup>th</sup> to 7<sup>th</sup> grade) children had higher levels of peer acceptance than primary school children ( $d=0.264$ ).

### **Hazard and Survival Curves Describing Friendship Dissolution**

Figure 1 depicts the hazard and survival curves. The survival curve depicts the probability that a reciprocated friendship originating at Time 1 will continue at each subsequent timepoint. Results indicated that over half of all Time 1 friendships continued to Time 2 (survival rate = 63.75%). Roughly half of Time 1 friendships continued to Time 3 (survival rate=50.15%). Less than a fifth of Time 1 friendships survived to Time

4 (survival rate=15.40%), following the summer holiday. Approximately 8% of Time 1 friendships survived to Time 5 (survival rate=8.79%) and Time 6 (survival rate=8.29%).

The discrete-time hazard curve depicts the conditional probability that a friendship ends at a specific time point, given that it did not end at a previous time point. Results indicated that Time 1 reciprocated friendships were at risk for dissolution at Time 2 (hazard rate =34.93%). The risk of dissolution declined at Time 3 (hazard rate =20.83%). The risk of dissolution was greatest at Time 4 (hazard rate =61.30%) after the summer holiday, declining again at Time 5 (hazard rate = 32.80% ) and Time 6 (hazard rate = 4.00%).

A likelihood-ratio test (Graham et al., 2013) revealed that the hazard rate for friendship dissolution varied significantly over time,  $\chi^2(82) = 1002.618, p < .001$ . As a consequence, hazard rates were allowed to vary in subsequent analyses.

### **Multivariate Survival Models of Friendship Dissolution: Individual Characteristics as Predictors**

Likelihood-ratio tests were used to evaluate the proportionality assumption to determine whether the effect of a predictor varied across timepoints. Two survival models were created. The first model allowed the predictor's effects to vary across timepoints (time-variant model/conditional model). The second model constrained the predictor's effects to be equal across timepoints (time-invariant model/unconditional model). There were no differences between conditional and unconditional models for any individual predictor  $\chi^2(7) = 3.232-4.554, p = .714-.863$ . As a consequence, each predictor's effect was fixed to be equal across timepoints in subsequent analyses.



Figure 2 depicts the results for the survival analysis with individual variables as predictors. Findings are presented in the form of odds ratios. The results indicated that peer acceptance, household structure, and maternal psychological control predicted the occurrence and timing of friendship dissolution. Each will be discussed in turn.

Figure 4 depicts the results for maternal psychological control. The odds of friendship dissolution were 39.5% higher for every 1 *SD* increase in maternal psychological control ( $\beta = .331, SE = .160, p = .039$ ). Compared to adolescents with average maternal psychological control ( $M= 2.05$ ) adolescents who reported 1 *SD* above the mean levels of maternal psychological control ( $M=2.05$ ) were 39.5% more likely to experience friendship dissolution at each time point, adolescents who reported 2 *SD* above the mean levels of maternal psychological control ( $M=2.98$ ) were 79.0% more likely to experience friendship dissolution at each time point, and adolescents who reported 3 *SD* above the mean levels of maternal psychological control ( $M=3.91$ ) were 118.53% more likely to experience friendship dissolution at each time point. Compared to adolescents with average maternal psychological control ( $M= 4.84$ ) adolescents who reported 1 *SD* below the mean levels of maternal psychological control ( $M=1.12$ ) were 39.5% less likely to experience friendship dissolution at each time point.

Figure 5 depicts the results for peer acceptance. The odds of friendship dissolution were 24.5% lower for every 1 *SD* increase in peer acceptance ( $\beta = -.281, SE = .133, p = .034$ ). Compared to adolescents with average peer acceptance ( $M= 2.73$ ) adolescents who reported 1 *SD* above the mean levels of peer acceptance ( $M=4.50$ ) were 24.5% less likely to experience friendship dissolution at each time point, adolescents who reported 2 *SD* above the mean levels of peer acceptance ( $M=6.27$ ) were

48.9% less likely to experience friendship dissolution at each time point, and adolescents who reported 3 *SD* above the mean levels of peer acceptance ( $M=8.04$ ) were 74.4% less likely to experience friendship dissolution at each time point. Compared to adolescents with average peer acceptance ( $M= 2.73$ ) adolescents who reported 1 *SD* below the mean levels of peer acceptance ( $M=0.96$ ) were 24.5% more likely to experience friendship dissolution at each time point.

The odds of friendship dissolution were 26.0% higher for children who do not live in households with biological parents ( $\beta = -.298, SE = .131, p = .023$ ). Compared to adolescents who live in households with biological parents, adolescents that do not live in households with biological parents were 26.0% more likely to experience friendship dissolution at each time point.

Follow-up analyses included sex and grade as moderators. There were no statistically significant sex by individual characteristic interactions. Nor were there statistically significant grade by individual characteristic interactions. Tables 2 and 3 present the results.

### **Multivariate Survival Models of Friendship Dissolution: Dyadic Differences as Predictors**

Likelihood-ratio tests were used to evaluate the proportionality assumption determining whether the effect of a predictor varied across timepoints. Two survival models were created. The first model allowed the predictor's effects to vary across grades (time-variant model/conditional model) this was compared to a second survival model that constrained the predictor's effects to be equal across grades (time-invariant model/unconditional model). There were no differences between conditional and

unconditional models for any dyadic predictor  $\chi^2(7) = 5.951-6.928, p = .226-.311$ .

Consequently, each predictor's effect was estimated to be consistent across grades in subsequent analyses.

Figure 3 depicts the odds ratios for the predictors in the dyadic model. Results indicated that differences between friends on mother-child relationship negativity, peer acceptance, peer rejection, and dyad sex were statistically significant predictors of the occurrence and timing of friendship dissolution. Associations of each significant predictor are discussed in turn.

Figure 6 depicts the results for mother-child relationship negativity. The odds of friendship dissolution were 40.2% higher for every 1 *SD* increase in differences on acceptance ( $\beta = .342, SE = .160, p = .032$ ). Compared to adolescents with average differences in mother-child relationship negativity ( $M= 1.02$ ) adolescents who reported 1 *SD* above the mean levels of differences in mother-child relationship negativity ( $M=1.88$ ) were 40.2% more likely to experience friendship dissolution at each time point, adolescents who reported 2 *SD* above the mean levels of differences in acceptance ( $M=2.74$ ) were 80.4% more likely to experience friendship dissolution at each time point, and adolescents who reported 3 *SD* above the mean levels of differences in mother-child relationship negativity ( $M=3.60$ ) were 120.6% more likely to experience friendship dissolution at each time point. Compared to adolescents with average differences in mother-child relationship negativity ( $M=1.02$ ) adolescents who reported 1 *SD* below the mean levels of differences in mother-child relationship negativity ( $M=0.16$ ) were 40.2% less likely to experience friendship dissolution at each time point.

Figure 7 depicts the results for differences in peer acceptance. The odds of friendship dissolution were 48.1% higher for every 1 *SD* increase in difference on peer acceptance ( $\beta = .393$ ,  $SE = .119$ ,  $p = .001$ ). Compared to adolescents with average peer acceptance ( $M= 1.33$ ) adolescents who reported 1 *SD* above the mean levels of differences in peer acceptance ( $M=2.54$ ) were 48.1% more likely to experience friendship dissolution at each time point, adolescents who reported 2 *SD* above the mean levels of differences in peer acceptance ( $M=3.75$ ) were 96.2% more likely to experience friendship dissolution at each time point, and adolescents who reported 3 *SD* above the mean levels of differences in peer acceptance ( $M=4.96$ ) were 144.4% more likely to experience friendship dissolution at each time point. Compared to adolescents with average differences in peer acceptance ( $M= 1.33$ ) adolescents who reported 1 *SD* below the mean levels of differences in peer acceptance ( $M=0.12$ ) were 48.1% less likely to experience friendship dissolution at each time point.

Figure 8 depicts the results for peer rejection. The odds of friendship dissolution were 61.3% higher for every 1 *SD* increase in differences on peer rejection ( $\beta = .478$ ,  $SE = .150$ ,  $p = .001$ ). Compared to adolescents with average differences in peer rejection ( $M= 1.14$ ) adolescents who reported 1 *SD* above the mean levels of differences in peer rejection ( $M=2.32$ ) were 61.3% more likely to experience friendship dissolution at each time point, adolescents who reported 2 *SD* above the mean levels of differences in peer rejection ( $M=3.50$ ) were 122.6% more likely to experience friendship dissolution at each time point, and adolescents who reported 3 *SD* above the mean levels of differences in peer rejection ( $M=4.68$ ) were 183.2% more likely to experience friendship dissolution at each time point.

Follow-up analyses included sex and grade as moderators. Tables 2 and 3 present the results. There were no statistically significant grade x dyadic differences interactions. There were statistically significant interactions between dyadic sex x maternal behavioral control ( $\beta = .400, SE = .175, p = .022$ ) and dyadic sex x mother-child relationship support ( $\beta = .624, SE = .211, p = .003$ ).

Figure 9 depicts the results for differences in maternal behavioral control. For girls, the odds of friendship dissolution were 53.9% higher for every 1 *SD* difference between friends ( $\beta = .431, SE = .201, p = .022$ ). For boys, the odds of friendship dissolution were 21.0% lower for every 1 *SD* difference between friends ( $\beta = -.236, SE = .216, p = .349$ ).

Compared to girls with average differences in maternal behavioral control ( $M=1.26$ ) girls who reported 1 *SD* above the mean levels of differences in maternal behavioral control ( $M=2.32$ ) were 53.9% more likely to experience friendship dissolution at each time point, girls who reported 2 *SD* above the mean levels of differences in maternal behavioral control ( $M=3.34$ ) were 107.7% more likely to experience friendship dissolution at each time point, and adolescents who reported 3 *SD* above the mean levels of differences in maternal behavioral control ( $M=4.36$ ) were 161.6% more likely to experience friendship dissolution at each time point.

Compared to boys with average differences in maternal behavioral control ( $M=1.34$ ) boys who reported 1 *SD* above the mean levels of differences in maternal behavioral control ( $M=1.34$ ) were 21.0% less likely to experience friendship dissolution at each time point, boys who reported 2 *SD* above the mean levels of differences in maternal behavioral control ( $M=1.34$ ) were 42.0% less likely to experience friendship

dissolution at each time point, and boys who reported 3 *SD* above the mean levels of differences in maternal behavioral control ( $M=1.34$ ) were 63.1% less likely to experience friendship dissolution at each time point.

Figure 10 depicts the results for differences in mother-child relationship support. For girls, the odds of friendship dissolution were 60.9% higher for every 1 *SD* difference between friends ( $\beta = .476, SE = .209, p = .023$ ). For boys, the odds of friendship dissolution were 32.8% lower for every 1 *SD* difference between friends ( $\beta = -.398, SE = .215, p = .03$ ).

Compared to girls with average differences in mother-child relationship support ( $M= 0.81$ ) girls who reported 1 *SD* above the mean levels of differences in mother-child relationship support ( $M=1.71$ ) were 60.9% more likely to experience friendship dissolution at each time point, girls who reported 2 *SD* above the mean levels of differences in mother-child relationship support ( $M=2.62$ ) were 121.9% more likely to experience friendship dissolution at each time point, and adolescents who reported 3 *SD* above the mean levels of differences in mother-child relationship support ( $M=3.53$ ) were 182.9% more likely to experience friendship dissolution at each time point.

Compared to boys with average differences in mother-child relationship support ( $M= 0.98$ ) boys who reported 1 *SD* above the mean levels of differences in mother-child relationship support ( $M=1.98$ ) were 32.8% less likely to experience friendship dissolution at each time point, boys who reported 2 *SD* above the mean levels of differences in mother-child relationship support ( $M=3.06$ ) were 65.7% less likely to experience friendship dissolution at each time point, and boys who reported 3 *SD* above the mean

levels of differences in mother-child relationship support ( $M=4.14$ ) were 98.5% less likely to experience friendship dissolution at each time point.

**Supplemental analyses.** Supplemental analyses were conducted in which friend nomination rank was used in place of number of friends as a potential confounding variable. Friendship rank has been found to predict friendship instability in prior studies at both the individual and dyadic level (Chan & Poulin, 2009). At the individual level results remained consistent. Results indicated that peer acceptance, household structure, and maternal psychological control were statistically significant as predictors of the occurrence and timing of friendship dissolution even with friendship rank as a potential confounding variable. Figure 11 depicts the odds ratios for the predictors for this supplemental individual model. Supplemental analyses based on the dyadic difference model remained consistent. Results indicated that differences between friends on mother-child relationship negativity, peer acceptance, peer rejection, and dyad sex were statistically significant predictors of the occurrence and timing of friendship dissolution. Figure 12 depicts the odds ratios for the predictors for this supplemental dyadic difference model. Statistically significant household structure by dyadic characteristic interactions or individual characteristic interactions did not arise at levels greater than chance. See Table 4 for full results for household structure interactions.

## DISCUSSION

The current study was designed to examine the degree to which maternal parenting practices and mother-child relationship quality predict friendship dissolution. New to this study is the examination of friend differences on maternal characteristics as predictors of friendship dissolution. Findings from separate models suggest that both individual parent characteristics and differences between friends on parent characteristics predict friendship stability. At the individual level, maternal psychological control was tied to friendship dissolution. Psychologically controlling mothers increased the odds of friendship loss. At the dyadic level, differences between friends in mother-child relationship negativity predicted friendship loss, such that greater differences increased the odds of friendship dissolution. In addition, differences between friends in mother-child relationship support and between friends in maternal behavioral control predicted friendship loss among girls, such that greater differences increased the odds of friendship dissolution. Unexpectedly, differences between friends in mother-child relationship support predicted lower levels friendship dissolution among boys.

The findings are noteworthy because the models also include peer status variables known to contribute to friendship instability, isolating effects to maternal predictors of friend loss. In terms of peer status variables, low accepted youth had elevated rates of friendship dissolution, as did dyads who differed in terms of peer acceptance and peer rejection. Removing the contribution of peer status variables removes overlap that may



exist between maternal characteristics and the child's standing in the peer social world, underscoring the unique contributions that mothers make to friend stability.

Most adolescent friendships are short-lived. In the present study, approximately 87% of adolescent friendships dissolved during a two-year period, from the beginning of one academic year to the end of the next academic year. This estimate compares with other studies that report that one-third of adolescent friendships dissolve over a five-month period within a single academic year (Chan & Poulin, 2009) and that approximately 75% dissolved over a period of 12 months (Hartl et al., 2015). New to the present study is the finding that rates of friendship dissolution varied over the course of a year. Friendships were most likely to end during the May to September period, indicating that summer holidays pose a special risk to friendships.

### **Testing the Hypothesis that Maternal Parenting Practices and Parent-Child Relationship Quality Predict Friendship Dissolution: Results from the Individual Model**

Results from the individual model confirmed the hypothesis that maternal psychological control contributes to friendship dissolution. Contrary to expectations, maternal behavioral control, mother-child relationship negativity, and mother-child relationship support were not associated with friendship dissolution.

#### ***Mother-Child Relationship Quality***

Strong evidence suggests that poor quality mother-child relationships have numerous negative outcomes for adolescent adjustment, including heightened externalizing problems and diminished self-esteem (Huey et al., 2020). Less clear, however, is the impact of parent-child relationship quality on friendship stability. I

hypothesized that mother-child relationship negativity would increase the rate of friendship dissolution, whereas mother-child relationship support would decrease it. Neither predicted friendship dissolution when included in a model with parenting practices.

Null findings should be interpreted with caution, but there are several reasons why characteristics of mother-child relationships may not be tied to friendship dissolution. Mother-child relationship quality may not uniquely predict peer outcomes because social support and negativity are moderately correlated with parenting practices, which could be the stronger predictor of friendship stability. Maternal psychological control, in particular, may capture most of the variance that ties mother-child negativity to peer relations. It is also possible that global characteristics of mother-child relationships obscure specific provisions of relationship quality that may predict friendship dissolution. A survey focused on features such as affective sharing or criticism might better capture qualities that anticipate peer problems. It would be helpful to collect reports about relationship quality from mothers themselves, which would bolster confidence in conclusions drawn from child reports.

### ***Maternal Parenting Practices***

Strong evidence suggests that maternal parenting practices directly influence child adjustment outcomes, such as conduct problems, school grades, and anxiety (Amato & Fowler, 2002) Less is known about the degree to which parenting practices shape friendship experiences. One previous longitudinal study of Finnish primary school children found that parent psychological control was associated with friendship dissolution for students across grades one to six, but parent behavioral control did not

predict friendship instability (Dickson et al., 2018). In keeping with these findings, I hypothesized that adolescents reporting high maternal psychological control would have fewer stable friendships than adolescents reporting low psychological control. Consistent with previous findings, my results indicated that maternal psychological control resulted in an increased chance of friendship dissolution. I did not expect to find that maternal behavioral control would increase the rate of friendship dissolution, and the results were consistent with this prediction.

Coercive parenting behaviors, such as psychological control, can negatively impact an adolescent's self-esteem and regulation skills. One recent study found that parent psychological control was linked to diminished adolescent self-worth, which gave rise to subsequent internalizing problems (Huey et al., 2020). In another study, parent derision, a form of psychological control, anticipated emotional regulation difficulties which in turn predicted a host of peer difficulties (Dickson et al., 2019). Concurrent studies have found that psychological control is tied to friendship-related difficulties for adolescents as well as children (Cummings, Keller, & Davies, 2005; Karavasilis, Doyle, & Markiewicz, 2003; Soenens, Vansteenkiste, Goossens, Duriez, & Niemiec, 2008). Children with emotional difficulties and low self-worth are not attractive interaction partners, which could explain why their friendships are short-lived. In a similar vein, children of psychologically controlling parents exhibit low levels of prosocial behaviors and empathy (Barber, 1996; Crick, 1996; Kaukiainen et al., 1999). It follows that children with psychologically controlling parents may have unstable friendships because their partners seek friends who are more rewarding.

Children with psychologically controlling parents may unintentionally imitate behaviors modeled by parents in interactions with friends. Given the voluntary nature of friendships, it is reasonable to assume that attempts at psychological control make it difficult to maintain positive exchanges, which can precipitate friend loss (Barber & Schluterman, 2008). Psychologically controlling behavior may also exacerbate existing conflict, creating distance between friends that ultimately results in dissolution.

### **Testing the Hypothesis that Maternal Parenting Practices and Parent-Child Relationship Quality Predict Friendship Dissolution: Results from Moderated Individual Models**

Another aim of the current study was to determine whether the predictors of friendship dissolution differed as a function of sex and grade. Patterns of association differed between boys and girls but not between primary and middle school students.

*Sex as a Moderator.* Prior research has not revealed consistent findings concerning sex differences in rates of friendship dissolution and few previous studies have considered whether factors that contribute to friendship instability differ for boys and girls (Chan & Poulin, 2009). Previous longitudinal studies revealed no sex differences in factors that predicted friendship dissolution (Hartl et al., 2015; Dickson, et al., 2018). Therefore, I did not make predictions concerning sex as a moderator. There were no sex differences in patterns of association from parenting practices or parent-child relationship quality to subsequent friendship dissolution. Accumulating evidence suggests that individual difference predictors of friendship dissolution do not vary as a function of sex.

*Grade as a Moderator.* I hypothesized that age differences would moderate the association between maternal parenting practices and friendship dissolution. I assumed that expectations of acceptable parent behavior would change as children grow older, supposing that parents would have less influence on friend dissolution as adolescents grow older. My results did not support this hypothesis. There were no interactions between grade and maternal parenting practices or between grade and mother-child relationship quality. I must interpret the null findings with caution. The current study may not have looked at a large enough age range to identify developmental differences in parent characteristics that predict friend dissolution. Had the current study looked at younger primary school children and older high school students, age group differences might have been easier to detect. It may also be the case that my study was underpowered to detect age group differences. Although there was adequate power to detect medium moderated effects, a larger sample is needed to capture small effects.

**Testing the Hypothesis that Differences Between Friends in Maternal Parenting Practices and Parent-Child Relationship Quality Predict Friendship Dissolution: Results from the Dyadic Model**

Results from the dyadic model confirmed the hypothesis that differences in mother child relationship negativity contribute to friendship dissolution. There were also moderated findings for friend differences on mother-child relationship support and friend differences on behavioral control, with associations that differed for boys and girls. Contrary to expectations, differences between friends in psychological control were not associated with friendship dissolution.

***Differences in Mother-Child Relationship Quality***

Evidence suggests that mother-child relationship quality can lead to negative outcomes, little is known of differences between dyads on mother-child relationship quality as a source of dissolution. My study is the first to investigate differences between friends in mother-child relationship quality as predictors of friendship dissolution. I hypothesized that both mother-child relationship support and mother-child relationship negativity would predict friendship dissolution. My results indicated that differences in mother-child relationship negativity predicted friendship dissolution. There were no main effect findings that differences between friends in mother-child relationship support predicted friendship dissolution, but there was a sex by dyadic difference interaction, which will be discussed in the next section.

There are several reasons why partner differences on mother-child relationship negativity might give rise to friendship instability. Friends who differ in terms of negativity with mothers may have different attitudes toward conflict and different strategies to resolving disagreement, based on skills and attitudes developed from interactions with mothers. Dissimilarity in mother-child negativity may also represent differences in willingness to disagree with authority figures. Nonconformity of this sort may bleed into peer relationships, creating conflict over behaviors and activities. Additionally, homes with conflict may be unpleasant to visit for friends who are not used to high levels of mother-child disagreement.

### ***Differences in Maternal Parenting Practices***

Conceptual models argue that friends who differ on personal characteristics such as aggression, popularity, and attractiveness are more likely to dissolve than friends who are similar (Dickson et al., 2018; Laursen, 2017; Laursen et al., 1996). The similarity-

attraction model provides a framework for why differences can lead to friendship dissolution: Similarity reflects compatibility, dissimilarity precedes conflict and avoidance. Although no previous studies have examined differences between friends on features of parenting, I hypothesized that dissimilarity on maternal psychological control and behavioral control would be related to friend instability. My results indicated that differences on maternal psychological control did not predict friendship dissolution. There were no main effect findings that differences between friends in maternal behavioral control predicted friendship dissolution, but there was a sex by dyadic difference interaction, which will be discussed in the next section.

Null findings should be interpreted cautiously, but there are several reasons why partner differences on maternal psychological control may not be tied to friendship dissolution. First, psychological control is not necessarily visible or comparable between adolescent peers. Some peers may notice (or be told about) psychological control and their effect on the child, but others may strive to keep matters private. Indeed, some youth never meet their friend's mothers so, absent disclosure, they have no means for comparing mother behaviors. Second, the present study involved self-reports of maternal parenting practices. This may not be representative differences in maternal parenting practices observed (or surmised) by peers or reported by mothers. I investigated the perceptions children had of their mothers, but perhaps paternal parenting practices influences on peer relations. Differences in maternal psychological control may also only be relevant to peer friendship stability at the extremes, such that the contrast between medium and high levels has a greater impact than the contrast between low and medium levels.

*Testing the Hypothesis that Differences Between Friends in Parenting and Parent-Child Relationship Quality Predict Friendship Dissolution: Results from Moderated Dyadic Models*

**Sex as a Moderator.** Little is known about whether there are sex differences in the degree to which dissimilarity predicts friendship instability. One previous longitudinal study revealed differences between boys and girls in the degree to which differences between friends on submissive behaviors anticipate friendship dissolution (Guimond et al., 2018). No previous studies have explored sex differences in mother-child relationship quality as a predictor of friendship instability. I also predicted an interaction between differences on maternal parenting practices and child sex. Differences were assumed to be a stronger predictor of dissolution for girls than for boys. My results supported the hypothesis for maternal behavioral control but not for maternal psychological control. Female friendships with larger differences in maternal behavioral control were associated with greater friendship dissolution, but other studies have revealed that differences between friends matter more to girls than boys. Girls, on average, are more sensitive to social situations than boys, and so girls may be more aware of differences in how their mothers treat them than boys are (Hall, 2011). Girls are also more likely to profit from mothers' emotional support than boys. I therefore hypothesized that mother-child relationship quality would be a stronger predictor of friendship dissolution for girls than boys. My results revealed a significant interaction between mother-child relationship support and sex, but not between mother-child relationship negativity and sex. Specifically, differences between friends in mother-child relationship support were a stronger predictor of dissolution for girls than for boys.



Findings that greater similarity between boys on mother-child relationship support anticipates more friendship dissolution were unexpected and counterintuitive. Post-hoc explanations for such findings should await replication.

**Grade as a Moderator.** Previous survival analyses examining dyadic differences as predictors of friendship dissolution have not examined age as a moderator (Guimond et al., 2018; Hartl et al., 2015). I hypothesized that the influence of behavioral control on friendship dissolution will vary due to a function of child age. I expected that differences in behavioral control would be a stronger predictor of friendship dissolution among older compared to younger participants because adolescents increasingly expect autonomy. With age, youth may increasingly resent friends whose mothers still tell them what to do. The findings did not support this hypothesis.

Several factors may explain the null findings. The current study only looked at participants who were friends in the same class, and therefore within the same grade. This may have limited my ability to identify larger differences between age ranges.

Additionally, the current study may not have investigated a large enough age range to identify the point at which differences in maternal parenting practices and mother-child relationship quality display significant results. Adolescents that are in high school may be more appropriate to detect potential differences in behavioral control.

### **Other Factors that Predict Friendship Dissolution: Peer Status and Demographic Characteristics**

Results from the individual and dyadic difference models confirmed the hypothesis that peer status is related to friend dissolution. Specifically, peer acceptance predicted dissolution such that greater differences increased the odds of friendship

dissolution. Contrary to expectations, peer rejection was not associated with friendship dissolution. In addition, differences between friends in peer acceptance and differences between friends in peer rejection predicted friendship dissolution. As differences increased, so too did rates of friend instability. Results from the dyadic and individual models also confirmed the hypothesis that household structure and dyad sex were related to friend dissolution. Results showed that adolescents who had two biological parents were less likely to experience friendship dissolution than adolescents who only had one or no biological parents in their home. Additionally, results showed that same-sex dyads were less likely to experience friendship dissolution compared to other-sex dyads.

### ***Peer Acceptance and Peer Rejection***

The focus of this project was maternal parenting practices and mother-child relationship qualities that predict friendship dissolution. I included peer status variables in these models because they are known to be confounded with parenting characteristic variables (Hartup & Stevens, 1997; Wojslawowicz Bowker et al., 2006). Although I included peer status variables in the analyses in order to bolster confidence in the findings of maternal contributions to friendship dissolution, the findings for peer status are important because they underscore their unique role in friendship stability, over and above the contributions of mothers.

I hypothesized that adolescents with high peer acceptance would predict lower friend dissolution, whereas adolescents with high peer rejection would predict friend dissolution. My results indicated that peer acceptance is associated with friendship dissolution whereas peer rejection is not. Previous studies have not found that peer acceptance or peer rejection anticipate friendship instability (Dickson et al., 2018; Hartl

et al., 2015), so findings from the current study diverge from other accounts for acceptance but not for rejection. One recent study indicates that supportive behaviors are better predictors of friendship dissolution than negative behaviors (Faur et al., 2023), which may explain why, in the present study, acceptance was a predictor of friend dissolution and rejection was not.

In terms of dyadic differences, conceptual models indicate that friends with differing levels of peer status should have higher levels of dissolution than friends with similar levels of peer status. One prior longitudinal study has found that differences in peer acceptance were associated with greater friendship instability but differences in rejection were not (Hartl, et al., 2015). My results revealed that differences in both forms of peer status predicted relationship dissolution, presumably because the more accepted and less rejected partners grow dissatisfied with the unequal social benefits provided by their less accepted and more rejected counterparts. Adolescents who are well-accepted exhibit better prosocial problem solving and social skills compared to their less accepted peers (Allen et al., 2005; Pakaslahi et al., 2002). Within a friendship, the less accepted individual is thought to rely on their more accepted friend for social navigation and support, placing a burden on the more accepted friend. This unequal social benefit is theorized to be the main driving force for peer acceptance differences. The same concept applies to differences in peer rejection, imposing more costs on the less rejected friend.

### ***Demographic Variables***

Conceptual models suggest that a lack of stability at home may be detrimental to peer outcomes (Gavazzi, 2013). I hypothesized that adolescents from divorced or remarried households would be more likely to experience dissolution compared to

adolescents from two biological parents' household. My results were consistent with this prediction. Evidence shows that indirect effects from mothers can influence friendships (Trzesniewski et al., 2006).

Sex differences in friend dissolution were/were not expected (Chan & Poulin, 2009). Consistent with previous findings, there were no main effect differences in friend dissolution; boy and girl friendships dissolved at similar rates. Replicating results from previous concurrent and longitudinal studies (Aboud, Mendelson, & Purdy, 2003; Lee et al., 2007; Hartl et al., 2015; Dickson et al., 2018), I found that other-sex friendships dissolved more frequently than same-sex friendships. During adolescence pressure to conform to same-sex peer structures remains a strong influence for friendships. Both girls and boys have different preferences from friendships (see Rose & Rudolph, 2006 for review). Boys prefer competition and physical activity, responding to stressors with humor. Girls prefer to communicate and cooperate with one another, responding to stressors with social support (Eder & Hallinan, 1978). It may also be the case that the rest of the peer group may not welcome a different-sex peer. In addition, romantic feelings and jealousy between burgeoning adolescents may arise to create conflict in other-sex friendships that leads to dissolution (Furman & Shaffer, 2011).

Conceptually it is suggested that how much a child values their mothers is an important influence. This is primarily found in romantic relationship literature (Lee, Swenson, & Niehuis, 2010). When children place greater importance on their relationships with mothers, the stability of their friendships should diminish. I hypothesized that adolescents who rank mothers as more important than peers will have greater levels of friendship dissolution because these affiliations may receive less time

and attention than those that are of primary importance. Differences in the relationship rank of maternal relationships were hypothesized to predict friendship turnover because they signal differences between friends in the ranking of their relationship. My results were inconsistent with this prediction. Null findings should be interpreted with caution.

Conceptually it is suggested that how much a child values their mother is an important influence. This is primarily found in romantic relationship literature (Lee, Swenson, & Niehuis, 2010). When children place greater importance on their relationships with mothers, the stability of their friendships should diminish. I hypothesized that adolescents who rank mothers as more important than peers will have greater levels of friendship dissolution because these affiliations may receive less time and attention than those that are of primary importance. Differences in the relationship rank of maternal relationships were hypothesized to predict friendship turnover because they signal differences between friends in the ranking of their relationship. My results were inconsistent with this prediction. Null findings should be interpreted with caution.

### **Limitations and Future Directions**

There are limitations to be considered in interpreting these findings. Every measure of maternal parenting and mother-child relationship quality used in the study is taken from the child's perspective rather than directly measuring characteristics of the mother. My measures of parent-child relationships may not be as comprehensive as a study that is able to measure both mother and child. The absence of these reports is a problem, as shared reporter variance may not accurately represent the true relationship between mother and child. Shared reporter variance may artificially increase associations, which would be reduced with mother reports. The predictor and outcomes variables come

from the same reporter, the adolescent, which might inflate associations by overstating the links between variables.

Within this study 18.18% of friendships were reconstituted after dissolving. In the present study, all friendships were considered equivalent. However, it is known that some friendships are considered more important than others (Hartup, 1996). Some friendships may be more prone to dissolve and reconstitute for this reason. The relative magnitude of maternal predictors may vary depending on the function of the importance of the friendship. In addition, some children had friends outside of class which were not accounted for in this study. These children who had friends outside of class may not be random. These individuals may be delinquents whose mothers may have withdrawn, not attempting to monitor or supervise them (Patterson et al., 1991).

The current study also lacks parental measures known to be associated with adolescent friendship dissolution. Maternal depression has been shown to have impacts on friendship dissolution (Dickson et al., 2018). Directly investigating mothers and fathers' level of depression, negative problems, and aggression may reveal more about the functions of parents that predict friendship dissolution in adolescents. Understanding both the direct and indirect effect of parents allows for a more thorough understanding of how parenting can lead to friendship dissolution in adolescence. In addition, I did not investigate children's perceptions of their fathers who could be more psychologically and behaviorally controlling.

Nearly all students in the study were ethnically Lithuanian which may have affected the generalizability of the results. Participants attended schools in a small, homogenous Northern European community. In Lithuania, child development resembles

that in other homogenous European communities (Kaniušonytė & Žukauskienė, 2018). However, some mothers in the current study were raised with Soviet-era values; these mothers prioritize obedience more than their Western European counterparts (Gorlizki & Khlevniuk, 2020). It is not clear how this parenting style may affect friendship dissolution in adolescents, or how it generalizes to other communities with more heterogeneous or urban contexts.

### **Conclusion**

Mothers are an important influence in the peer world even as their children age and grow more distant. This study confirms growing evidence that individual parent characteristics influence friendship dissolution and the first to show that differences between dyads in certain characteristics can influence peer relationships. Mothers influence their children's peer relationships more than they might believe.

Table 1

*Time 1 Bivariate Correlations, Means, and Standard Deviations for Dyadic Difference and Individual Characteristic Variables*

Time 1 Individual Variables	1	2	3	4	5	6	7	<i>M (SD)</i>
1. Maternal Behavioral Control	--	.274** [.194, .351]	.405** [.332, .473]	.284** [.204, .360]	.059 [-.370, .153]	.059 [-.026, .142]	.040 [-.044, .124]	3.63 (1.17)
2. Maternal Psychological Control	.074 [-.013, .161]	--	-.031 [-.115, .054]	.624** [.569, .673]	.112 [.017, .204]	.001 [-.082, .085]	.023 [-.060, .107]	2.05 (0.93)
3. Mother-Child Relationship Support	.300** [.219, .377]	.262** [.179, .340]	--	-.052 [-.136, .033]	-.048 [-.142, .046]	.124** [.041, .205]	-.003 [-.086, .080]	4.19 (0.79)
4. Mother-Child Relationship Negativity	.141** [.053, .226]	.442** [.369, .509]	.313** [.232, .389]	--	.082 [-.013, .175]	.013 [-.070, .097]	.003 [-.080, .087]	2.11 (0.93)
5. Relationship Rank	.029 [-.060, .117]	.111* [.024, .196]	.117** [.030, .202]	.134** [.047, .219]	--	.013 [-.070, .097]	.003 [-.080, .087]	2.54 (1.38)
6. Peer Acceptance	-.052 [-.138, .035]	.056 [-.030, .141]	-.054 [-.138, .031]	-.039 [-.124, .047]	-.002 [-.086, .082]	--	-.028 [-.008, .176]	2.73 (1.77)
7. Peer Rejection	.037 [-.050, .123]	-.028 [-.113, .058]	.024 [-.061, .108]	-.020 [-.106, .066]	-.021 [-.104, .063]	.052 [-.030, .133]	--	1.77 (1.81)
<i>M (SD)</i>	1.30 (1.02)	1.04 (0.86)	0.85 (0.99)	1.02 (0.86)	1.43 (1.19)	1.33 (1.21)	1.14 (1.18)	



*Notes.*  $N = 574$  participants in 627 friend dyads. Correlations and descriptive statistics for individual variables ( $N = 574$ ) are given above the diagonal. Correlations and descriptive statistics for dyadic difference scores ( $N = 627$  friend dyads) are given below the diagonal. Dyadic difference scores represent the absolute value of the difference between the scores of two friends. Higher values reflect greater dissimilarity. Behavioral Control, Psychological Control, Relationship Support, and Relationship Negativity were rated on a scale ranging from 1 (*never*) to 5 (*always*). Relationship Rank was rated on a scale ranging from 1 (most important) to 7 (least important). Peer rejection and peer acceptance were standardized peer nomination scores that ranged from 0 to 13. \* $p < .05$ ; \*\*  $p < .01$

Table 2

*Results from Discrete-Time Survival Analyses Describing the Dissolution of Friendships as a Function of Time 1 Individual*

*Characteristics and Time 1 Dyadic Differences: Sex as a Moderator*

Time 1 Interaction Variables	Individual Characteristics Model	Dyadic Difference Model
Maternal Behavioral Control x Sex	0.67 [0.29, 1.54] <i>p</i> =.46	1.49 [1.12, 1.99] <i>p</i> =.02
Maternal Psychological Control x Sex	1.49 [0.83, 2.68] <i>p</i> =.248	0.75 [0.52, 1.09] <i>p</i> =.21
Mother-child Relationship Support x Sex	0.74 [0.21, 2.63] <i>p</i> =.70	1.87 [1.32, 2.64] <i>p</i> =.01
Mother-child Relationship Negativity x Sex	.058 [0.30, 1.12] <i>p</i> =.17	0.84 [0.56, 1.25] <i>p</i> =.46
Relationship Rank x Sex	1.35 [0.97, 1.89] <i>p</i> =.13	1.12 [0.86, 1.45] <i>p</i> =.48
Peer Rejection x Sex	0.98 [0.79, 1.20] <i>p</i> =.85	1.08 [0.82, 1.43] <i>p</i> =.64
Peer Acceptance x Sex	0.93 [0.93, 1.37] <i>p</i> =.77	0.97 [0.71, 1.33] <i>p</i> =.87

*Notes.*  $N = 574$  participants in 627 friend dyads. Sex = 0 (*male*) or 1 (*female*). Estimates indicate odds ratios for predictors of dissolved friendships; 95% confidence intervals given in brackets.

Table 3

*Results from Discrete-Time Survival Analyses Describing the Dissolution of Friendships as a Function of Time 1 Individual*

*Characteristics and Time 1 Dyadic Differences: Grade as a Moderator*

Time 1 Interaction Variables	Individual Characteristics Model	Dyadic Difference Model
	0.71	0.86
Maternal Behavioral Control x Grade	[0.18, 2.77] <i>p</i> =.68	[0.63, 1.17] <i>p</i> =.53
	0.84	1.19
Maternal Psychological Control x Grade	[0.34, 2.10] <i>p</i> =.75	[0.83, 1.70] <i>p</i> =.74
	0.69	0.61
69 Mother-child Relationship Support x Grade	[0.21, 2.24] <i>p</i> =.61	[0.41, 0.91] <i>p</i> =.66
	0.90	1.38
Mother-child Relationship Negativity x Grade	[0.31, 2.65] <i>p</i> =.87	[0.98, 1.93] <i>p</i> =.157
	1.23	1.12
Relationship Rank x Grade	[0.95, 1.58] <i>p</i> =.17	[0.89, 1.39] <i>p</i> =.31
	0.59	0.76
Peer Rejection x Grade	[0.28, 1.25] <i>p</i> =.25	[0.61, 0.94] <i>p</i> =.36
	2.99	1.04
Peer Acceptance x Grade	[0.80, 11.15] <i>p</i> =.17	[0.85, 1.26] <i>p</i> =.21

*Notes.*  $N = 574$  participants in 627 friend dyads. Sex = 0 (*male*) or 1 (*female*). Grade ranged from 4<sup>th</sup> (10-11 years) to 7<sup>th</sup> (13-14 years). Estimates indicate odds ratios for predictors of dissolved friendships; 95% confidence intervals given in brackets. Covariances between predictors are included but are not depicted. \* $p < .05$ ; \*\*  $p < .01$ .

Table 4

*Results from Discrete-Time Survival Analyses Describing the Dissolution of Friendships as a Function of Time 1 Individual Characteristics and Time 1 Dyadic Differences: Household Structure as a Moderator*

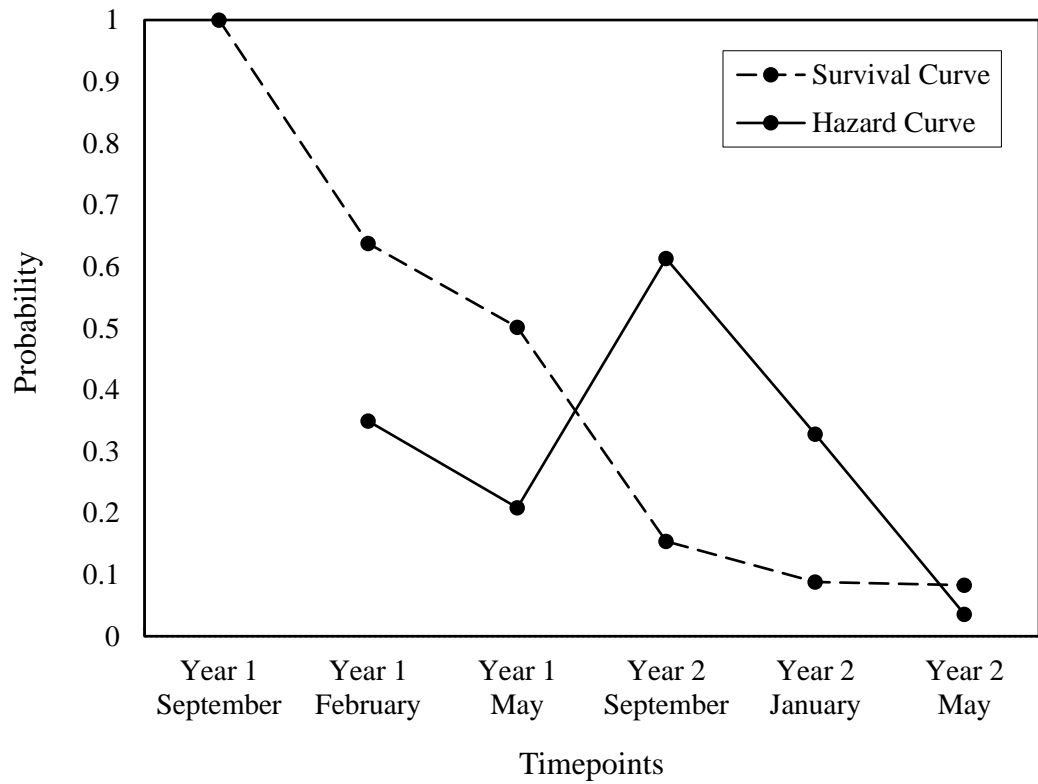
Time 1 Interaction Variables	Individual Characteristics Model	Dyadic Difference Model
Maternal Behavioral Control x Household Structure	1.30 [0.49, 3.41] <i>p</i> =.65	0.81 [0.53, 1.24] <i>p</i> =.43
Maternal Psychological Control x Household Structure	0.55 [0.19, 1.55] <i>p</i> =.34	1.22 [0.80, 1.84] <i>p</i> =.43
71 Mother-child Relationship Support x Household Structure	0.44 [0.17, 1.17] <i>p</i> =.17	0.53 [0.36, 0.76] <i>p</i> =.01
Mother-child Relationship Negativity x Household Structure	0.95 [0.41, 2.23] <i>p</i> =.93	1.45 [0.96, 2.19] <i>p</i> =.14
Relationship Rank x Household Structure	1.22 [0.94, 1.58] <i>p</i> =.20	1.18 [.50, 1.20] <i>p</i> =.421
Peer Rejection x Household Structure	1.19 [0.73, 1.94] <i>p</i> =.56	0.69 [0.52, 0.94] <i>p</i> =.05
Peer Acceptance x Household Structure	0.69 [0.37, 1.26] <i>p</i> =.31	1.06 [0.78, 1.44] <i>p</i> =.74

*Notes.*  $N = 574$  participants in 627 friend dyads. Sex = 0 (male) or 1 (female). Estimates indicate odds ratios for predictors of dissolved friendships; 95% confidence intervals given in brackets. Covariances between predictors are included but are not depicted.

\* $p < .05$ ; \*\*  $p < .01$ .

Figure 1

*Survival and Hazard Curves for the Dissolution of Time 1 Friendships.*



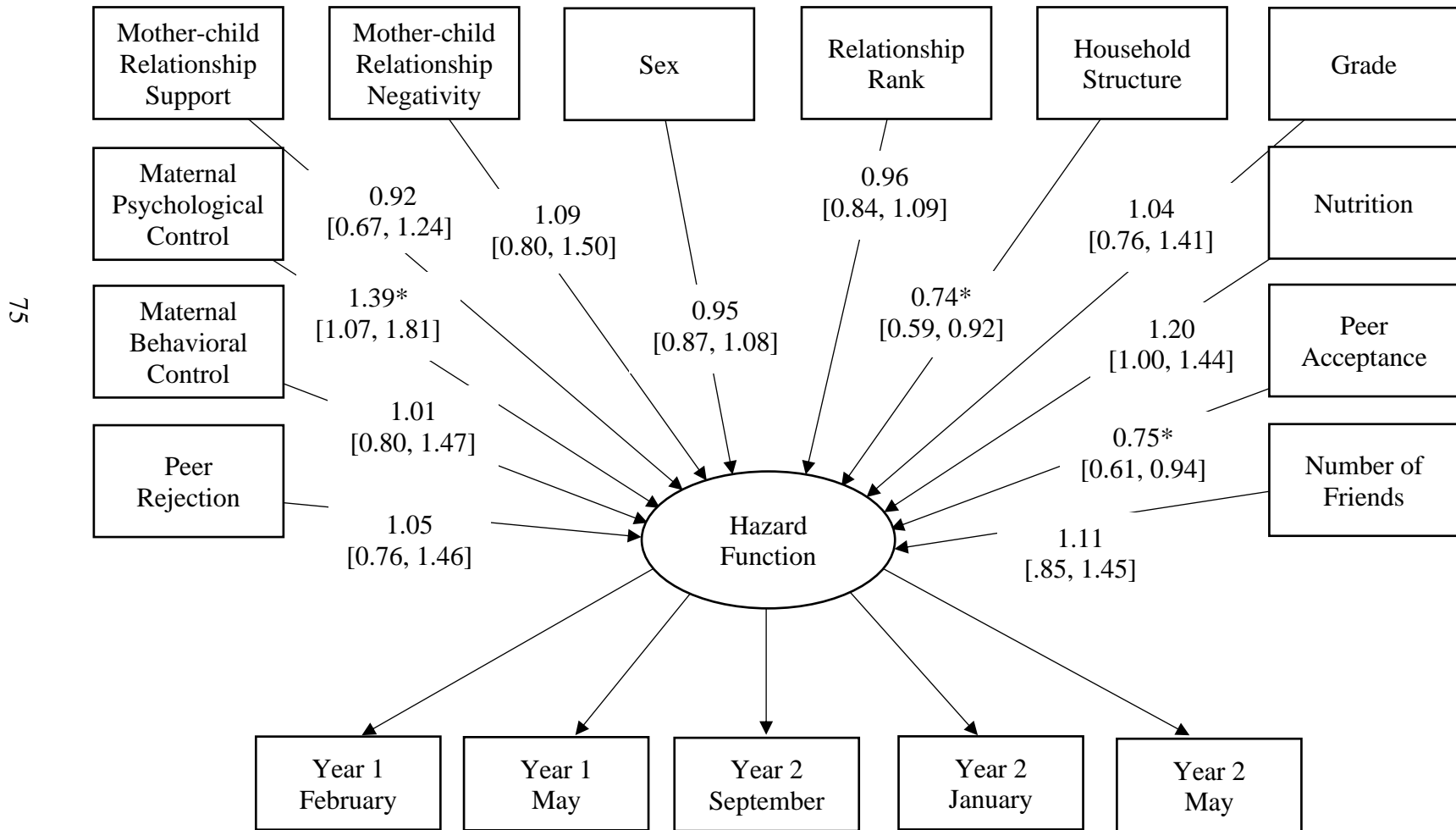


*Note.*  $N = 574$  participants in 627 friend dyads. The survival curve reflects the probability of friendship continuation at each time point. The hazard curve reflects the probability that a reciprocated Time 1 friendship will dissolve at each time point

Figure 2

Results from a Discrete-Time Survival Analysis Describing the Dissolution of Friendships as a Function of Time 1 Individual

Characteristics: Individual Model (Odds Ratios Presented)

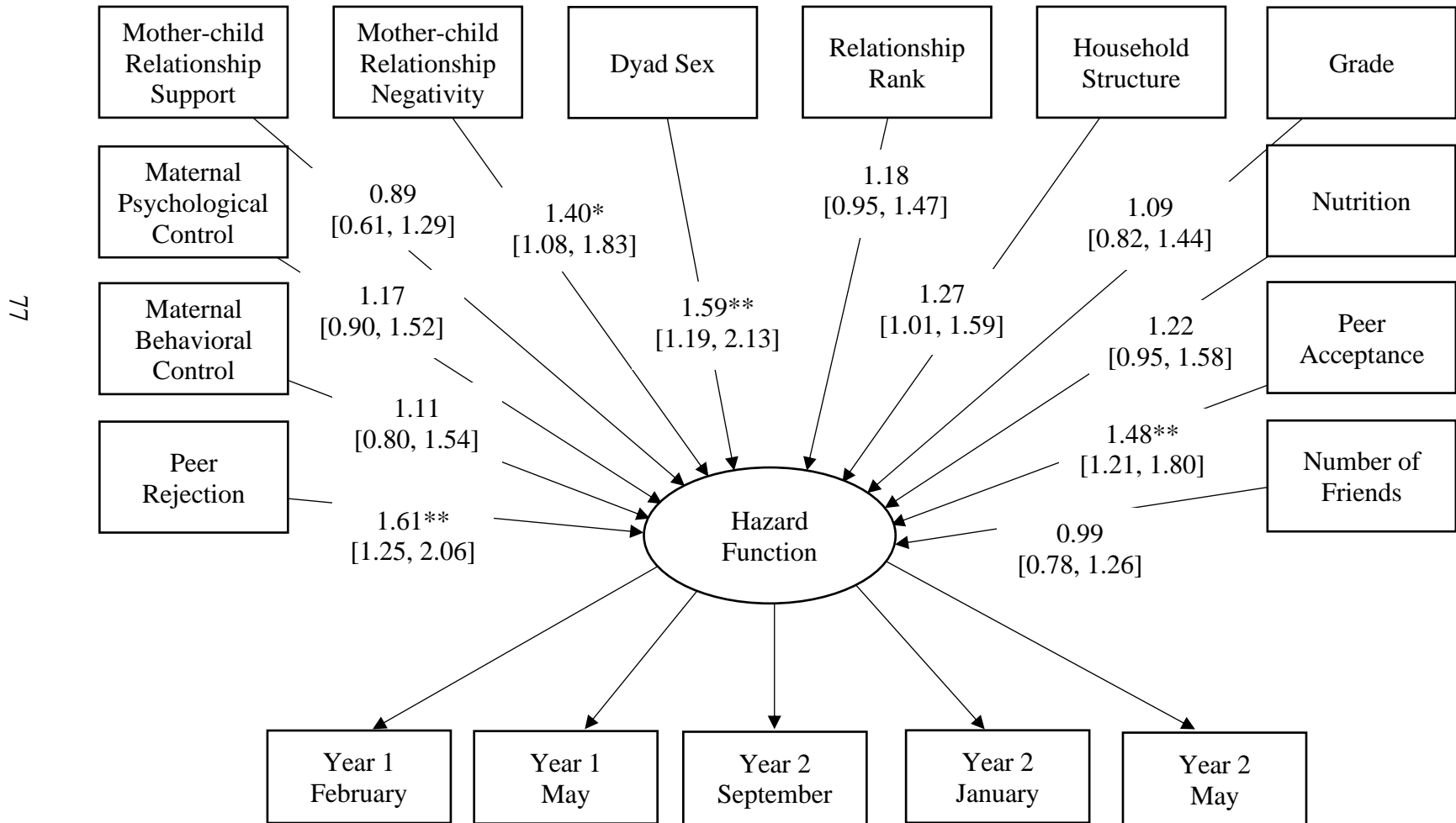


*Notes.*  $N=574$  participants in 627 friend dyads. Maternal Behavioral Control, Maternal Psychological Control, Mother-Child Relationship Support, and Mother-Child Relationship Negativity were rated on a scale ranging from 1 (*never*) to 5 (*always*). Relationship Rank was rated on a scale ranging from 1 (most important) to 7 (least important). Sex = 0 (*male*) or 1 (*female*). Peer Acceptance and Peer Rejection represent standardized peer nomination scores that ranged from 0 to 13. Number of friends describes the number of Time 1 friendships, ranging from 1 to 5. Household structure = 0 (*other*) or 1 (*Two biological parents*). Estimates indicate odds ratios for predictors of dissolved friendships; 95% confidence intervals given in brackets. Covariances between predictors are included but are not depicted.  $*p < .05$ ,  $**p < .01$ , two tailed.

Figure 3

Results from a Discrete-Time Survival Analysis Describing the Dissolution of Friendships as a Function of Time 1 Dyadic Difference

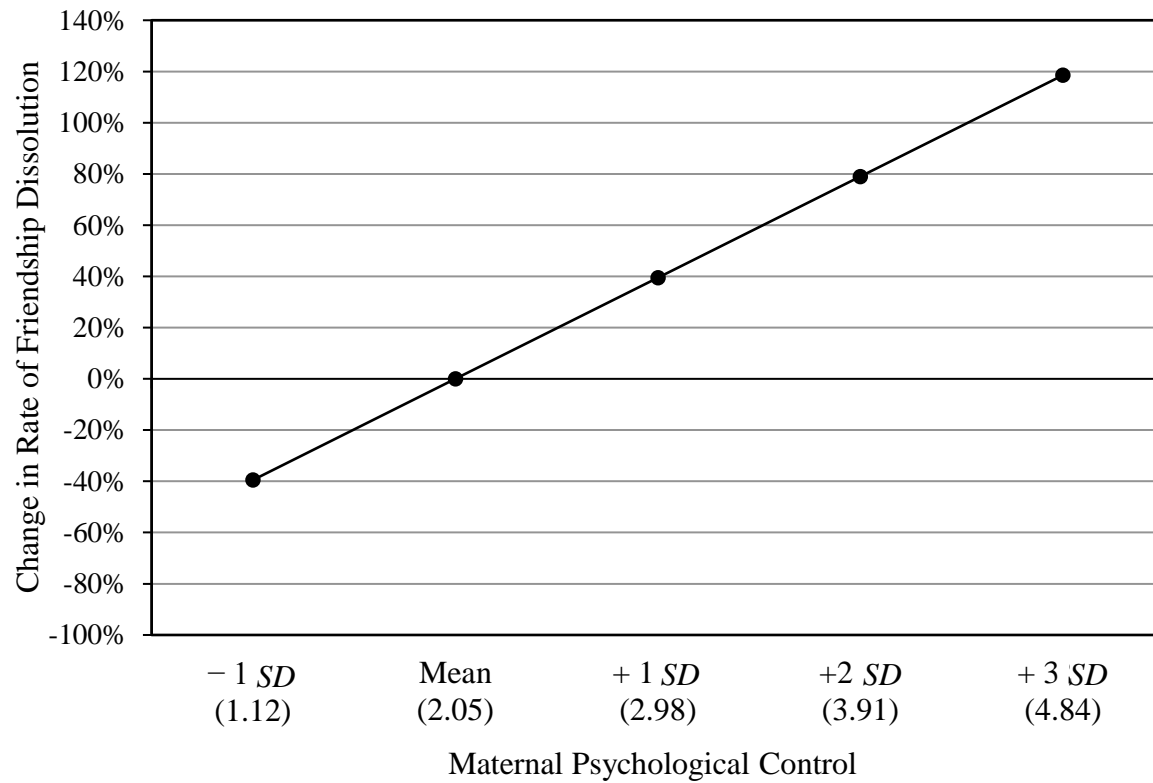
Characteristics: Dyadic Model (Odds Ratios Presented)



*Note.*  $N=574$  participants in 627 dyadic combinations, all dyadic combinations included friendships at Time 1. Maternal Behavioral Control, Maternal Psychological Control, Mother-Child Relationship Support, and Mother-Child Relationship Negativity were rated on a scale ranging from 1 (*never*) to 5 (*always*). Dyad sex 0 (*same-sex*) or 1 (*mixed-sex*). Grade ranged from 4<sup>th</sup> (10-11 years) to 7<sup>th</sup> (13-14 years). Dyadic differences in nutrition and home structure were scored as 0 (*same*) or 1 (*different*). Estimates indicate odds ratios for predictors of dissolved friendships; 95% confidence intervals given in brackets. Covariances between predictors are included but are not depicted.  $*p < .05$ ,  $**p < .01$ , two tailed.

Figure 4

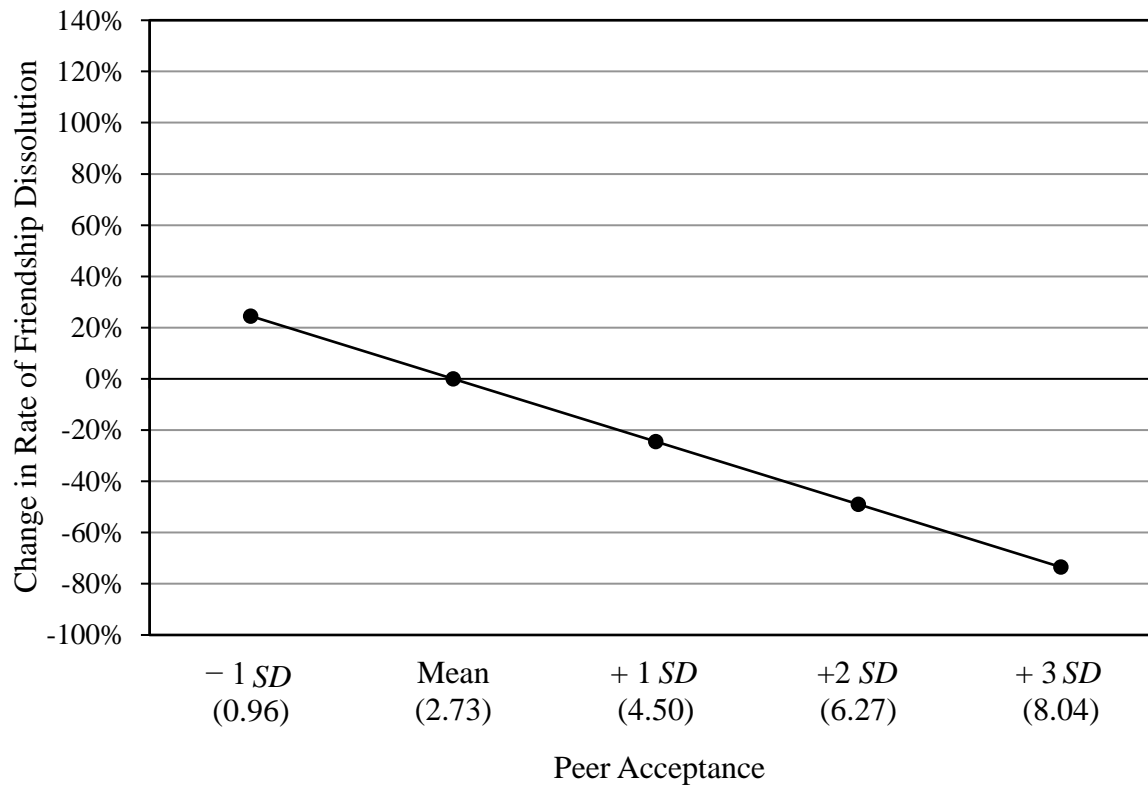
*Individual Maternal Psychological Control Predicting the Rate of Friendship Dissolution: As Maternal Psychological Control Increases Odds of Friend Dissolution Increase*



*Note.* Maternal Psychological Control was rated on a scale ranging from 1 (*never*) to 5 (*always*)

Figure 5

*Peer Acceptance the Rate of Friendship Dissolution: Individual Characteristics Model: As Peer Acceptance Increases Odds of Friend  
Dissolution Decrease*

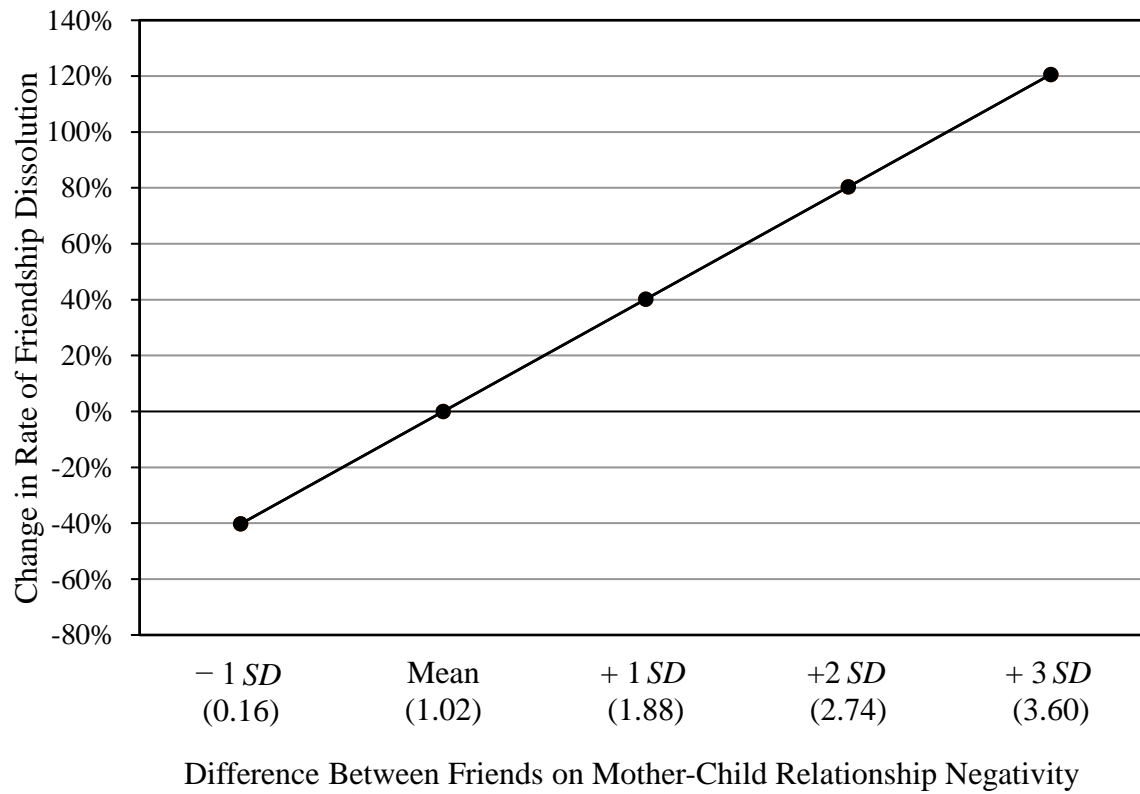


*Note.* Peer acceptance represent standardized peer nomination scores that ranged from 0 to 13.



Figure 6

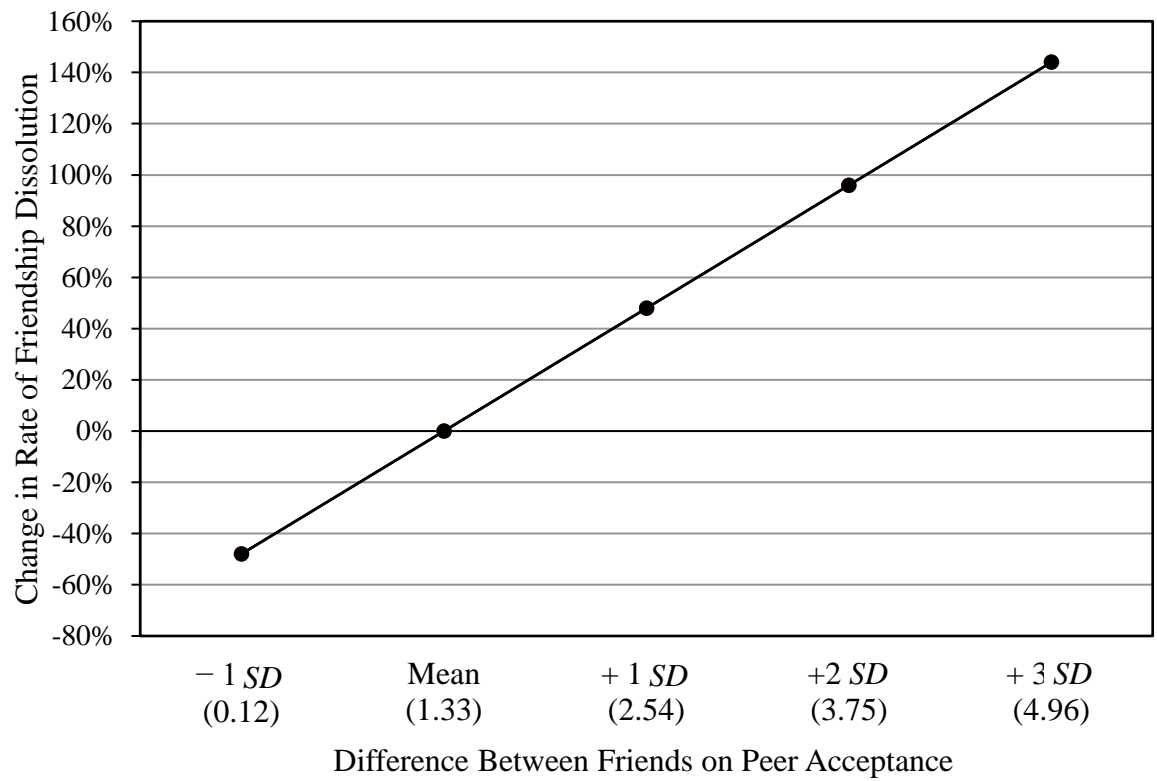
*Dyadic Differences in Maternal Relationship Negativity Predicting the Rate of Friendship Dissolution: As Differences between Maternal Relationship Negativity Increases the Odds of Friend Dissolution Increase*



*Note.* Mother-Child Relationship Negativity was rated on a scale ranging from 1 (never) to 5 (always). Differences were calculated by taking the absolute value difference between friends.

Figure 7

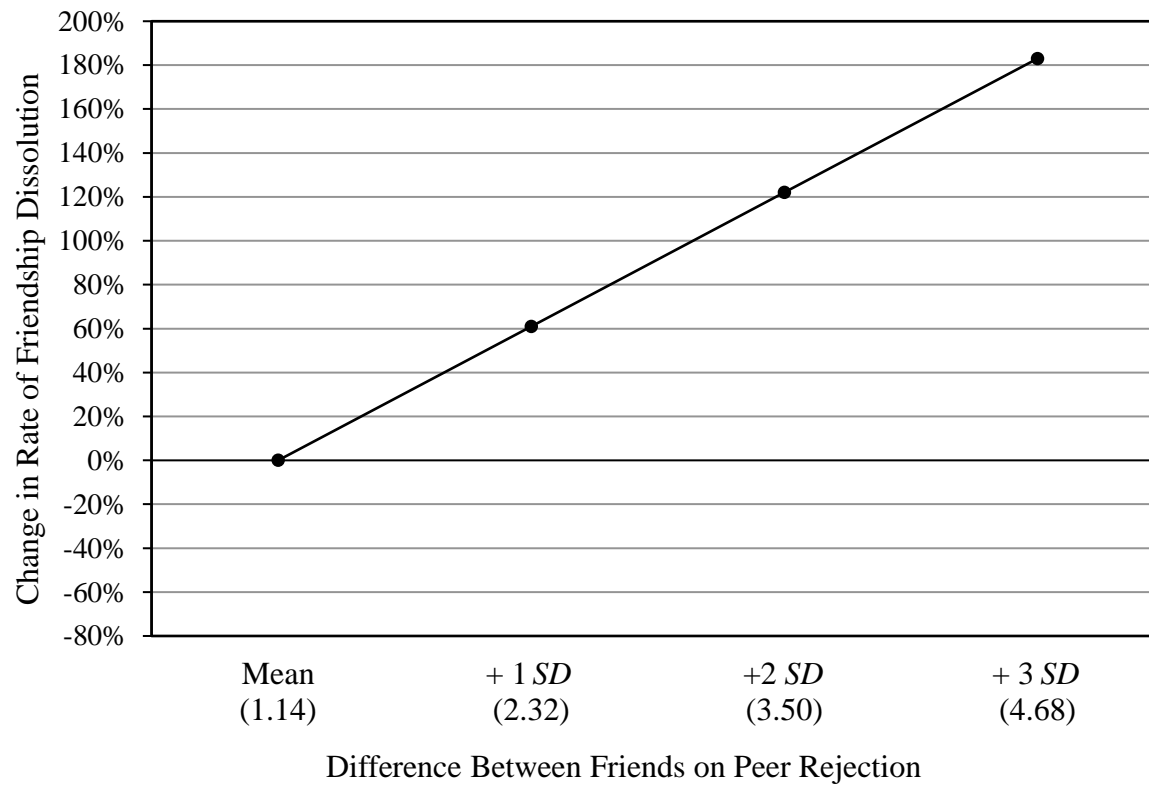
*Dyadic Differences in Peer Acceptance Predicting the Rate of Friendship Dissolution: As Differences between Peer Acceptance Increase Odds of Friend Dissolution Increase*



*Note.* Peer acceptance represent standardized peer nomination scores that ranged from 0 to 13. Differences were calculated by taking the absolute value difference between friends.

Figure 8

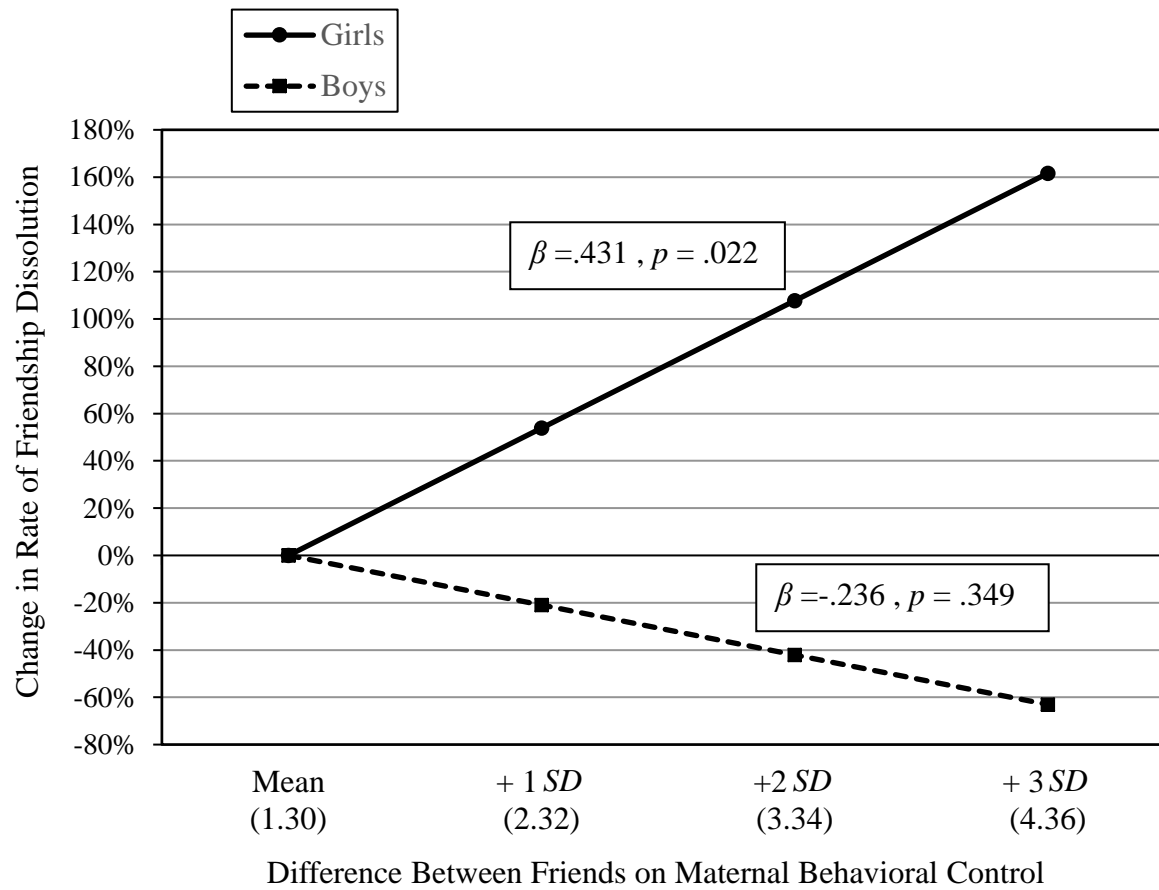
*Dyadic Differences in Peer Rejection Predicting the Rate of Friendship Dissolution*



*Note.* Peer rejection represent standardized peer nomination scores that ranged from 0 to 13. Differences were calculated by taking the absolute value difference between friends.

Figure 9

*Maternal Behavioral Control Predicting the Rate of Friendship Dissolution, Moderated by Sex Dyadic Differences Model*

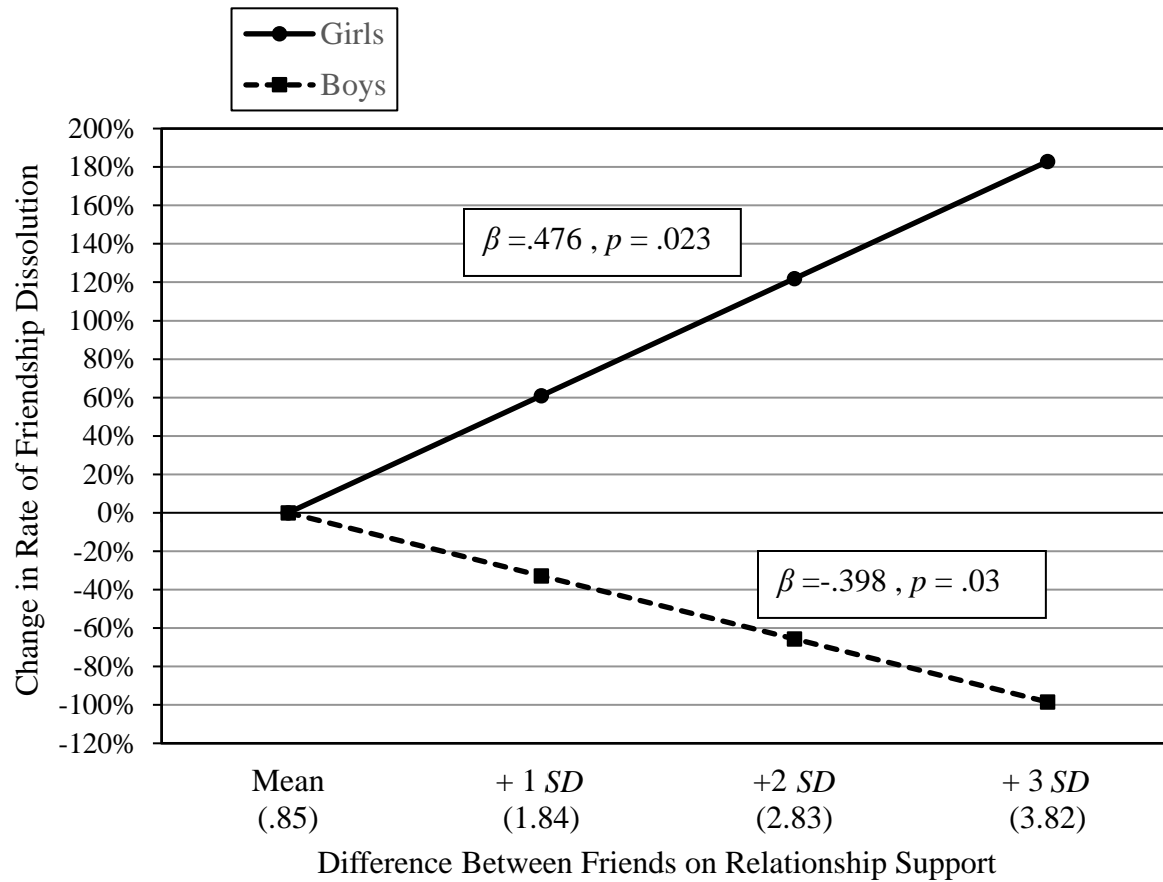


*Note.* Maternal Behavioral Control was rated on a scale ranging from 1 (never) to 5 (always). Differences were calculated by taking the absolute value difference between friends.



Figure 10

*Mother-Child Relationship Support Predicting the Rate of Friendship Dissolution, Moderated by Sex Dyadic Differences Model*

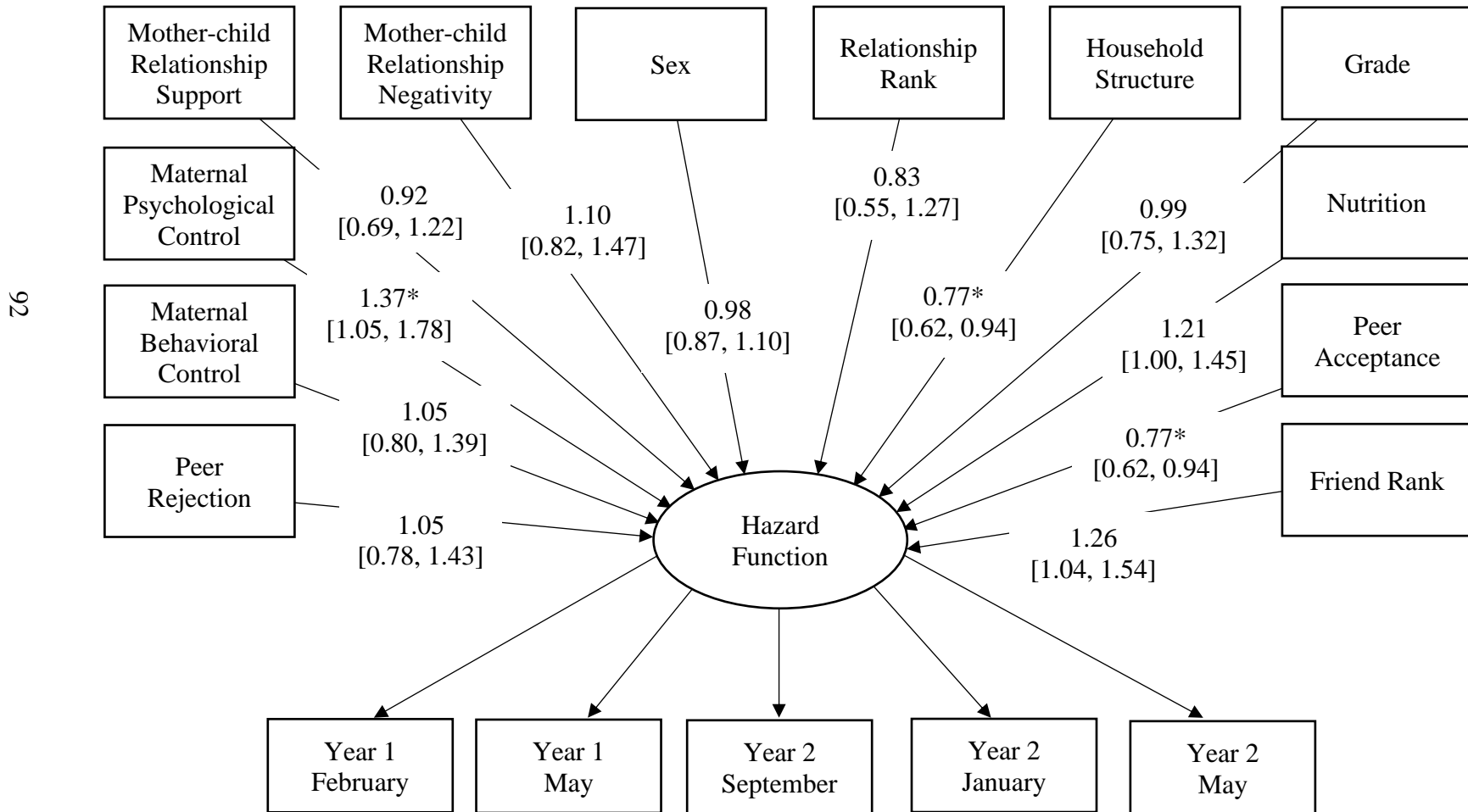


*Note.* Mother-Child Relationship Support was rated on a scale ranging from 1 (never) to 5 (always). Differences were calculated by taking the absolute value difference between friends.

Figure 11

Results from a Discrete-Time Survival Analysis Describing the Dissolution of Friendships as a Function of Time 1 Individual

Characteristics with Friend Rank: Individual Model (Odds Ratios Presented)

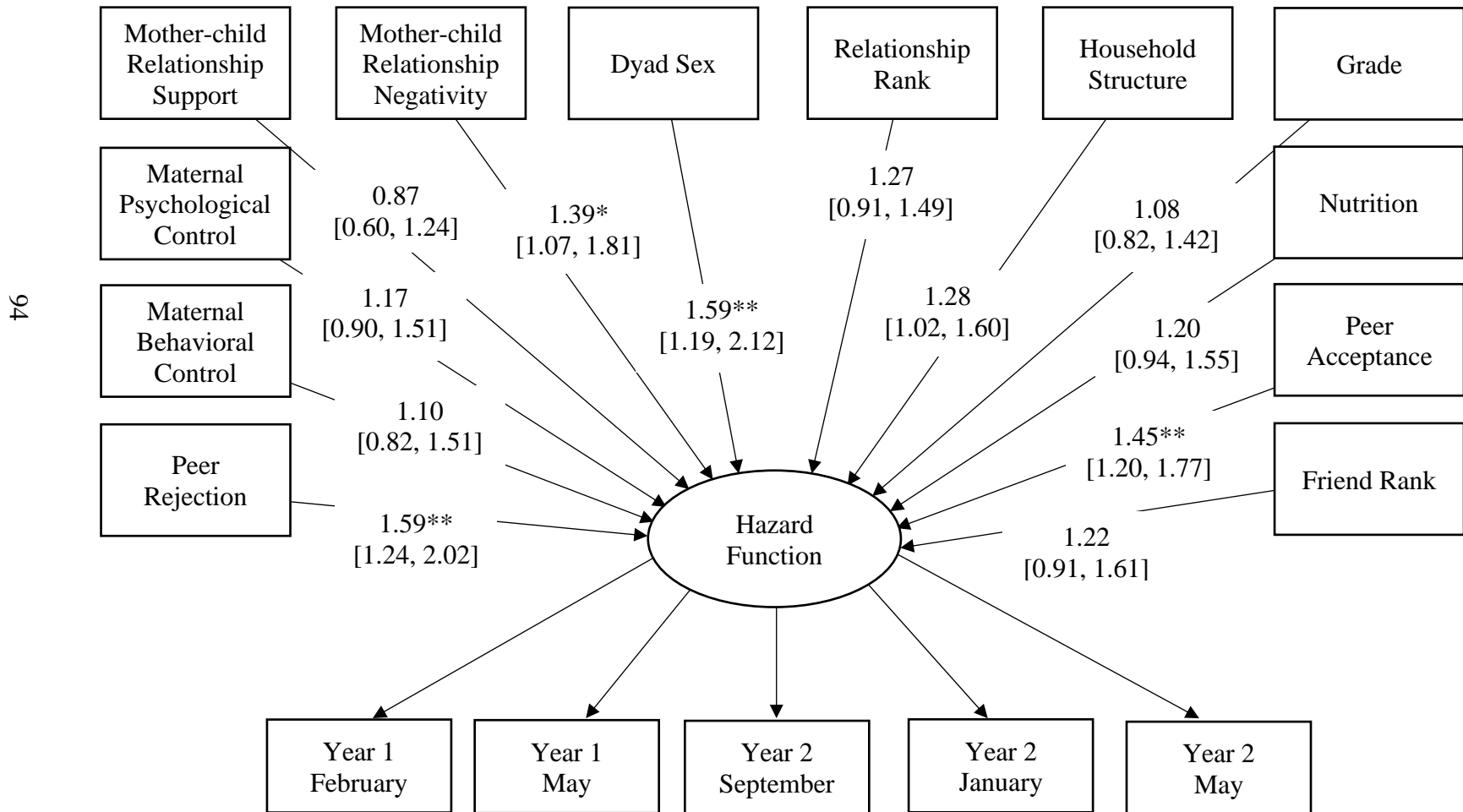


*Notes.*  $N=574$  participants in 627 friend dyads. Maternal Behavioral Control, Maternal Psychological Control, Mother-Child Relationship Support, and Mother-Child Relationship Negativity were rated on a scale ranging from 1 (*never*) to 5 (*always*). Relationship Rank was rated on a scale ranging from 1 (most important) to 7 (least important). Sex = 0 (*male*) or 1 (*female*). Peer Acceptance and Peer Rejection represent standardized peer nomination scores that ranged from 0 to 13. Number of friends describes the number of Time 1 friendships, ranging from 1 to 5. Household structure = 0 (*other*) or 1 (*Two biological parents*). Estimates indicate odds ratios for predictors of dissolved friendships; 95% confidence intervals given in brackets. Covariances between predictors are included but are not depicted.  $*p < .05$ ,  $**p < .01$ , two tailed.

Figure 12

Results from a Discrete-Time Survival Analysis Describing the Dissolution of Friendships as a Function of Time 1 Dyadic Difference

Characteristics with Friend Rank: Dyadic Model (Odds Ratios Presented)



*Note.*  $N=574$  participants in 627 dyadic combinations, all dyadic combinations included friendships at Time 1. Maternal Behavioral Control, Maternal Psychological Control, Mother-Child Relationship Support, and Mother-Child Relationship Negativity were rated on a scale ranging from 1 (*never*) to 5 (*always*). Dyad sex 0 (*same-sex*) or 1 (*mixed-sex*). Grade ranged from 4<sup>th</sup> (10-11 years) to 7<sup>th</sup> (13-14 years). Dyadic differences in nutrition and home structure were scored as 0 (*same*) or 1 (*different*). Estimates indicate odds ratios for predictors of dissolved friendships; 95% confidence intervals given in brackets. Covariances between predictors are included but are not depicted.  $*p < .05$ ,  $**p < .01$ , two tailed.

## APPENDICIES

## **Appendix A**

### **Peer Nomination Measures**

*Peer acceptance:* “Someone you like to spend time with.”

*Peer rejection:* Someone you don’t like to spend time with.”

*Friend nominations:* “Who are your friends?”



## Appendix B

### Mother-Child Relationship Quality and Maternal Parenting Practices

#### *Mother Psychological Control*

1. If I have hurt my mother's feelings, she stops talking to me until I please her
2. My mother brings up my past mistakes when she criticizes me
3. My mother changes the subject whenever I have something to say
4. My mother often interrupts me.
5. My mother is less friendly with me if I do not see things her way.

#### *Mother Behavioral Control*

1. Do you need to have your mother's permission to stay out late on a weekday evening?
2. Do you have to ask your mother before you can make plans to do something on a Saturday night?
3. Does your mother always make you tell her where you are at night, who you are with, and what you do together?

#### *Perceived Social Support*

1. My mother and I hang around and have fun together
2. My mother and I help each other out
3. My mother and I really care about each other
4. My mother and I go places and do enjoyable things together
5. My mother and I like or love each other
6. My mother treat me like I am admired and respected
7. My mother like or approve of the things I do
8. My mother treats me like I'm good at many things

#### *Perceived Relationship Negativity*

1. My mother and I disagree about many things
2. My mother and I argue with each other
3. My mother and I get annoyed with each other
4. My mother and I get mad or upset with each other

#### *Response format:*

Never Always  
1 -----2-----3-----4-----5

## **Appendix C**

### *Nutrition*

1. Do you get free nutrition in school? (1=Yes; 0=No)

### *Household structure*

1. Who do you share your home with? (1=With mother and father; 2=With mother and step-father; 3=With mother only; 4=With father step-mother; 5=With father only; 6=With guardian or grandparents)

### *Relationship Rank*

1. Please rank the listed relationships from the most important to least important (Best friends, mothers, fathers, siblings, grandparents, teachers, and romantic partners)

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