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PREDICTORS AND OUTCOMES ASSOCIATED WITH CHILDREN'S FRIENDSHIP STABILITY

by

Amanda Joy Murray

An Abstract

Of a thesis submitted in partial fulfillment
of the requirements for the Doctor of
Philosophy degree in Psychology
in the Graduate College of
The University of Iowa

December 2011

Thesis Supervisor: Professor John F. Knutson

ABSTRACT

Friendships are an important context of children's development, yet there is much still to be learned about these formative relationships. Friendship stability is one understudied feature of children's friendships. The aim of the present study was to investigate both predictors and outcomes associated with friendship stability to further elucidate the role that friendships play in shaping children's development. Potential predictors examined included age, gender, gender match, race, residence in a rural or urban community, number of moves in the last year, child externalizing behavior, friendship quality, and deficient parenting. Similarity between friends in terms of overt and relational aggression was also examined as a potential predictor of stability, and age was tested as a potential moderator of these relations. Additionally, a double mediational model was explored wherein child behavior was tested as a mediator of the link between deficient parenting and friendship quality and friendship quality was tested as mediator of the link between child behavior and friendship stability. Finally, in order to better understand the impact of stable friendships on children's adjustment, the present study tested friendship stability as a predictor of time 2 child externalizing behavior after controlling for time 1 externalizing behavior.

Participants were 176 children and primary caretakers enrolled in a 3-year longitudinal study examining the social development of children living in circumstances of social disadvantage. A multisource, multimethod approach was used to assess deficient parenting and children's externalizing behavior. Friendship stability was assessed over two waves approximately 12 months apart. Participating children provided data on their friendships, friendship quality, and friends' aggressive behavior. Children

were invited to report on friendships occurring in any setting and friendship stability was examined both in children's networks of 1-3 best friends and in children's relationships with one very best friend. Proposed models were tested using structural equation modeling.

The link between child externalizing behavior and friendship stability was supported, as was the link between deficient parenting and child externalizing behavior. Deficient parenting and friendship quality did not predict friendship stability. Thus, the role of child externalizing behavior as a mediator of the relation between deficient parenting and friendship stability was not supported by the present study, nor was the role of friendship quality as a mediator of the relation between child externalizing behavior and friendship stability. Age significantly predicted friendship stability with one very best friend and residence in a rural or urban community significantly predicted friendship stability within children's networks of 1-3 best friends. Friendship stability did not predict time 2 externalizing behavior. These results highlight the influence of child behavior, age, and contextual factors on friendship stability.

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CERTIFICATE OF APPROVAL

PH.D. THESIS

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To Andrew and Loreen Guilford (PCs),
and to Colleen Guilford and Lee Murray (VBFs).

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CHAPTER I

FRIENDSHIP STABILITY IN CHILDHOOD

Friendships are widely recognized as an important context of children's development, yet the current understanding of these relationships is far from comprehensive (Glick & Rose, 2011; Hartup 1996). Friendship stability is one understudied feature of friendships that merits further scrutiny (Bukowski, Newcomb, & Hartup, 1996; Poulin & Chan, 2010). The factors that influence friendship stability are poorly understood, as is the impact that stable friendships exert on childhood development. The aim of the present study was to investigate both predictors and outcomes associated with friendship stability.

Definitions and Methodological Considerations

Friendship stability is understood as the subsistence of a friendship over time. A recent review estimates that 35-40 studies contain data on friendship stability (Poulin & Chan, 2010). One likely reason for the limited research on friendship stability is that such research ideally involves collecting data at multiple time points. Among the studies of friendship stability that do exist, there is substantial methodological variation in the determination of both friendship and friendship stability.

Researchers have employed a variety of data collection techniques to assess friendship stability including questionnaires, nominations from a list, face-to-face interviews, telephone interviews, and observations in school settings (Poulin & Chan, 2010). Friendship stability has also been investigated over a variety of time spans, sometimes as brief as several weeks (Austin & Thomas, 1948; Blachman & Hinshaw, 2002; Cairns, Leung, Buchanan, & Cairns, 1995; Horrocks & Thompson, 1946; Parker & Seal, 1996) or several months (Chan & Poulin, 2007; Ellis & Zarbatany, 2007). More commonly, however, stability is considered over the course of one 9 month school year (Degirmencioglu, Urberg, Tolson, & Richard 1998). Friendship stability has been

examined between dyads, among small groups, and occasionally among "cliques" of friends—however, stability has most commonly been examined for up to 3 "best friends" named by participating children (Poulin & Chan, 2010). A few studies have allowed as many as 10 friendship nominations or solicited unlimited nominations of "close friends" (Chan & Poulin, 2007; Degirmencioglu et al., 1998).

Whether to restrict the number of friendship nominations is an interesting methodological question. Some have argued that allowing unlimited nominations minimizes the concern that stability might be underestimated because a participant names a different subset of friends at different time points (Berndt, Hawkins, & Hoyle, 1986; Poulin & Chan, 2010; Degirmencioglu et al., 1998). Child report on broad friendship networks has yielded some interesting results. One study soliciting unlimited friendship nominations from participants found that the number of friends in a child's friendship network inversely correlates with stability in that network (Chan & Poulin, 2007). The same finding was evident in a study asking participants to name up to 10 friends (Degirmenciogui et al., 1998). The authors of both these studies propose that larger friendship networks are less cohesive and that the friendships within them are of lower quality, leading to higher levels of instability. It is also possible that these results are due to individual differences in participants' definitions of—or perceptions of—friendship. While investigating friendship stability within children's broadly defined network of friends can provide useful data, so can restricting nominations to several close friends or "best" friends help to ensure that all participants are reporting on the stability of highly valued friendships within their relationship networks.

Researchers have operationalized friendships in a variety of ways. Some have emphasized the importance of mutuality in defining the existence of friendships, and reciprocal classroom nominations are the most common approach used to assess friendship stability (Bukowki & Hoza, 1989; Rubin, Wojslawowicz, Rose-Krasnor, Booth-LaForce, & Burgess, 1998). However, reciprocal classroom nominations are a

limitng approach as children's friendships are not restricted to their classrooms or their schools (Kiesner, Poulin, & Nicotra, 2003; Poulin & Chan, 2010; Schneider, Wiener, & Murphy, 1994). Another criticism of reciprocal nominations is that they may underestimate stability in friendships—in soliciting data from both members of the dyad and requiring mutual nominations, the odds that one member of the dyad might name a different subset of friends at a second assessment increases, which may lead to researchers presuming instability for friendships that are still intact (Cairns et al., 1995). Additionally, some researchers argue that unilateral friendships are an important facet of children's social networks and that it is crucial to consider children's perceptions of their friendships in examining links between friendships and adjustment (Aloise-Young, Graham, & Hansen, 1994; Cairns et al., 1995; Degirmenciogui et al., 1998; Furman 1996). Mounting evidence supports the notion that reciprocal and unilateral friendships are actually similar in many important respects, including children's perceptions of friendship quality in such relationships (Bowker, 2004; Kiesner, Cadinu, Poulin, & Bucci, 2002, Newcomb & Bagwell, 1995). A variety of approaches to operationalizing friendship thus appear to provide informative data on friendship stability and its potential impact on childhood development.

Friendship Stability and Risk and Resilience in Childhood

In considering the potential importance of research examining friendship stability, it is important to view friendship stability in the wider context of risk and resilience in childhood. A variety of perspectives have been applied to child development in adverse circumstances and our understanding of risk and resilience is constantly evolving. This body of research grew out of interest in the development of psychopathology, perhaps best represented by Garmezy's work on risk and protective factors in the etiology of schizophrenia (Garmezy, 1987; Garmezy, 1994). While previous research had primarily focused on risk and negative outcomes, Garmezy's work opened an important door by

considering factors that bolstered positive outcomes (Masten, 1999). This protective factors approach allows for a greater understanding of the impact of risk while also enhancing the possibility of identifying potentially fruitful targets for intervention and prevention. Friendships are one such promising protective factor.

The risk and resilience literature represents a unique combination of individual difference and developmental perspectives (Garmezy, 1994; Masten, 1999; Sroufe & Rutter, 1984). At the heart of risk and resilience research is the question of why individuals have idiosyncratic responses to comparable experiences. Consequently, a focus on individual variation in response to adverse events is imperative for building a meaningful science of risk and resilience (Rutter, 2006). While an individual difference approach is thus instrumental, it is not sufficient for a comprehensive understanding of risk and resilience. Developmental psychology provides a framework for identifying both adaptive and maladaptive deviations from normative development (Masten, 1999; Sroufe & Rutter, 1984). Additionally, because a number of positive experiences throughout development may foster resilience in the wake of potentially adverse life events, a lifespan trajectory approach to the science of risk and resilience is indicated (Rutter, 2006).

Masten (1999) defines resilience as adaptive functioning in spite of exposure to risk. Researchers have operationalized both adaptive functioning and risk in a variety of ways. At some level, these constructs are subjective and certainly influenced by the culture in which they are being defined. Adaptive functioning can be viewed as the absence of mental health concerns or as demonstrated competence in developmentally relevant tasks (Masten & Coatsworth, 1998). Werner (1995) noted that adaptive functioning in the face of risk can include general positive outcomes, sustained competence under stress, and recovery from trauma. Similarly, Rutter (2006) defines resilience as either the relative resistance to risk or the overcoming of stress and adversity. Resilience is viewed as a multidimensional construct, and heterogeneity in

adaptive functioning is to be expected across different domains (Luthar, Cicchetti, & Becker, 2000). Risk factors of interest in the resilience literature include poverty, biological vulnerabilities, stressful life transitions, war, and maltreatment (Masten & Coatsworth, 1998; Rutter, 2006). There is mounting evidence that controlled exposure to risk may foster resilience, activating adaptive traits which would be without major effect in the absence of environmental hazards (Rutter, 2006). Gene-environment interactions are also a topic of burgeoning interest, and continued collaboration between psychosocial and biological fields is likely to enhance our understanding of such interactions in relation to risk and resilience—in some instances, biological constraints may have enormous detrimental effects on an individual's capacity for resilience (Rutter, 2006). The methodological variation employed in studies of risk resilience can be viewed as an asset that will ultimately cultivate a better understanding of these important and consequential constructs (Luthar et al., 2000).

In addition to identifying potential risks and successful adaptation, risk and resilience research commonly includes a consideration of protective factors hypothesized to modify or buffer the impact of risk. Social relationships are one pivotal context of development, and consequently a frequent topic of interest in protective factors research (Reis, Collins, & Berscheid, 2000). In conjunction with individual differences such as a child's personality or temperament, both a supportive family environment and the availability of extrafamilial support have been highlighted as important potential contributors to resilience (Masten & Garmezy, 1985; Werner, 1989). Though the home environment and individual differences are major foci within resilience research, there is growing awareness that studies of risk and resilience should ideally take extrafamilial relationships into consideration in order to provide a more comprehensive understanding of factors that foster adaptive outtcomes in spite of exposure to risk (Cochran, Larner, Riley, Gunnarsson, & Henderson,1990).

Researchers such as Bronfenbrenner (1979) have emphasized the importance of an ecological perspective in considering risk and resilience in development. Such a perspective takes into account microsystems (including families, schools, neighborhoods, and friendship networks), mesosystems (the interactions between various microsystems), exosystems (factors which indirectly impact microsystems—for instance, how a parent's work environment impacts a child's family environment), macrosystems (factors such as culture, socioeconomic status, and race), and chronosystems (sociohistorical circumstances and patterns of environmental events over the life course). This ecological perspective views social networks not as static entities but as dynamic processes that vary as a function of both the environment and the interactions of individuals within that environment (Cochran et al., 1990).

Individual characteristics and a child's home environment have the potential to interact in a complex and multidirectional fashion with extrafamilial factors such as relationships with friends (Perkins & Jones, 2004). Such a multifaceted interaction is gradually being mapped by a growing "science of relationships" (Hinde, 1978; Reis et al., 2000). This line of research emphasizes the importance of relationship dimensions such as the content, diversity, quality, relative frequency, and patterning of interpersonal interactions; the reciprocity vs. complementarity that characterizes interpersonal interactions; and the intimacy, interpersonal congruency, and commitment between the participants. Relationship dynamics including social constraints, social learning, and positive and negative feedback all exert a powerful influence on how members of a relationship dyad shape the behavior of their partners (Reis et al., 2000).

In considering relationships between parents and children, the immense asymmetry in power and competence between adults and children is one likely reason that parental relationships play a unique role in childhood socialization (Maccoby, 1992). Additionally, such relationships are instrumental in shaping formative predictors of patterns of social interaction, such as attachment style in children (Bowlby, 1979;

Schneider, Atkinson, & Tardif, 2001). While parents are pivotal figures in the lives of children and play a key role in shaping social development, friends are also in a unique position to influence children's social development. As children grow older, friendships become a venue for increased choice and autonomy. Additionally, these relationships may serve as a crucial source of support and adaptive socialization when a child's relationships within the home environment are impoverished (Berndt, 1989; Furman & Buhrmeister, 1985).

A child's ability to get along with other children is a robust predictor of adaptive outcomes later in life (Hartup & Stevens, 1999). However, this ability says little about the causal influence that friendships have on development. A reasonable case can be made that friendships are simply confounded with factors such as social skills or self-image that predict both success in friendships and success later in life. Research examining the potential influence of friendships on functioning over time is thus essential to gain a better understanding of the role that friendships could play in fostering resilience in the face of threats to normative development. Such research would ideally examine markers of adaptive development at multiple time points. Additionally, a consideration of friendships themselves at multiple time points is warranted. While there is some evidence that having any good friend predicts adaptive outcomes (Wojslawowicz Bowker, Rubin, Burgess, Booth-LaForce, & Rose-Krasnor, 2006) there is much yet to be learned about the potential benefits of maintaining the same friendships over time.

In considering the potential influence of both friendships and factors in the home environment on risk and resilience, it is important to note that risk is cumulative and disproportionately represented among individuals with low socioeconomic status (Evans, 2003). Social problems are multiply determined and mounting evidence documents the long term deficits to physical and mental health that can result from exposure to chronic, cumulative risk factors (Evans, Kim, Ting, Tesher, & Shannis, 2007; Garmezy, 1994). A child subjected to neglect and violence may also suffer impairments in social

development and struggle to form friendships that could be a fruitful alternate source of support. Considering cumulative risk in a child's environment rather than single stressors in isolation is likely to provide a better understanding of risk and resilience in childhood (Garmezy, 1994). Similarly, while risk may be cumulative, protective factors may be conceptualized as additive. An adaptive outcome at one point in time may be an important predictor of later gains in adaptive functioning (Masten, 1999; Sameroff & Chandler, 1975, Werner, 1990). Both child behavior and the ability to maintain stable friendships are considered within this framework in the present study. That is, externalizing behavior is considered as both a potential predictor of friendship stability and a potential outcome associated with friendship stability. Further, the ability to maintain stable friendships is considered as both a marker of adaptive development and as a protective factor that influences future outcomes.

Masten (1999) asserts that three criteria should be articulated in studies of risk and resilience: the developmental threat, measures of successful adaptation, and potential protective factors. The literature evidences a robust relation between deficient parenting and child externalizing problems (Bolger & Patterson, 2001; Dubowitz, Papas, Black, & Starr, 2002; Kaufman & Cicchetti, 1989; Knutson, Degarmo, Koeppl, & Reid, 2005; Knutson, Degarmo, & Reid, 2004). Thus, a cumulative deficient parenting variable, which takes into account a variety of indicators of risk that may be present in the home environment, was selected the primary developmental threat under consideration in the present study. There is also evidence of a deleterious relation between externalizing problems and friendship stability (Blachman & Hinshaw, 2002; Ellis & Zarbatany, 2007; Hektner, August, & Realmuto, 2000; Johnson & Foster, 2005). Consequently, child externalizing problems were examined as an additional potential risk factor in the present study. Externalizing behavior was also examined as a key outcome variable, with successful adaptation operationalized as lower levels of externalizing behavior over time. Additionally, friendship stability is considered both as a marker of successful adaptation

and as a potential protective factor bolstering future behavioral outcomes. The study sample is a high risk sample, recruited on the basis of social disadvantage in order optimize clinical relevance (Cicchetti, Rogosch, Lynch, & Holt, 1993). This approach was selected to provide a better understanding of the complex relations between individual, familial, extrafamilial, and contextual factors that contribute to risk and resilience in childhood. By examining friendship stability as it relates to risk factors and behavioral outcomes, the present research aims to identify potential targets for intervention that could one day be utilized to help foster resilience in the lives of children at risk.

CHAPTER II

PREDICTORS ASSOCIATED WITH FRIENDSHIP STABILITY

Friendship, like any relationship, involves a complex interplay of factors including individual characteristics such as age, gender, culture, and behavior, interactional factors such as friendship quality, and external environmental factors that provide the context for the friendship.

Various individual characteristics have the potential to influence friendships and friendship stability. Several studies provide evidence that friendship stability varies with age, increasing as children grow older. Early research on friendship stability established a general trend of increasing friendship stability between the ages of 5 and 18 years (Horrocks & Buker, 1951; Thompson & Horrocks, 1947). Later work provides evidence that gains in friendship stability are not purely linear. Berndt and Hoyle (1985) found that children generally experienced increases in friendship stability between 1st and 4th grade (ages 6-10) but not between 4th and 8th grade (ages 9-14). Additionally, friendship stability appears to suffer in early adolescence and then continue to increase in later adolescence (Poulin & Chan, 2010). One explanation for this complex pattern of growth in friendship stability with age is provided by Sullivan (1953), who proposed a model wherein different social needs emerge during different stages of development—for instance, a desire for companionship emerges in childhood while s desire for intimacy emerges in adolescence. Additionally, early adolescence is characterized by intense transition and change, which may foster instability, while later adolescence is characterized by increased autonomy and choice, which may bolster stability (Poulin & Chan, 2010).

It is less clear how gender impacts friendship stability. Several studies provide evidence that gender does not play a significant role in predicting friendship stability (Benjamin, Schneider, Greenman, & Hum, 2001; Berndt & Hoyle, 1985; Bukowski &

Newcomb, 1984; Cairns et al., 1995; Epstein, 1986). However, one recent study of 6th and 7th grade students found that girls' friendships were more unstable than those of boys (Hardy, Bukowskiw, & Sippola, 2002). The authors of this study also argue that while Berndt and Hoyle (1985) did not believe their data established a consistent pattern of gender differences in friendship stability, their reported findings do, in fact, imply that boys experience greater stability in their friendships over time. The issue of whether significant gender differences in friendship stability exist deserves further attention.

A handful of studies have examined potential cultural differences in friendship stability. For instance, a study conducted with children in a middle class suburb of Toronto, Canada and a middle class suburb of Taipei, Taiwan found no ethnic differences in friendship stability (Benjamin et al., 2001). Another study, however, found that Italian children—especially females—experience greater friendship stability than Canadian children (Schneider, Fonzi, Tani, & Tomada, 1997). The question of whether race and ethnicity uniquely predict friendship stability among children residing in the same country, however, has not been explored.

The impact of different regional living circumstances on friendship stability has not been explored recently. However, a series of studies conducted in the United States in the 1940's found differences in friendship stability based on children's residence in urban or rural communities, providing evidence that children living in urban areas enjoy greater friendship stability than children living in rural areas (Thompson, & Horrocks, 1947; Horrocks, & Thompson, 1946). The nature of living circumstances in such settings has changed substantially in the past 6 decades and it is unclear whether these settings still exert a differential impact on friendship stability. Additionally, the impact of moves on friendship stability has never been explored. Because so many of children's friendships take place in the school or neighborhood context, relocation from one area to another is another potentially important predictor of friendship stability that merits consideration.

Several studies have examined the impact of child behavior on friendship stability. Beginning with the externalizing spectrum, a longitudinal study of the friendships of girls with ADHD in a five-week day camp setting found that an ADHD diagnosis did negatively impact friendship stability (Blachman & Hinshaw, 2002). Girls with Combined-type ADHD had trouble maintaining friendships from the beginning to middle of camp while girls with Inattentive-type ADHD had trouble maintaining friendships from the middle to end of camp. Girls with ADHD exhibited higher levels of conflict and relational aggression in their friendships, but links between these problems and friendship stability were not explored. There is evidence that antisocial adolescents experience more instability in their friendships (Dishion, Andrews, & Crosby, 1995). Several other studies provide support for the notion that aggressive behavior is a deterrent to friendship stability, though this effect appears to vary with age and type of aggression. Among 5th to 8th graders, there is evidence that overt aggression—direct verbal and physical attacks—predict friendship dissolution (Ellis & Zarbatany, 2007). Acts of relational aggression—aimed at damaging a victim's social status—did not predict friendship stability in this sample. Additionally, relational aggression actually appears to bolster perceived popularity among adolescents, but not younger children (Rose, Swenson, & Waller, 2004; Young, Boye, & Nelson 2006). As in adolescence, overt aggression appears to be problematic for friendships in middle-childhood. For instance, 7 year olds who exhibit high levels of overt aggression also appear to have difficulties maintaining friendships (Hektner, August, & Realmuto, 2000). For kindergarteners, however, teacher ratings and peer nominations of relational aggression, but not physical aggression, have been linked with friendship dissolution (Johnson & Foster, 2005). The fact that physical aggression is more normative in early childhood (NICHD, 2004) may partially explain such developmental differences in the impact of physical and relational aggression on friendship stability at different stages of development. Externalizing

behaviors do appear to exert a negative impact on friendship stability—however, the impact of overt and relational aggression appears to vary with age.

Findings concerning the impact of internalizing symptoms on friendship stability are mixed. Shy and withdrawn 5th graders do not appear to experience lower friendship stability with their best friends than nonaggressive controls (Rubin et al., 2006). The authors of this study report that shy children were more likely to have shy best friends and theorize that this shy-shy pairing may be detrimental for children, although this hypothesis was not explored. With regard to depressive symptomatology, one study conducted with 4th to 6th grade participants found no link between depressive symptoms and friendship stability (Brendgen, Vitaro, Turgeon, & Poulin, 2002). However, there is evidence that depressive symptoms predict poor friendship stability among 6th to 8th grade girls (Prinstein, Borelli, Cheah, Simon, & Aikins, 2005). Another recent study also found that depressive symptoms predicted friendship instability among early adolescents (Chan & Poulin, 2009). Taken together, these studies provide evidence that depressive symptoms begin to impair friendship stability as children transition into adolescence.

One important factor to consider in exploring the impact of individual characteristics on a friendship is the similarity between both members of the dyad. Similarity is an important factor in friend selection. A preference for same-gender friendships emerges in children as early as preschool (Maccoby, 1998). Children ages 7-8 demonstrate a preference for behavioral similarity in their mutual friendship nominations (Hektner, et al., 2000). One study of friend similarity among adolescents found that similarity was greatest for substance use, modest for academic orientation, and low for race (Hamm, 2000). Similarity between friends also appears to bolster friendship stability. For instance, friendships are more stable when members of the dyad share the same gender or ethnicity (Aboud, Mendelson, & Purdy, 2003; Lee, Howes, Chamberlain, 2007). Shared tastes and interests also appear to predict friendship stability (Austin & Thomas, 1948). Behavioral similarity is another important determinant of friendship

stability. Ellis and Zarbatany (2007) found that early adolescents' reciprocated same-sex friendships are more unstable when friends are dissimilar to each other in terms of their levels of relational aggression. Overtly aggressive children had difficulty remaining in a friendship regardless of their friends' aggressive behavior. As discussed earlier, there is evidence that the impact of overt and relational aggression on young people's friendships varies with age. It is possible that similarity in terms of overt aggression and relational aggression varies in its importance at different stages of development.

Friendship quality is another key feature of friendships (Hartup, 1996) and another important predictor of friendship stability. Friendship quality can be understood as the quality of the interaction between friends. This construct is conceptualized as having both positive and negative dimensions. Conflict, conflict resolution, closeness, companionship, helping, security, validation, caring, recreation, and intimate exchange are commonly studied friendship quality dimensions (Bukowski, Hoza, & Boivin, 1994; Parker & Asher, 1993). Friendships are considered high quality when they are characterized by higher levels of positive dimensions and lower levels of negative dimensions.

Early work regarding friendship quality and friendship stability found that conflict within the friendship was one commonly reported reason for friendship dissolution over a period of two weeks (Austin & Thomas, 1948). Another study found that children's descriptions of friendship features in the fall were predictive of friendship stability approximately six months later (Berndt, Hawkins, & Hoyle, 1986). Later work provides evidence that the friendship quality dimensions of closeness, security, and help predict friendship stability (Bukowski, Hoza, & Newcomb, 1994). Another study found that the provision of positive feedback and support predicted greater friendship stability while conflict between friends impaired friendship stability (Ladd, Kochenderfer, & Coleman, 1996). However, a study by Schneider et al. (1997) found no relation between conflict and friendship stability—only positive friendship features predicted future friendship

status. A study by Bowker (2004) yielded no connection at all between friendship quality and the stability of best friendships. Notably, the Bowker (2004) study was conducted with adolescents while the other studies on friendship quality and friendship stability cited above involved children between the ages of 4 and 11. Further research is warranted to clarify the role of friendship quality in fostering friendship stability.

There is also evidence that child behavior and friendship quality—two key predictors of friendship stability—are related. Friendship quality negatively correlates with child behavior problems such as anxiety, low self-esteem, and externalizing behavior (Cillessen, Jiang, West, Laszkowski, 2005; Fordham & Stevenson-Hinde, 1999). Though there is evidence supporting the connection between child behavior and friendship quality, the causal nature of this relation is unclear. While poor quality friendships likely exacerbate child behavior problems, problems with friendship quality are inherently interactive and must begin with problematic behavior on the part of one or both children involved in a friendship dyad. It is probable that behavior problems contribute to impaired friendship quality, which in turn increases the likelihood of friendship dissolution. Friendship quality may thus mediate the link between child behavior problems and friendship stability—a possibility which was not been explored in the existent literature.

A child's experiences in the home environment may also impact friendship stability, though no studies have directly examined the link between the home environment and children's friendship stability. Parenting practices could conceivably influence friendship stability in a variety of ways. Competent parenting fosters secure attachment in children, which in turn encourages healthier peer relations (McElwain, Booth-LaForce, Lansford, Wu, & Dyer, 2008; Schneider et al., 2001). Good parenting can also benefit children by buffering children from the negative influence of antisocial peers. For instance, there is evidence that high levels of parental monitoring predict the

dissolution of delinquent children's friendships with delinquent peers (Brendgen, Vitaro, & Bukowski, 2000).

While competent parenting may buffer children from risk, deficient parenting also has the potential to contribute to the termination of adaptive friendships. Though the impact of problems in the home environment on friendship stability has not been studied directly, there is robust evidence that troubled home environments predict both problematic child behavior and impaired friendship quality. The experience of harsh discipline and neglect, and conflict in the home has been linked with a wide range of behavior problems for children (Bolger & Patterson, 2001; Dubowitz et al., 2002; Grych, Jouriles, Swank, McDonald, & Norwood, 2000; Jaffee, Caspi, Moffitt, & Taylor, 2004; Kaufman & Cicchetti, 1989; Kitzman & Cohen 2003; Knutson et al., 2004; Knutson et al., 2005). There is also some evidence linking harsh discipline and neglect to impaired friendship quality (Lansford, Criss, Pettit, Dodge, & Bates, 2003).

Explanations for the link between risk factors in the home environment and behavior problems are varied. Some researches propose that potentially traumatic experiences, such as exposure to violence or the experience of harsh discipline, may lead to problems with emotion regulation that promote negative affect, anxiety, and aggression (Davies & Cummings, 1994). Social learning and social cognitive theories hold that experiences with harsh discipline, neglect, and parental conflict give children an opportunity to learn maladaptive social cognitions and maladaptive behaviors (Bandura, 1963; Pettit & Mize, 1993).

Given the evidence that interactions with parents impact both child behavior and friendship quality and the fact that both these constructs have the potential to impact friendship stability, it appears plausible that risk factors in the home environment may damage friendship stability by fostering both negative behavior patterns and poor friendship quality. Additionally, because child behavior problems are predictive of poor friendship quality, it is possible that a double mediational model may apply. Behavior

problems may mediate the link between deficient parenting and friendship quality while friendship quality mediates the link between child behavior problems and friendship stability, as proposed earlier in the manuscript.

CHAPTER III

OUTCOMES ASSOCIATED WITH FRIENDSHIP STABILITY

Studies examining the impact of stable friendships on child adjustment are particularly sparse. However, some information on the impact of stable friendships can be gleaned from studies examining outcomes associated with having or not having a friend at a single point in time. Friendships are widely assumed to encourage adaptive development (Hartup, 1996; Sullivan, 1953) and the research literature does provide some support for this assertion. For instance, children who have friends are more likely to be popular, to experience positive social interactions, to display altruism, and to exhibit fewer problems with externalizing behavior (Howes, 1988; Kupersmidt, Burchinal, & Patterson, 1995; Mannarino, 1976; McGuire & Weisz, 1982). Unfortunately, because many of the studies that examine the benefits of having a friend only provide cross-sectional data, it is difficult to make a case for the causal impact of friendships utilizing such data. Popular, socially competent, altruistic children are almost certainly at an advantage when it comes to the ability to form friendships. Friendship in these studies is as likely to be a sign of adaptive development as it is a cause. Further, longitudinal research that assesses changes in child behavior is required to better understand the potential impact of friendships on children's development.

In addition to the direct benefits of friendships, the role of friendships in buffering children from the negative impact of environmental stressors has also been examined in the literature. One such study found that problems in the home environment did not predict child behavior problems when children had more friends and high levels of peer acceptance (Criss, Pettit, Bates, Dodge, & Lapp, 2002). Unfortunately, this study did not control for child externalizing behavior at Time 1, so again it is difficult to distinguish whether friendships are a marker of adaptive development or a cause. Additionally, although friendships correlated with lower levels externalizing behavior in this study, the

existence of friendships was only assessed at Time 1. Consequently, it is unclear the role that friendship stability might play in protecting children from stressors, such as the experience of harsh discipline.

A few studies have directly investigated outcomes associated with stable friendships rather than the existence of a friendship at one point in time. These studies bring important insights to the impact of stable friendships on development. They also help to clarify how stable friendships may foster adaptive development. In considering how stable friendships might benefit children, several potential pathways present themselves. One possibility is that stable friendships are beneficial because they provide more opportunities for friends to influence each other. This social learning model has been evoked as an explanation for behavioral homogeneity among friends (Cohen, 1977). In accordance with this theory, the benefits provided by stable friendships should be strongly dependent on whether friends model adaptive or maladaptive behavior. Although the notion that stable friendships provide more opportunities for children to influence each other is compelling, several studies have shown that friendship stability does not appear to moderate the link between friends' behavior. In one study of 9th and 10th graders, friendship stability did not moderate the link between friends' prosocial behavior and participants' prosocial goal pursuit (Barry & Wentzel, 2006). Another study focused on the impact of stable friendships on cigarette and alcohol use among 6th, 8th, and 10th graders (Urberg, Degirmencioglu, & Pilgrim, 1997). Results indicated that friendships stability did not moderate the impact of peer influence. These studies provide evidence that stable friendships do not exert an impact on development by providing more opportunities for friends to model each other's behavior.

Another possibility is that having stable friendships is beneficial due to positive, supportive interactions with friends, which provide boons such as companionship and intimacy (Furman & Buhrmester, 1985). The provision of friendship quality dimensions such as security and companionship may contribute to children's adaptive development

by improving their self-image or giving them more opportunities develop their social skills. Indeed, high quality friendships are correlated with such benefits (Hartup & Stevens, 1999). Additionally, several longitudinal studies have shown that stable friendships predict adaptive outcomes including less disruptive behavior, higher grades and school involvement, and gains in peer acceptance (Berndt & Keefe, 1995; Drewy, & Clark, 1984). There is also evidence that adolescents who are unable to maintain any of their time 1 best friendships exhibit significant losses in appearance satisfaction at Time 2, 9-12 months later (Keefe & Berndt 1996). Though the causal conclusion to be drawn from these studies are somewhat limited as friendship and outcomes were sampled over the same time span, they do provide suggestive evidence for a relation between friendship stability and a variety of adaptive outcomes. An additional study sampling friendship stability at three time points and several indices of adjustment to school at waves 2 and 3 found that friendship stability predicted improvements in children's perceptions of school and school performance and decreases in anxiety and avoidance (Ladd, 1990).

It is conceivable that some of the benefits attributed to stable friendships are actually due to the fact that children with stable friendships aren't exposed to the experience of friendship loss—an experience that can be stressful (Berndt 1989). One investigation of friendship formation and dissolution found that children who rotated through numerous friendships during a 4 week summer camp were more likely to engage in socially inappropriate behaviors, such as being bossy, hitting, telling on others, ridiculing others, and not keeping secrets (Parker & Seal, 1996). It is possible that these maladaptive behaviors were exacerbated by the experience of friendship loss. However, it seems likely that the ability to maintain stable friendships is in fact a marker of better adjustment and fewer of the socially inappropriate behaviors. Moreover, one recent study found that having any friend was comparable to maintaining the same friendship over time in terms of protecting children from increases in peer victimization (Wojslawowicz Bowker et al., 2006). These findings imply that, at least where the experience of peer

victimization is concerned, the benefits of friendship appear to derive from the mere existence of a friendship rather than the avoidance of friendship dissolution. Additionally, it would be erroneous to assume that all friendship terminations have a negative net impact on development. Despite potential negative consequences associated with friendship termination, it is important to note that friendships themselves are not always beneficial. Low quality friendships and friendships with delinquent peers can actually foster maladaptive behavior (Berndt & Keefe, 1995; Brendgen, et al., 2000; Dishion & Dodge, 2005; Lansford, Criss, Pettit, Dodge, & Bates, 2003). Friendship dissolution, though potentially stressful, may sometimes be part of adaptive change in children's social networks.

CHAPTER IV

OVERVIEW OF THE PRESENT STUDY

The existing literature concerning friendship suffers from scant consideration of friendship stability, a lack of longitudinal research that examines changes in outcome variables over time, and infrequent examination of friendships that occur outside of school settings (Bukowski, et al., 1996; Poulin & Chan, 2010). Additionally, the potential link between problems in the home environment and friendship stability has never been examined. The present study aims to address these limitations while seeking a greater understanding of the predictors and outcomes associated with friendship stability.

The data on friendship stability utilized in the present study were provided by one member of the friend dyad. As noted in the introduction, researchers have emphasized the similarity between reciprocal and unilateral friendships (Bowker, 2004; Kiesner et al., 2002, Newcomb & Bagwell, 1995). Others have emphasized the importance of assessing unilateral friendships and children's perceptions of their friendships in addition to reciprocated friendships (Aloise-Young et al., 1994; Cairns et al, 1995; Degirmenciogui et al., 1998; Furman, 1996). Although collecting friendship data from only one member of the friendship dyad did not allow for a distinction between mutual and unilateral friendships, there is reason to believe that the data obtained from participanting children provided a relevant and informative perspective on these children's friendship networks. Additionally, the data on friendship stability obtained for the present study allowed for the inclusion of best friends who do not attend the participant child's current school. Such friendships form a substantial proportion of children's friendship networks, comprising approximately 20% of children's best friendships (Kupersmidt et al., 1995).

One primary aim of the present study was to examine potential predictors of friendship stability. There is evidence that demographic factors including age, gender,

race, and residence in rural or urban communities may predict friendship stability (Berndt & Hoyle, 1985; Hardy et al., 2002; Horrocks & Buker, 1951; Schneider et al., 1997; Thompson & Horrocks, 1947). Moves from one community to another may also impact friendship stability. These factors were conseuqently tested as potential predictors of friendship stability in the present sample.

The impact of child behavior on friendship stability also merits further examination. There is evidence that behaviors on the externalizing spectrum impair friendship stability (Blachman & Hinshaw, 2002; Ellis & Zarbatany, 2007; Hektner et al., 2000; Johnson & Foster, 2005). The present study thus tested whether friendship stability was predicted by a multi-method, multi-source index of child externalizing problems. There is also evidence that friendship quality predicts friendship stability, though findings have been mixed (Berndt et al., 1986; Bowker, 1994; Bukowski et al., 1994; Ladd et al., 1996; Schnieder et al., 1997). The present study consequently investigated the impact of friendship quality on friendship stability.

The present study also examined the contributions of children's experiences in the home environment to friendship stability. Parenting has been linked with other key predictors of friendship stability—child behavior and friendship quality—but has not itself been examined as a predictor of friendship stability (Bolger & Patterson, 2001; Dubowitz et al., 2002; Grych et al., 2000; Jaffee et al., 2004; Kaufman & Cicchetti, 1989; Kitzmann & Cohen, 2003; Knutson et al., 2004; Knutson et al., 2005). The present study investigated the relation between friendship stability and a multisource, multimethod index of deficient parenting. Additionally, given the fact that deficient parenting, child behavior, and friendship quality are all closely linked in a literature, a double mediational model was explored. Child behavior was tested as a mediator of the link between deficient parenting and friendship quality. Additionally, as the current literature provides evidence for a link between child behavior and friendship quality—two predictors of friendship stability (Fordham & Stevenson-Hinde, 1999; Cillessen et al., 2005)—the

present study examined whether friendship quality mediated the link between child behavior and friendship stability. Children's report of one very best friend's aggressive behavior was also included as a potential predictor of friendship quality.

Both gender match and behavioral homophily appear to foster friendship stability (Lee et al., 2007; Ellis & Zarbatany 2007). In the present study, gender match with one very best friend and within a child's network of 1-3 best friends was examined a potential predictor of friendship stability. Similarity between the participant child and one very best friend in terms of both overt and relational aggression was also examined as a potential predictor of stability. Additionally, because the literature provides evidence that relational aggression negatively impacts friendship stability in younger children, while overt aggression negatively impacts friendship stability in older children (Ellis & Zarbatany, 2007; Hektner et al., 2000; Johnson & Foster, 2005), age was tested as a moderator of the relation between friendship stability and similarity between friends in terms of both overt and relational aggression.

The second primary aim of this project was to investigate potential outcomes associated with friendship stability. Few studies have provided an assessment of behavioral outcomes associated with stable friendships over time. In order to better understand the impact of stable friendships on children's adjustment, the present study tested friendship stability as a predictor of time 2 child externalizing behavior after controlling for time 1 externalizing behavior.

A model representing the proposed relationships of interest is illustrated in Figure 1. This model was evaluated utilizing both the proportion of friendship stability in a child's network of 1-3 best friends over one year and a dichotomous variable representing friendship stability with one very best friend over one year. In summary, the primary questions of interest in the present study were as follows:

1) Do age, gender, race, urban or rural residence, and number of moves in the last year predict friendship stability?

2) Does externalizing behavior predict friendship stability?
3) Does friendship quality predict friendship stability?
4) Does deficient parenting predict friendship stability?
5) Is the impact of deficient parenting on friendship stability mediated by child behavior problems and friendship quality?
6) Does similarity between friends in terms of gender, relational aggression, and overt aggression predict friendship stability?
7) Is the impact of similarity in terms of overt and relational aggression on friendship stability moderated by age?
8) Does friendship stability predict time 2 child behavior after controlling for time 1 behavior?

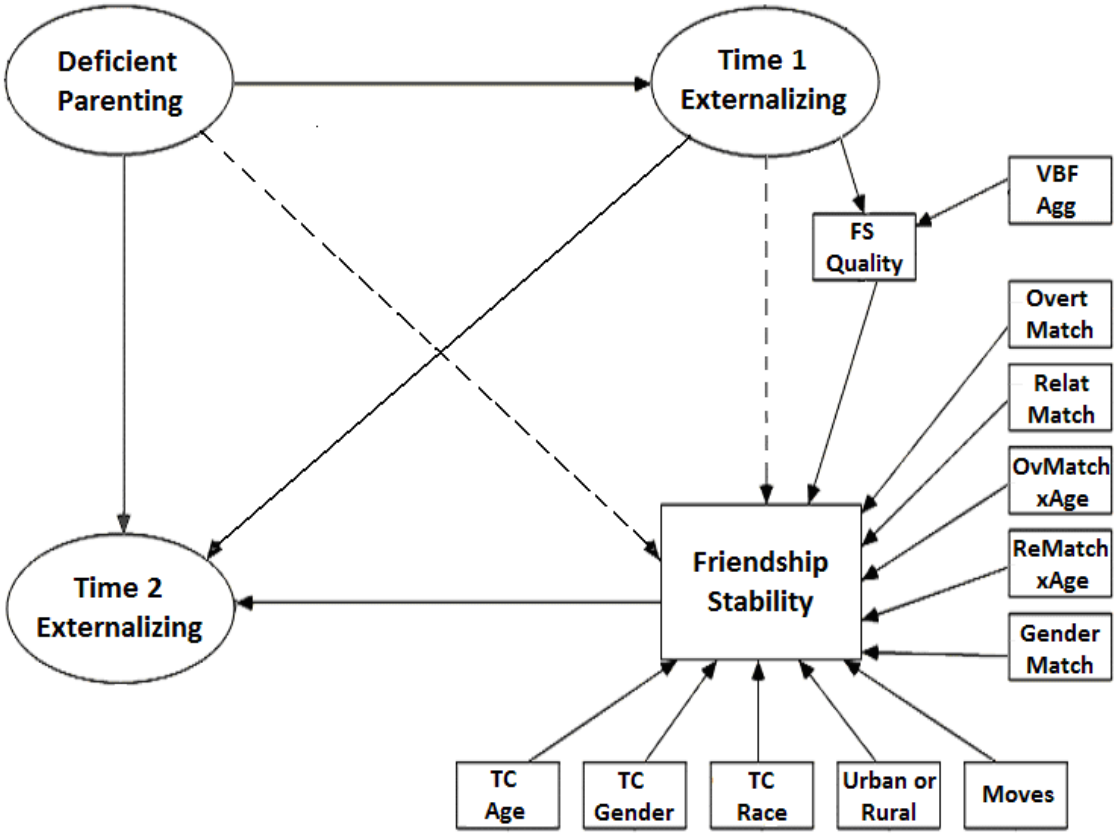

Figure 1. The proposed model of potential predictors and outcomes associated with friendship stability.

FS=Friendship; VBF=Very Best Friend; Overt Match=Overt Aggression Match; Relat Match=Relational Aggression Match.

CHAPTER V

METHOD

Participants

The sample for the present study consisted of 176 children enrolled in a 3-year longitudinal study examining the social development of children living in circumstances of social disadvantage. Primary caretakers also provided data for the present study—these caretakers were typically biological mothers, though 8 biological fathers and 4 biological grandmothers were also included in the analyses as primary caretakers. Families were recruited from sites in both South East Iowa and North Central Wisconsin. Children participating in the longitudinal parent study were between the ages of 4 and 8 at the time of enrollment. Data collection for the present study began after the parent project was already underway. Families from the parent study were included in the present study if the participating child completed relevant friendship measures at two consecutive waves after turning 6 years old. The participating child was also required to report having at least 1 best friend at time 1—two participants from the parent study were not included in the present study because they reported having no friends when friendship data were first collected. Of the 176 participating families, 142 provided complete data. Attrition from the parent project was most commonly due to family relocation. Previous analyses comparing participants who were lost to follow-up with those who continued to participate in the parent project revealed no significant differences ($\alpha > 0.10$) on demographic variables or potentially relevant variables including participant IQ levels and ratings of child behavior (Shay, 2009).

Primary caretakers' self-report of race was as follows: 73.9% Caucasian (non-Hispanic), 13.6% African American, 7.4% Hispanic, 3.4% multiracial, 1.1% Asian/Pacific islander, and 0.6% Native American. Primary caretakers' report of participating children's race was: 61.9% Caucasian (non-Hispanic), 13.6% African

American, 11.4% multiracial, 9.1% Hispanic, 2.3% Asian/Pacific islander, and 0.6% Native American. Primary caretakers' highest levels of education completed were: 4.5% no high school diploma, 32.3% high school diploma or GED, 42% some college, 10.8% associate's degree, and 10.2% bachelor's degree or higher. Household compositions were: 40.4% single parents, 32.4% two biological parents, 14.7% one biological parent and one stepparent, 9.1% one biological parent and one cohabitating partner, and 3.4% biological grandparents. In 72.2% of the households, there was at least one sibling living in the home. Participating children were 50.6% female and 49.4% male.

Procedure

To establish a socially disadvantaged sample, families were eligible to participate if they received any form of service from the Iowa Department of Human Services (IDHS) or the Oneida County (Wisconsin) Department of Social Services (DSS) during the three months preceding enrollment. Services could be economic (e.g. TANF) or health-care related (e.g. Medicaid), or families could have been recently identified as neglectful, physically abusive, or characterized by injurious domestic assault. This recruitment procedure was employed to facilitate the enrollment of children at high risk of experiencing deficient parenting and behavior problems (Cicchetti et al., 1993; Hinshaw, 1992). Children who had been in an out-of-home placement, or who were known to have been sexually abused were not eligible to participate in the study. Only one, randomly selected child per family was enrolled in order to prevent shared family variance from compromising findings. Participant recruitment and all procedures were conducted under the aegis of The University of Iowa IRB-02 and appropriate informed consent was obtained from all participants. Additionally, the project was conducted under a Certificate of Confidentiality issued by the office of the National Institute of Child Health and Human Development (NICHD). This certificate was obtained with the provision in the informed consent documents that the investigators would report to

relevant CPS agencies any circumstances that were deemed to occasion significant risk to the child. Such circumstances could be identified from child interviews, parent interviews, or direct observations.

At each of the recruitment sites, sentinel agencies identified potential participants and provided a list of eligible families at quarterly intervals. Eligible families first received a letter inviting them to participate in a voluntary research study on parenting and children's social development, for which they would be compensated $50 per session plus any out of pocket expenses (i.e., babysitting and transportation). Families who did not respond to the initial letter received a follow-up letter. When a family contacted the laboratory to express an interest in participating, an initial in-home appointment was arranged to obtain informed consent from the primary caretaker and to complete a structured In-Home Interview pertaining to the child's personal history, living circumstances, and some aspects of parenting. Observations regarding the participant child's living conditions were also made during this in-home appointment. All other measures were completed during 3-5 subsequent laboratory sessions in the initial year, the first of which was typically scheduled within 45 days of the in-home interview. During the first laboratory session the Reading and Spelling subtests of the Wide Range Achievement Test-III were administered to establish literacy for adult participants. Follow-up appointments were conducted 1 and 2 years after enrollment. Parents were compensated $50 per session and the participating child selected a toy valued at $10 or $10 cash at each session.

Data on deficient parenting were collected in wave 1 of the parent project. Friendship stability was assessed between waves 1 and 2 or waves 2 and 3. If the participating child completed relevant friendship measures at 3 waves, data from the most recent 2 waves were used. Child externalizing behavior was assessed at the same two waves as friendship stability.

Instruments

Deficient Parenting

Deficient parenting was assessed using seven indicators including direct observation, analog procedures, child report, and parent report. The first indicator of deficient parenting was a measure of harsh discipline completed by the primary caretaker. Ten items from the In-Home Interview were scored as 0 (did not occur) or 1 (has occurred) and then summed. Sample items include "red marks that lasted more than 24 hours from being spanked, bruises after being disciplined, broken bones from being disciplined, child required stitches after discipline, child spanked with object other than a hand (e.g., belt, paddle, tree branch, hair brush, other), unusual punishment (e.g., child tied up, lock in closet, physically restrained, required to do push-ups, etc.).

The second indicator of deficient parenting was the participating child's reported perceptions of harsh discipline employed by his or her caretakers. Questions for this measure are based on the harsh discipline items in the In-Home Interview completed by the primary caretaker (Knutson et al., 2004). Children's responses to 6 items concerning whether and how often the child is hit or spanked when in trouble are summed to assess child report of the presence of harsh physical discipline in the home.

The third indicator of deficient parenting was the primary caretaker's report on 11 items probing inconsistent or erratic discipline (Knutson et al., 2004). Sample items included "get angry when punishing child, parent does not follow through on punishment, threaten punishment to get child to do something."

The fourth and fifth indicators of deficient parenting came from primary caretaker responses on the on the Analog Parenting Task (APT; Zaidi, Knutson, & Mehm, 1989). The APT consists of 28 slides, each depicting a child engaging in a developmentally appropriate or developmentally inappropriate activity that could be irritating or concerning to a child's caretaker. Seven scenes depict a child engaged in destructive acts

(e.g., stepping on a calculator, tearing pages from a book), seven scenes depict dangerous activities (e.g., loading a revolver, hanging out the window of a moving car, sitting on the edge of a roof), and seven depict rule-violating behaviors (e.g., theft, drinking an alcoholic beverage, smoking). The remaining scenes include age-appropriate acts (e.g., spilling a jar of salsa, messy play with toys). In response to each scene, the parent is asked to imagine that he or she is charged with the responsibility of caring for the depicted child, to indicate her emotional reaction to the depicted child (e.g., anger, worry, annoyance, amusement), and to classify the depicted behavior (e.g., sloppy, destructive, dangerous, fine). After rating and classifying the depicted behavior, the participant is asked to select, in a closed-set format, the disciplinary response she would use if she were attempting to alter the child's behavior. Disciplinary choices include such acts as ignoring, verbal reprimands, restricting of privileges, spanking, striking other than spanking, and striking with objects. Although the more severe acts are potentially injurious, the possible injurious consequences of the acts are not specified in the response choices. After selecting a disciplinary strategy, participants were asked to indicate how many times they would permit the child to engage in the depicted behavior before changing their disciplinary response. If participants indicated that they would change their disciplinary tactic, they were asked to indicate what that next disciplinary alternative would be.

There are three primary measures obtained from the APT. The first is the frequency with which the primary caretaker's initial disciplinary choice involved the use of physical discipline. The second is the use of escalated discipline as described by Knutson and Bower (1994) based on the notion of escalated discipline advanced by Patterson and Reid (1984). Escalated discipline is a circumstance where the participant shifts from a nonphysical form of discipline to physical discipline if the depicted child were to persist in the displayed behavior. Escalated discipline can also occur when the participant shifts from minor physical discipline (e.g., spanking) to potentially injurious

discipline (e.g., striking with an object) within a scene. Total physical responses and total escalated responses were combined to create an APT Discipline factor score. Based on the work of Greenwald, Bank, Reid, and Knutson (1997) and Averill's (1982) work on normative and nonnormative anger experiences, an APT Anger score was also derived from the APT. This APT Anger score was calculated as the total number of scenes that evoked an anger response from the primary caretaker.

The sixth indicator of deficient parenting was a measure of hostile primary caretaker behaviors directed at the participating child during a structured interaction with the participating child. Interactions were conducted in rooms outfitted to resemble a typical living room setting. The task began with a communication test in which the child first plays an unfamiliar (i.e., commercially unpopular) age-appropriate board game with a research assistant. During that time, the parent was completing a questionnaire on child behavior issues in an adjacent room. After the child and research assistant played the game for 5 minutes, the parent was brought to the room and left alone with the child with the instruction to learn the details of the game from the child. After 5 minutes, the child was removed from the room, and the research assistant interviewed the primary caretaker to determine how successfully he or she was able to obtain information from the child. The second component of the laboratory interaction was a social problem-solving task where primary caretakers were asked to have a discussion with their child about how they would respond to one of three randomly selected hypothetical scenarios (e.g., preparing for the visit of another family with a child who is disliked by the participant child). The third component involved the primary caretaker leading a 5 minute discussion with their child regarding one of the child behavior issues identified by the primary caretaker on the questionnaire completed earlier. Fourth, primary caretakers and children engaged in free play for 10 minutes. Primary caretakers were then instructed to engage the child in a game of their choosing for an additional 10 minutes. Finally, primary caretakers and

children were given an opportunity to clean up the play materials together. Laboratory tasks were recorded using a remote control dome camera.

Videotapes from this task were coded by a professional team of behavior coders at Oregon Social Learning Center (OSLC) using the Family and Peer Process Code (FPPC; Stubbs, Crosby, Forgatch, & Capaldi, 1998). The FPPC Provides a real-time assessment of virtually all verbal and nonverbal interactions among family members in 6-second intervals by recording the Activity (the global context or setting in which the interactions occur), Content (a description of each verbal, nonverbal, and physical behavior), and Affect (the emotional tone accompanying each content code) of the parent-child interactions. The FPPC score used as an indicator of deficient parenting was a factor score combining total aversive behaviors (contempt, anger, etc.), and total negative physicals behaviors (e.g., hit, pinch, slap, etc.) of the primary caretaker directed at the participating child.

The final indicator of deficient parenting was a multisource, multimethod index of care neglect, described by Knutson et al. (2005) and DeGarmo, Reid, and Knutson (2006). This summative index was derived from parent report and objective observer ratings of circumstances that are associated with care neglect (e.g., child does not have a toothbrush), and household environmental conditions that would occasion social (household is overly crowded, inadequate illumination) and physical risks to a child (unsafe stairs, inadequate plumbing, animal feces present, accessible pharmaceuticals) obtained by research assistants at the initial home visit. Items are all scored in a direction to indicate neglect and then summed. Proximal circumstances outside the home that could occasion risk to the child that research assistants observe during the home visit (e.g., broken glass, drug paraphernalia) were also included in the index. Items in the index were chosen based on their inclusion in the research literature or recommendations from the Interagency Task Force on Defining Child Maltreatment (see Sternberg et al. 2004).

Child Externalizing Behavior

Child externalizing behavior was measured using five indicators including research assistant observations, child report, and parent report. The first indicator of child externalizing behavior consisted of research assistant ratings of child behavior at the home visit and during each laboratory visit. These ratings were aggregated and divided by the total number of available observations to create a summative score for child externalizing problems. Observations were not made during laboratory interactions videotaped for coding purposes. The seven dichotomous items comprising this measure assessed whether the child was positive toward interviewer, cooperative, angry/irritable, noncompliant, and friendly to parents and also whether the child struck parent during the appointment or screamed/yelled during the appointment.

The Child Behavior Checklist long form (CBCL; Achenbach, 1992) was completed by primary caretakers and the externalizing scale comprised the second indicator of child externalizing behavior. This scale is contains aggression and delinquency subscales. Raw scores from the externalizing scale were utilized in analyses as the T-scores are truncated and may exhibit less variance than raw scores (Achenbach & Rescorla, 2001).

The Direct and Indirect Aggression Scales (DIAS; Björkqvist, Lagerspetz, & Osterman, 1992) were administered to both primary caretakers and to children in interview format to assess perceptions of the participating child's aggressive behavior. Items are rated for frequency on a 5-point Likert-type scale from 0 (never) to 4 (always). To facilitate responding, children were presented with an illustration of 5 gumball machines ranging from empty to full labeled: Never, A Little, Sometimes, A lot, and All the Time, respectively. The DIAS consists of 24 items: 12 indirect aggression items, 7 direct physical aggression items, and 5 direct verbal aggression items. Total scores from primary caretaker and child report on the DIAS comprised the third and forth indicators of child externalizing problems.

The final indicator of child externalizing behavior came from the Hostile Attributions Bias Measure (HABM; adapted from Dodge & Frame, 1982) which was administered to children in interview format to measure children's self-report of hostile attributions and aggressive responses to hypothetical scenarios. This measure contains 4 of the 8 vignettes originally devised by Dodge & Frame. Participants are asked to imagine themselves in scenes where the actions of a character produce a negative outcome for the participant. For example, "*Pretend that you are standing on the playground playing catch with another boy/girl. You throw the ball to him/her and her/she catches it. You turn around and the next thing you realize is that he/she has thrown the ball and hit you in the middle of your back. The ball hits you hard, and it hurts a lot.*" The gender of the other player in the scenario was matched to the child being interviewed. After hearing each scenario, children were asked why they think the other child in the story acted the way he/she did. Answers to these questions were scored as hostile or not hostile. Children were also asked what they would do next in each scenario. Answers to these questions were scored as aggressive or non-aggressive. Hostile and aggressive responses were then summed to produce the final score. In the present study, friendship status of the other child in the scenario is not specified. There is evidence that responses to such scenarios are not influenced by whether the other child is described as a friend (Sancilio, Plumert, & Hartup, 1989). Sancilio et al. (1989) also provided evidence that aggressive children make more hostile attributions than non-aggressive children when the ambiguous actions in the scenarios are directed at themselves, not at others. In the vignettes utilized in the present study, participant children were directly impacted by the actions of the other child.

Demographic Predictors of Friendship Stability

Primary caretakers provided information on child demographics during the initial In-Home Interview. Caretakers reported on child age, gender, and race. Gender was

coded as a dichotomous variable, with females coded as 1 and males coded as 2. Race was also coded dichotomously, with 1 representing minority status and 2 representing majority (Caucasian, non-Hispanic) status. On initial contact, primary caretakers confirmed the location of the child's current residence. Families were recruited from Johnson and Linn Counties in Iowa and Oneida County in Wisconsin. In order to examine the potential impact of rural or urban residence on friendship stability, participating children in Iowa were given an "urban" designation, coded as 1, while families in Wisconsin were given a "rural" designation, coded as 2. These designations were made on the basis of the highly discrepant population densities in the two Iowa counties and one Wisconsin county, as well as discrepancies in the population of the largest city located in each county. According to the 2000 census, Oneida County in Wisconsin had a population density of 33 people per square mile. Rhinelander, the largest city in Oneida County, had a population of 7,735. In contrast, Johnson County had a population of 181 people per square mile and Linn County had a population of 267 people per square mile. The largest city in Johnson County is Iowa City, with a population of 62,220 and the largest city in Linn County is Cedar Rapids, with a population of 120,758. Because Johnson and Linn Counties in Iowa are contiguous, and because there are no cities comparable in size to Iowa City or Cedar Rapids in close proximity to Oneida County, the choice was made to explore the rural versus urban designation at the state level. While this designation also incorporates statewide differences, it was deemed the best approach for probing potential differences in friendship stability that children in each county might experience due to population density and availability of urban resources.

At the first visit in each follow-up year, primary caretakers reported whether the family had moved in the past year. In order to assess the potential impact of relocation on friendship stability, "no moves" was coded as 0, "one or more close moves" was coded as 1, and "one of more far moves" was coded as 2.

Friendships and Friendship Stability

Two indices of friendship stability were obtained utilizing a structured Friendship Interview conducted with child participants at time 1 and time 2 (or time 2 and time 3). In this interview, children initially name their "really good friends." Children then indicate if they would call any of these friends their "best friend." Children can name between one and three best friends. When a child nominated more than three best friends, this was noted, and the child was asked to pick his or her three closest and best friends. A proportion score was calculated to assess stability within the child's network of up to three best friends between the first and second administrations of the Friendship Interview. The Friendship Interview was also used to assess the stability of the participant child's friendship with one "very best friend" (VBF). Children were asked to nominate a VBF from the best friends they had named. If the child was unable to do so, they were prompted to nominate the best friend they liked the most or with whom they spent the most time. If the child continued to be unable to nominate a VBF, one was randomly selected from the best friends the child had named. A dichotomous variable was used to measure the stability of children's friendships with their VBFs—a score of 1 was given if the child did not nominate the same VBF at time 2, and a score of 2 was given if the child did nominate the same VBF.

Participating children provided information on the gender of their best friends. A proportion score was calculated to represent the percentage of gender match in the participating child's best friend network. A dichotomous score was used to represent gender match with the child's VBF, 1 indicating no match and 2 indicating a match.

Children provided ratings of VBF aggressive behavior. A modified version of the Direct and Indirect Aggression Scale (DIAS; Björkqvist, Lagerspetz, & Österman, 1992) was used to obtain the participant child's report of VBF Aggression as well as Overt Aggression and Relational Aggression subscales. This measure contains 7 items. Each item is rated on a 5-point Likert-type scale. To facilitate responding, children were

presented with the gumball machine visual aid described above. Three items (two physical, 1 verbal) probed VBF overt aggression. Another three items (2 indirect, 1 verbal) probed VBF relational aggression. One additional instrumental aggression item not present in the original DIAS was included in the total VBF Aggression score. Relational and overt aggression subscale scores for participating children were derived from both child and primary caretaker responses to 10 DIAS items probing overt aggression and 14 DIAS items probing relational aggression. Match between participating children and their VBFs in terms of overt and relational aggression was computed as the absolute difference between z-scores on the measures of child and VBF overt and relational aggression.

Children also provided ratings of the friendship quality of the relationship they shared with their VBF. The Friendship Qualities Scale (FQS; Bukowski et al., 1994), modified with the permission of SAGE Publications, was used to measure friendship quality. Items assuming shared school attendance were removed. Items were rated using a 5 point Likert-type scale. To facilitate responding, children were presented with the gumball machine visual aid described above. This measure consists of 17 items and includes subscales for 6 domains of friendship: help, companionship, security, closeness, reciprocity, and conflict.

CHAPTER VI

RESULTS

In conducting analyses, steps were first taken to identify potential violations of statistical assumptions. For each variable, skewness and kurtosis were examined to determine whether variables were normally distributed with skewness < 2 and kurtosis < 5. When departures from normality were identified, appropriate transformations were applied to the raw scores, using natural log (ln (X+1)), as recommended by Winer (1972). All variables that required a transformation, except one (the proportion of gender match between participating children and their best friends), fell within the limits of skewness and kurtosis outlined above after transformations were applied. The distribution of each variable was also examined for outliers. Potential outliers were all determined to represent reasonable variance within the variables of interest. Where necessary, variables were scaled in order to eliminate extreme discrepancies in relative variances in order to ensure better model fit. A ratio of 1:10 or lower among all variances was achieved. Correlations among variables can be found in Table 1—n's ranged from 153-176.

No issues of multicollinearity were detected among the variables of interest (cutoff $r = .70$), except between Overt Aggression Match and Overt Aggression Match x Age ($r = .95$, $p < .01$) and between Relational Aggression Match and Relational Aggression Match x Age ($r = .97$, $p < .01$). Such multicollinearity is frequently encountered with interaction terms. In the analyses described below, no steps were taken to address this multicollinearity due to the argument that mean centering, while it reduces covariance, does not actually reduce collinearity. (Echambadi & Hess, 2007). As a precaution, analyses were also conducted utilizing a residual centering approach with the interaction terms (Lance, 1988; Little, Bovaird, & Widaman, 2006), which did not significantly alter findings.

Descriptive data are provided below, followed by results from structural equation modeling.

Deficient Parenting

Primary caretakers and children differed somewhat in their reports of harsh discipline. For children, 35% indicated that they are not subject to any harsh discipline. The mean for the 5 item child measure of harsh discipline was 2.23 (*SD* = 2.25, α = .79). Parents were more likely to report harsh discipline, with only 12.6% of primary caretakers indicating that they engaged in no harsh discipline with the participating child. On the 10 item parent measure of harsh discipline, scores ranged from 0-6 with a mean of 2.09 (*SD* = 1.29, α = .44). The low Cronbach's α on this parent measure is likely due to the fact that the measure probes a wide range of harsh discipline practices, from spanking to injurious discipline serious enough to necessitate medical treatment.

Most primary caretakers also endorsed engaging in at least some inconsistent discipline. Scores on the 11 item measure of inconsistent discipline ranged from 0-9; 13.7% of primary caretakers obtained a score of zero on this measure. The mean score was 3.22 (*SD* = 2.51, α = .76).

On the APT, only 7.9% of primary caretakers reported that they would never get angry if their child engaged in the behavior depicted in the scenes. The mean for this measure was 6.51 (*SD* = 6.51, α = .77). In considering disciplinary responses on the APT, 82.6% of primary caretakers indicated that their initial response to the scenarios would never be physical while 58.4% indicated that they would never escalate their response to a physical or more severe physical punishment. The mean for physical responses was 0.42 (*SD* = 6.51, α = .90) while the mean for escalated responses was 2.35 (*SD* = 4.18, α = .92). Scores for physical discipline ranged from 0-12 out of a potential score of 28 and scores on escalated discipline ranged from 0-23 out of a potential score of 28.

Results from observational data revealed that 10.9% of primary caretakers did not engage in any non-physical aversive behavior directed at their children during the laboratory task. In contrast, 88.5% of primary caretakers did not engage in any physical aversive behavior directed at their child during the task. The mean for total non-physical aversive behaviors was .934 (*SD* = 1.00). The mean for total physical aversive behaviors was .03 (*SD* = .11).

Scores on the 56 item neglect index ranged from 2-24, indicating that all children were exposed to at least some neglectful parenting. The mean for this index was 8.75 (*SD* = 4.181, α = .67).

Child Externalizing Behavior

Research assistants indicated that 58.5% of children were not observed engaging in externalizing behavior during research visits at time 1 while 78.0% were not observed engaging in externalizing behavior during research visits at time 2. Scores ranged from 0-1.50 at time 1 with a mean of .22 (*SD* = .33, α = .62). At time 2, scores ranged from 0-2.67, with a mean of .17 (*SD* = .36, α = .62).

Very few primary caretakers—6.3% at time 1 and 5.7% at time 2—indicated that their child never engages in any externalizing behavior on the CBCL. Raw scores ranged from 0-28 at both time points with a mean of 9.10 at time 1 (*SD* = .6.82, α = .79) and 8.68 at time 2 (*SD* = 6.85, α = .79). The T-score means were 54.91 at time 1 and 54.34 at time 2, indicating that externalizing behavior in the sample population was approximately one half SD above the population mean at both time points.

On the DIAS, the vast majority of primary caretakers again indicated that their child engages in at least some aggression, with only 0.6% zero scores at time 1 and 1.1% zero scores at time 2. Scores ranged from 0-46 at time 1 with a mean of 12.95 (*SD* = 8.47, α = .82) and 0-49 at time 2 with a mean of 12.89 (*SD* = 8.76, α = .82). Participating children were less likely to report that they engaged in aggressive behavior, with 16.1%

at time 1 and 14.3% at time 2 denying that they engaged in any aggressive behavior. Scores ranged from 0-64 at time 1 with a mean of 8.06 (*SD* = 10.34, α = .87) and 0-56 at time 2 with a mean of 8.46 (*SD* = 9.45, α = .91).

Total scores on the Hostile Attribution Bias measure ranged from 0-6 at time 1 and 0-5 at time 2. At time 1, 28.4% of children did not endorse any hostile attributions or aggressive responses. At time 2, 29.1% of children did not endorse any hostile attributions or aggressive responses. The mean for total scores was 1.50 at time 1 (*SD* = .41, α = .59) and 1.36 at time 2 (*SD* = 1.2, α = .56).

Demographic Predictors of Friendship Stability

As indicated above, gender of participating children was evenly distributed (50.6% female). Children were predominantly Caucasian (non-Hispanic) while 32.1% were identified as belonging to a minority group by their primary caretaker. Children were between 6 and 10 years old at the first time point when friendship data were collected (31.8% 6 years old, 25.6% 7 years old, 26.7% 8 years old, 12.5% 9 years old, and 3.4% 10 years old).

Of participating families, 59.7% were recruited from Johnson and Linn Counties in Iowa while 40.3% were recruited from Oneida County in Wisconsin. Families demonstrated moderate geographic mobility, with 18.2% of primary caretakers reporting at least one close move between time 1 and time 2 and 8% of primary caretakers reporting at least one far move between time 1 and time 2. For those families that experienced a distant move, rural classification remained unchanged.

Friendships and Friendship Stability

As reported above, two participants from the parent project could not be included in the analyses because they reported that they had no friends when friendship data were initially collected. At time 1, of the 176 participating children, 21.6% reported having 1 best friend, 27.3% reported having 2 best friends, 23.9% reported having 3 best friends,

and 27.3% reported having 4 or more best friends. One year later, 1.7% reported having no best friends, 20.5% reported having 1 best friend, 22.2% reported having 2 best friends, 28.4% reported having 3 best friends, and 27.3% reported having 4 or more best friends. Best friends were predominantly the same gender as the participating child—4.7% of children reported .00 gender match in their best friend network, 1.8% reported .33 gender match, 2.3% reported .50 gender match, 5.3% reported .67 gender match, and 86% reported perfect 1.00 gender match with their best friends.

Looking at the proportion of friendship stability among the 1-3 best friends that children named at time 1 and time 2, 47.9% of children reported .00 friendship stability, 17.1% reported .33 friendship stability, 12.6% reported .50 friendship stability, 6.9% reported .67 friendship stability, and 13.7% reported 1.00 friendship stability.

At time 1, 76.7% of children were able to immediately identify one VBF. An additional 15.3% of children were able to identify a VBF after being prompted to identify the best friend who they liked the most or with whom they spent the most time. For 8% of participants, a VBF was randomly selected from the best friends that the child had named. At time 1, 6.4% of children provided data on a VBF of the opposite gender. When participating children were asked how they knew their VBF, 70.2% said school, 11.2% said neighborhood, 4.7% said both school and neighborhood, 7.1% said their VBF was the child of a parent's friend, 2.4% said their VBF was a cousin, 1.8% said church, 1.2% said an extracurricular club, and 1.2% said through a mutual friend.

At time 1, 22.9% of children indicated that their VBF did not engage in any aggressive behavior. Scores for VBF aggression ranged from 0-28, again representing the entire possible range, with a mean of 4.05 (SD = 4.42, α = .74). Scores for the match between children and their VBF in terms of overt aggression ranged from .04-9.23 with a mean of 2.91 (SD = 1.91). Match scores for relational aggression ranged from .03-9.37 with a mean of 1.80 (SD = 1.72). On the Friendship Qualities Scale, 4.5% of children indicated that the friendship they shared with their time 1 VBF was perfect. Scores

ranged from 11-68, representing the entire possible range, with a mean of 52.15 (*SD* = 10.27, $\alpha = .85$).

At time 2, 23.7% of children demonstrated stability in their friendship with the VBF selected at time 1. In the second round of data collection, 75.6% of children immediately identified a VBF, 14.2% identified a VBF after prompting, and 8.5% had a VBF randomly selected for them from among the identified friends.

Model Analyses

The proposed models were tested using Structural Equation modeling (SEM). SEM is a latent variable regression technique that simultaneously combines factor analyses with path analyses under the assumptions of multivariate normality. SEM is particularly well suited for the type of multimethod, multisource approach utilized in the current study because of its ability to partial measurement error of constructs and, more specifically, to specify error between same source indicators, thus controlling for certain types of mono-method, mono-agent biases. For all models examined, error variances of measures using common methods (self-report, observational data) were allowed to co-vary.

Multiple indices were used to assess model fit. For each model, the Chi-square to degrees of freedom ratio (χ^2/df; Wheaton, Muthen, Alwin, & Summers, 1977), the Comparative Fit Index (CFI; Bentler, 1990), and the Root Mean Square Error of Approximation (RMSEA; Browne & Cudeck, 1993) are reported. For the Chi-square to degrees of freedom ratio, values below 2 indicate adequate fit (Wheaton et al., 1977). For the CFI, values of .90 or greater reflect adequate model fit (Bentler, 1990). MacCallem, Browne, and Sugawara (1996) assert that for the RMSEA, values of .05 or less indicate good fit, values up to .08 indicate reasonable fit, values ranging from .08-.10 indicate mediocre fit, and values greater than .10 indicate poor fit.

Model Examining Friendship Stability with Best Friends

For the first model, examining children's friendship stability in their network of best friends, the SEM path models were estimated using full information maximum likelihood (FIML). FIML utilizes all portions of data in a covariance matrix to estimate parameters in the model. The advantage of FIML is that it allows for the use of all subjects without listwise deletion due to missing data. When data are missing, the FIML approach permits an estimation of scores from the distributions of the available data using predetermined algorithms. Thus, FIML utilizes a covariance matrix to take advantage of all available data assuming that data are missing at random, as in the present study, producing efficient estimates of standard errors (Arbuckle, 1996; Wothke, 2000).

Results from the full model, depicted in Figure 2, did not evidence adequate fit: $\chi^2 = 709.3$ ($df = 330$), $p < .001$, $\chi^2/\text{df} = 2.15$, CFI = .80, RMSEA = .08. The model was subsequently parsed to attain adequate fit by removing nonsignificant paths where theoretically sensible. As no relations were evident between friendship stability and any of the proposed similarity variables, these variables were removed from the model. Additionally, friendship quality did not evidence any significant relation with child externalizing problems or friendship stability. Friendship quality was consequently removed from the model. Four of the 5 demographic predictors of friendship stability—child age, child gender, child race, and number of moves in the last year—evidenced no relation with friendship stability and were also removed from the model. The fifth demographic variable—residence in an urban or rural community—did predict friendship stability, and was retained.

The parsed model, depicted in Figure 3, did evidence good fit: $\chi^2 = 162.1$ ($df = 123$), $p < .001$, $\chi^2/\text{df} = 1.32$, CFI = .92, RMSEA = .04. Within this model, deficient parenting was a significant predictor of time 1 child externalizing problems, with higher levels of deficient parenting predicting higher levels of child externalizing behavior. Time 1 externalizing behavior did significantly predict time 2 externalizing behavior.

Additionally, time 1 child externalizing problems significantly predicted instability in children's best friend networks. Residence in an urban or rural community also significantly predicted friendship stability, with children living in Wisconsin's rural Oneida County experiencing greater stability in their network of best friends than children living in Iowa's urban Johnson and Linn counties. Deficient parenting did not exert a significant direct effect on friendship stability—the role of child behavior in mediating the relation between deficient parenting and friendship stability thus could not be examined. Finally, friendship stability did not significantly predict time 2 externalizing problems.

Model Examining Friendship Stability with One Very Best Friend

In order to test the model utilizing the dichotomous measure of children's friendship stability with one very best friend, which acts as both an independent and dependent variable in the model, path models were estimated using weighted least squares with mean and variance adjustment (WLSMV). The WLSMV approach is the most robust estimation procedure compatible with models that include dichotomous dependent variables (Muthén, du Toit, & Spisic, 1997). WLSMV begins with a two stage, limited information maximum likelihood, least squares approach and later adjusts the covariance matrices using the appropriate weight matrix. While it facilitates the inclusion of categorical dependent variables, this approach handles missing data differently than the FIML approach used above and is less efficient than the FIML approach (Muthén & Muthén, 2007).

The model, depicted in Figure 4, did not evidence satisfactory fit: $\chi^2 = 433.25$ ($df = 321$), $p < .001$, $\chi^2/\text{df} = 1.35$, CFI = .82, RMSEA = .05. Additionally, VBF friendship stability was not significantly related to any of the latent variables in the model. Parsed versions of the model also failed to achieve satisfactory fit. Consequently, potential

predictors of friendship stability with one very best friend were examined within the correlation matrix. Though both best friend and VBF friendship stability exhibited unexpected negative correlations with friendship quality, these effects were no longer significant when examined using structural equation modeling and controlling for shared source variance. A significant correlation was evident between VBF friendship stability and child age, in the expected direction ($r = .22$, $p < .01$). No other demographic predictors of VBF friendship stability were statistically significant.

Table 1. Zero Order Correlations

Measure	1	2	3	4	5	6	7
1. BF Friendship Stability	-						
2. VBF Friendship Stability	.48**	-					
3. Harsh Discipline (TC Report)	-.08	-.09	-				
4. Harsh Discipline (PC Report)	-.05	-.10	.46**	-			
5. Inconsistent Discipline	.01	.03	.04	.07	-		
6. Care Neglect	.06	.06	-.06	.04	.18*	-	
7. Analog Parenting Anger	-.04	-.05	-.07	-.13	.19*	.10	-
8. Analog Parenting Discipline	-.02	-.01	.20**	.23**	-.01	.06	.19*
9. FPPC Mother to Child	.02	.01	.16	.21**	.19*	.20*	.08
10. T1 RA Obs of Externalizing	-.15	-.11	-.12	.03	.13	-.03	-.03
11. T1 CBCL	-.14	-.05	.13	.20**	.47**	.10	.06
12. T1 DIAS (PC Report)	-.14	.02	.10	.19*	.33**	-.04	.08
13. T1 DIAS (TC Report)	.16*	.11	.30**	.24**	.06	-.01	-.05
14. T1 Hostile Bias Measure	.02	-.07	.13	.18*	-.03	-.00	-.00
15. VBF Aggression	-.01	-.08	.20**	.10	.15	-.01	-.02
16. Friendship Quality	-.17*	-.15*	-.16*	-.07	-.06	.08	.21**
17. Overt Agg Match	-.05	.03	.31**	.20**	.23**	.00	.15
18. Relational Agg Match	-.12	-.01	.32**	.18*	.27**	-.22**	-.00
19. Overt Agg Match x Age	-.04	.07	.32**	.20**	.25**	-.03	.17*
20. Relational Agg Match x Age	-.09	.02	.29**	.17*	.28**	-.22**	-.02
21. Gender Match (with BFs)	.07	.06	-.05	.07	-.14	-.05	-.01
22. Gender Match (with VBF)	.06	.09	-.04	.03	-.22**	-.02	.00
23. Child Age	.13	.22**	-.08	-.02	-.09	-.06	-.07
24. Child Gender	.08	.08	.21**	.08	-.03	.06	.05
25. Child Race	.11	-.03	-.05	-.09	-.09	-.06	.03
26. Urban or Rural Residence	.18*	-.06	.07	-.03	-.04	.03	-.13
27. Moves	-.13	-.03	-.07	-.05	-.04	.10	-.09
28. T2 RA Obs of Externalizing	-.05	.05	.09	-.14	.15*	.01	.11
29. T2 CBCL	-.07	.05	.07	.17*	.40**	.19*	.09
30. T2 DIAS (PC Report)	-.19*	-.02	.10	.17*	.24**	.09	.14
31. T2 DIAS (TCReport)	.13	.21**	.22**	.27**	.09	.01	.01
32. T2 Hostile Bias Measure	.08	.03	.-2	.09	-.05	-.02	.03

Table 1. Continued

Measure	8	9	10	11	12	13	14
1. BF Friendship Stability							
2. VBF Friendship Stability							
3. Harsh Discipline (TC Report)							
4. Harsh Discipline (PC Report)							
5. Inconsistent Discipline							
6. Care Neglect							
7. Analog Parenting Anger							
8. Analog Parenting Discipline	-						
9. FPPC Mother to Child	.30**	-					
10. T1 RA Obs of Externalizing	-.04	.01	-				
11. T1 CBCL	.01	.20*	.32**	-			
12. T1 DIAS (PC Report)	-.01	.08	.10	.44**	-		
13. T1 DIAS (TC Report)	.08	.14	.02	.18*	.25**	-	
14. T1 Hostile Bias Measure	.07	.15	.08	.02	-.00	.18*	-
15. VBF Aggression	.07	.17*	.00	-.01	-.01	.18*	.14
16. Friendship Quality	.14	.01	-.04	-.04	.03	-.14	.06
17. Overt Agg Match	.03	.17*	-.02	.15	.29**	.22**	.05
18. Relational Agg Match	.12	.10	-.10	.11	.28**	.18*	.15
19. Overt Agg Match x Age	.04	.16*	-.04	.14	.32**	.23**	.03
20. Relational Agg Match x Age	.11	.09	-.10	.11	.32**	.10**	.11
21. Gender Match (with BFs)	.02	-.17*	-.07	-.01	-.02	.14	-.06
22. Gender Match (with VBF)	-.04	-.17*	-.08	-.07	-.01	.09	-.11
23. Child Age	.04	-.02	-.08	-.10	.05	.09	-.14
24. Child Gender	.15	.04	-.05	-.03	-.04	.03	.15
25. Child Race	-.03	-.00	.14	.01	-.17*	-.09	-.03
26. Urban or Rural Residence	-.07	-.07	.05	.05	-.13	.10	-.02
27. Moves	.01	.16	.12	.09	.04	-.21**	.08
28. T2 RA Obs of Externalizing	-.01	-.05	.27**	.17*	.00	.07	-.01
29. T2 CBCL	.06	.19*	.08	.66**	.38**	.11	.09
30. T2 DIAS (PC Report)	.11	.09	.08	.37**	.65**	.19*	-.02
31. T2 DIAS (TCReport)	.12	-.07	.05	.18*	.14	.47**	-.02
32. T2 Hostile Bias Measure	.05	.05	.02	-.03	.03	.01	.36**

Table 1. Continued

Measure	15	16	17	18	19	20	21
1. BF Friendship Stability							
2. VBF Friendship Stability							
3. Harsh Discipline (TC Report)							
4. Harsh Discipline (PC Report)							
5. Inconsistent Discipline							
6. Care Neglect							
7. Analog Parenting Anger							
8. Analog Parenting Discipline							
9. FPPC Mother to Child							
10. T1 RA Obs of Externalizing							
11. T1 CBCL							
12. T1 DIAS (PC Report)							
13. T1 DIAS (TC Report)							
14. T1 Hostile Bias Measure							
15. VBF Aggression	-						
16. Friendship Quality	-.32**	-					
17. Overt Agg Match	.33**	-.12	-				
18. Relational Agg Match	.40**	-.18*	.43**	-			
19. Overt Agg Match x Age	.32**	-.11	.95**	.44**	-		
20. Relational Agg Match x Age	.36**	-.17*	.41**	.97**	.45**	-	
21. Gender Match (with BFs)	-.28**	.25**	-.04	-.14	-.06	-.12	-
22. Gender Match (with VBF)	-.27**	.21**	-.01	-.10	-.02	-.08	.68**
23. Child Age	-.14	-.00	-.11	-.11	.03	.05	.11
24. Child Gender	-.03	-.07	.07	.01	.05	-.02	-.01
25. Child Race	-.15*	-.06	-.09	-.07	-.07	-.05	-.02
26. Urban or Rural Residence	-.10	-.08	-.06	-.02	-.09	-.02	-.04
27. Moves	.02	.14	.03	.07	.01	.05	-.02
28. T2 RA Obs of Externalizing	-.02	.08	-.07	-.01	-.04	-.00	-.06
29. T2 CBCL	.01	.08	.08	.10	.08	.11	-.04
30. T2 DIAS (PC Report)	.01	.06	.19*	.17*	.21**	.17*	-.10
31. T2 DIAS (TCReport)	.12	-.14	.14	.14	.17*	.14	.04
32. T2 Hostile Bias Measure	.10	-.11	-.06	.01	-.00	.02	-.28**

Table 1. Continued

Measure	22	23	24	25	26	27	28
1. BF Friendship Stability							
2. VBF Friendship Stability							
3. Harsh Discipline (TC Report)							
4. Harsh Discipline (PC Report)							
5. Inconsistent Discipline							
6. Care Neglect							
7. Analog Parenting Anger							
8. Analog Parenting Discipline							
9. FPPC Mother to Child							
10. T1 RA Obs of Externalizing							
11. T1 CBCL							
12. T1 DIAS (PC Report)							
13. T1 DIAS (TC Report)							
14. T1 Hostile Bias Measure							
15. VBF Aggression							
16. Friendship Quality							
17. Overt Agg Match							
18. Relational Agg Match							
19. Overt Agg Match x Age							
20. Relational Agg Match x Age							
21. Gender Match (with BFs)							
22. Gender Match (with VBF)	-						
23. Child Age	.07	-					
24. Child Gender	.02	-.12	-				
25. Child Race	-.02	-.01	-.16*	-			
26. Urban or Rural Residence	-.04	-.10	-.12	.43**	-		
27. Moves	-.08	-.03	-.09	-.02	-.15*	-	
28. T2 RA Obs of Externalizing	-.04	.01	.07	-.02	.14	.00	-
29. T2 CBCL	-.13	-.06	-.03	-.07	-.02	.10	.18*
30. T2 DIAS (PC Report)	-.10	-.03	.03	-.19*	-.19*	.06	.06
31. T2 DIAS (TCReport)	.08	.20**	-.04	.01	.04	-.13	.21**
32. T2 Hostile Bias Measure	-.26**	.09	.05	-.02	-.14	.04	-.11

Table 1. Continued

Measure	29	30	31	32
1. BF Friendship Stability				
2. VBF Friendship Stability				
3. Harsh Discipline (TC Report)				
4. Harsh Discipline (PC Report)				
5. Inconsistent Discipline				
6. Care Neglect				
7. Analog Parenting Anger				
8. Analog Parenting Discipline				
9. FPPC Mother to Child				
10. T1 RA Obs of Externalizing				
11. T1 CBCL				
12. T1 DIAS (PC Report)				
13. T1 DIAS (TC Report)				
14. T1 Hostile Bias Measure				
15. VBF Aggression				
16. Friendship Quality				
17. Overt Agg Match				
18. Relational Agg Match				
19. Overt Agg Match x Age				
20. Relational Agg Match x Age				
21. Gender Match (with BFs)				
22. Gender Match (with VBF)				
23. Child Age				
24. Child Gender				
25. Child Race				
26. Urban or Rural Residence				
27. Moves				
28. T2 RA Obs of Externalizing				
29. T2 CBCL	-			
30. T2 DIAS (PC Report)	.52**	-		
31. T2 DIAS (TCReport)	.22**	.26**	-	
32. T2 Hostile Bias Measure	.06	.04	.09	-

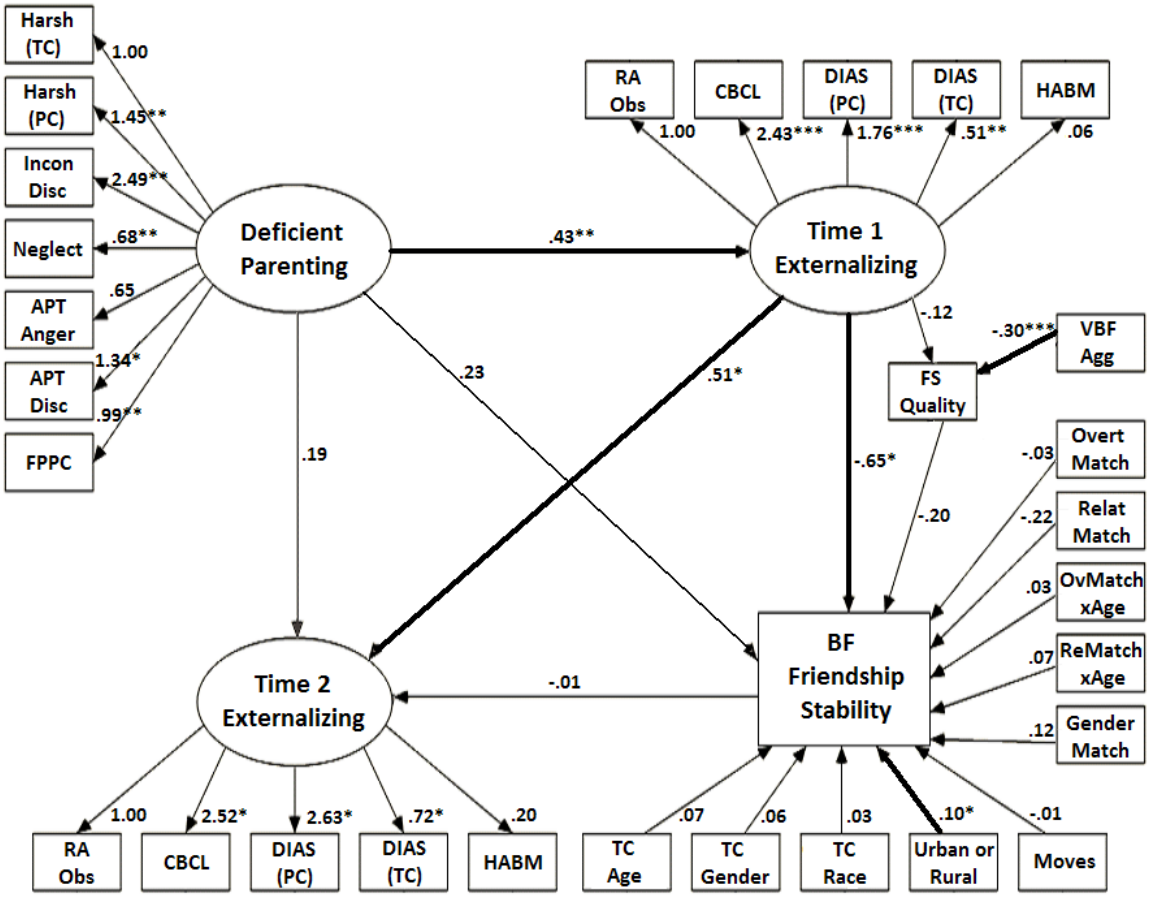

Figure 2. Full model examining friendship stability in children's best friend networks (unstandardized beta weights).

TC=Target Child; PC=Primary Caretaker; Incon Disc=Inconsistent Discipline; APT=Analog Parenting Task; FPPC=Family Peer and Process Code; RA Obs=Research Assistant Observations; CBCL= Child Behavior Checklist long form; DIAS=Direct and Indirect Aggression Scales; HABM=Hostile Attribution Bias Measure; FS=Friendship; BF=Best Friend; VBF=Very Best Friend; Overt Match=Overt Aggression Match; Relat Match=Relational Aggression Match.

$\chi^2 = 709.3$ ($df = 330$), $p < .001$, $\chi^2/\text{df} = 2.15$, CFI = .80, RMSEA = .08

$^*p < .05$ $^{**}p < .01$ $^{***}p < .001$

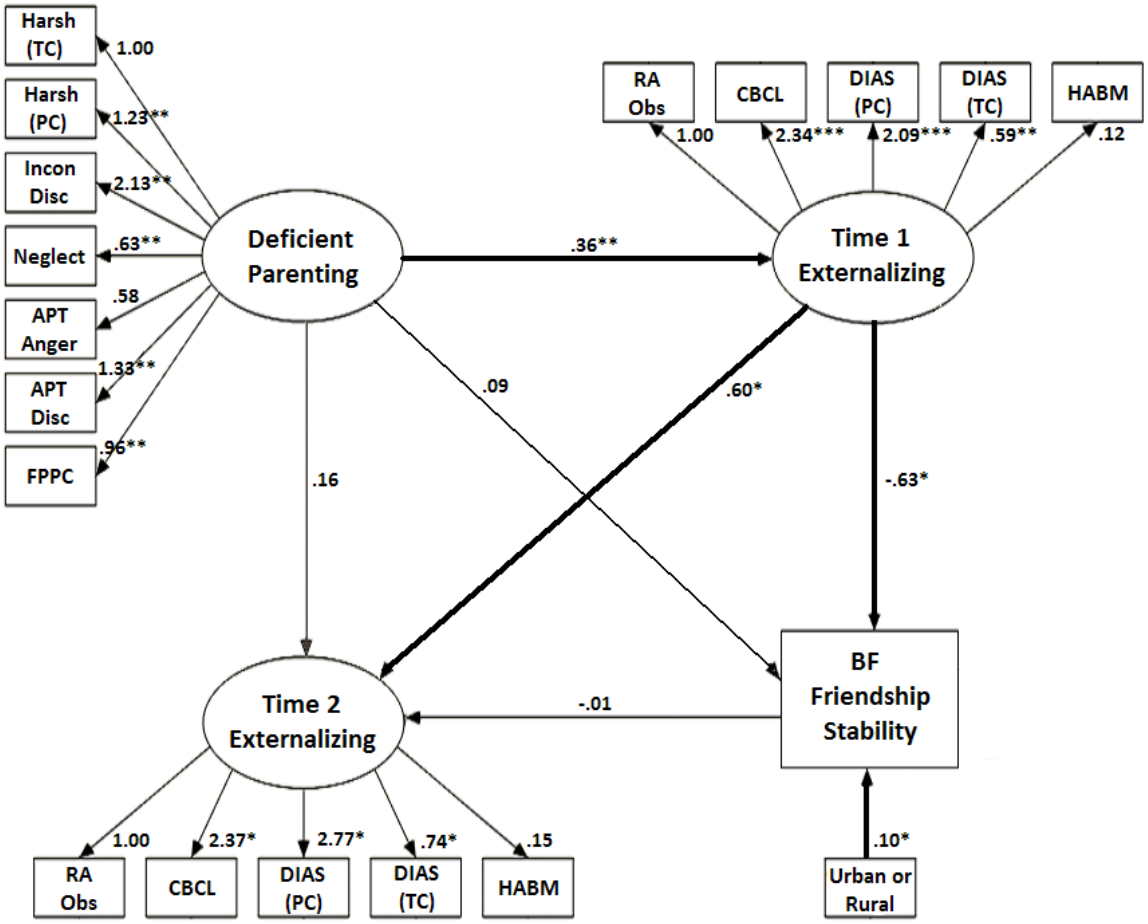

Figure 3. Parsed model examining friendship stability in children's best friend networks (unstandardized beta weights).

TC=Target Child; PC=Primary Caretaker; Incon Disc=Inconsistent Discipline; APT=Analog Parenting Task; FPPC=Family Peer and Process Code; RA Obs=Research Assistant Observations; CBCL= Child Behavior Checklist long form; DIAS=Direct and Indirect Aggression Scales; HABM=Hostile Attribution Bias Measure; FS=Friendship; BF=Best Friend; VBF=Very Best Friend; Overt Match=Overt Aggression Match; Relat Match=Relational Aggression Match.

$\chi^2 = 162.1$ ($df = 123$), $p < .001$, $\chi^2/\text{df} = 1.32$, CFI = .92, RMSEA = .04

$^*p < .05$ $^{**}p < .01$ $^{***}p < .001$

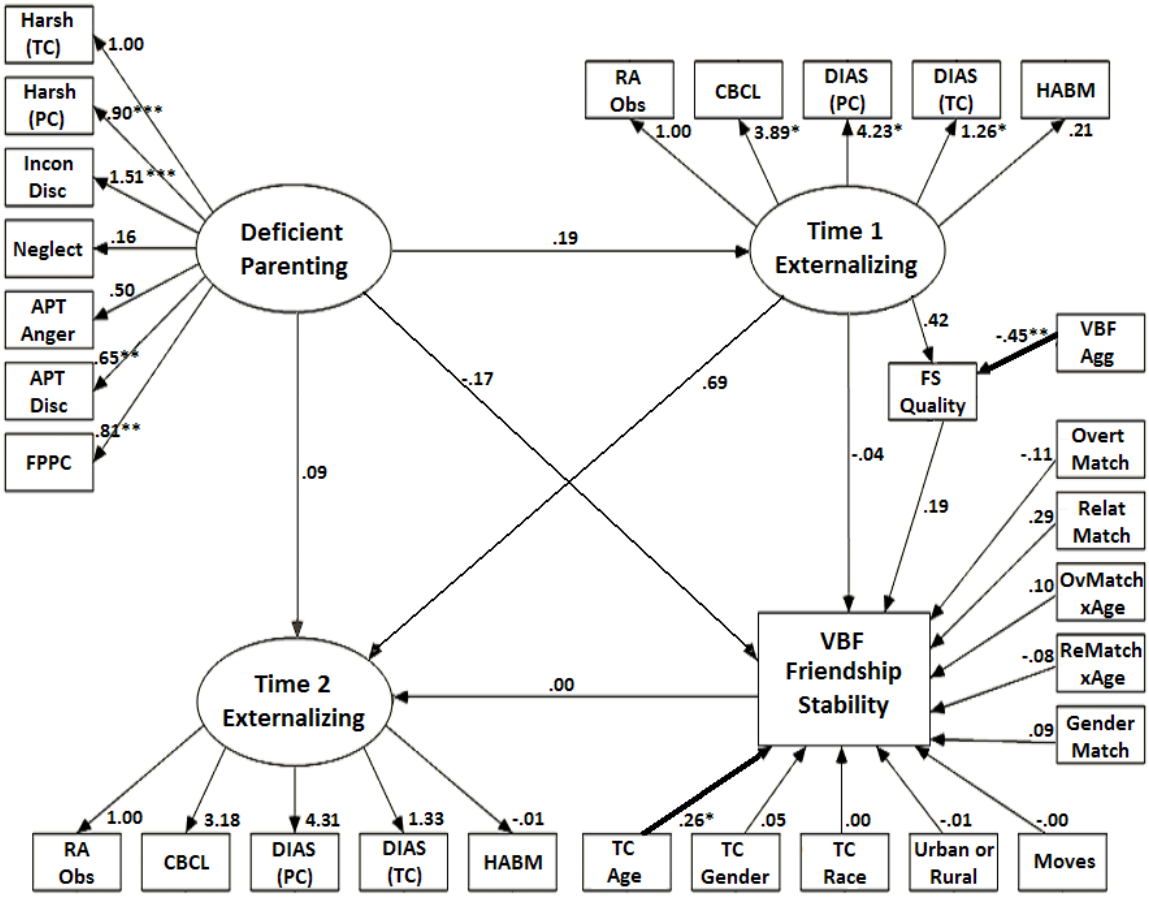

Figure 4. Full model examining friendship stability with one very best friend (unstandardized beta weights).

TC=Target Child; PC=Primary Caretaker; Incon Disc=Inconsistent Discipline; APT=Analog Parenting Task; FPPC=Family Peer and Process Code; RA Obs=Research Assistant Observations; CBCL= Child Behavior Checklist long form; DIAS=Direct and Indirect Aggression Scales; HABM=Hostile Attribution Bias Measure; FS=Friendship; BF=Best Friend; VBF=Very Best Friend; Overt Match=Overt Aggression Match; Relat Match=Relational Aggression Match.

$\chi^2 = 433.25$ ($df = 321$), $p < .001$, $\chi^2/\text{df} = 1.35$, CFI = .82, RMSEA = .05

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

CHAPTER VII

DISCUSSION

Deficient Parenting, Externalizing Behavior, Friendship Quality, and Friendship Stability

Analyses did not provide evidence for the hypothesized direct link between deficient parenting and friendship stability—the models tested did not establish a significant relation between friendship stability and the deficient parenting construct. This was true whether or not the proposed mediating paths were included. Though unexpected, this is result is somewhat encouraging. The present study does not provide evidence that deficient parenting directly impairs children's ability to maintain lasting friendships.

The significant relation between child externalizing problems and friendship stability is supported by the present study. This relation was not evident in the poorly fit model exploring friendship stability with one very best friend. However, in the model examining friendship stability with best friends that achieved satisfactory fit, time 1 child externalizing behavior was significantly negatively correlated with friendship stability one year later. This finding supports the hypothesis that child externalizing problems make it more difficult for children to sustain lasting friendships, at least within their networks of 1-3 best friends.

The link between deficient parenting and child externalizing behavior, well established in the literature, was supported in the models examining stability friendship stability with 1-3 best friends. While externalizing behavior significantly predicted friendship stability with best friends, deficient parenting did not. Consequently, the role of child externalizing behavior as a mediator of the relation between deficient parenting and friendship stability was not supported by the present study.

Friendship quality was negatively correlated with both indices of friendship stability. However, this counterintuitive correlation was not evident when the variables were included in structural equation models that could control for shared source and method variance. When examined in the proposed models, friendship quality was not significantly related to either child externalizing problems or friendship stability. Consequently, the hypothesis that friendship quality mediates the link between child externalizing problems and friendship stability could not be supported.

The relation between friendship stability and time 2 externalizing was not significant—this finding held whether or not the model controlled for time 1 externalizing behavior. This result provides evidence that friendship stability does not exert a direct influence on child externalizing problems over the course of one year.

Similarity as a Predictor of Friendship Stability

None of the similarity variables included in the present study were significantly related to children's friendship stability. The proportion of gender match in children's best friend networks did not predict friendship stability with best friends. Additionally, gender match between children and their VBFs did not predict friendship stability with VBFs. This finding contradicts previous studies which have found a link between gender match and friendship stability (Aboud et al., 2003; Lee et al., 2007).

The match between children and their friends in terms of relational and overt aggression was not supported as a predictor of friendship stability. Additionally, age did not appear to moderate the impact of these variables on friendship stability. None of the proposed similarity or similarity interaction variables predicted friendship stability with 1-3 best friends. Nor did these variables predict friendship stability with one VBF—where the effect would presumably be largest were it significant—either in the poorly fit model for VBF friendship stability or in correlational data Consequently, the proposed relation between match on overt and relational aggression and friendship stability could

not be supported. Nor did the present study provide evidence that discrepancies in relational aggression are more detrimental to friendship stability for younger children while discrepancies in overt aggression are more detrimental to the friendship stability of older children.

Demographic Predictors of Friendship Stability

Previous studies have yielded mixed results concerning the impact of gender on friendship stability. Though several studies have found no relation between gender and friendship stability (Benjamin et al., 2001; Berndt & Hoyle, 1985; Epstein, 1986) one study did find a significant relation between these variables (Hardy et al., 2002). The present study provides evidence that, among children ages 6-10, gender is not a significant predictor of friendship stability.

Though some cultural differences in friendship stability have been documented (Schneider et al., 1997), the role of minority group status had not previously been considered. The present study tested minority group status as a potential predictor of friendship stability and found no significant relation.

Surprisingly, no existing studies have examined the role of relocation on friendship stability. The present study included an index of near and far moves as a potential predictor of friendship stability to test the hypothesis that children who relocated during the year would be more likely to experience instability in their friendships. The data did not support this hypothesis—no relation was found between number of moves and either index of friendship stability.

Several early studies of friendship stability found that children living in urban areas enjoyed greater friendship stability than children living in rural areas (Thompson, & Horrocks, 1947; Horrocks, & Thompson, 1946). In the present study, residence in a rural or urban community was included as a potential predictor of friendship stability. No relation was evident between this variable and friendship stability with one VBF.

However, this variable was significantly correlated with stability in children's best friend networks. In contrast to earlier work, the present study provides evidence that children in rural communities enjoy greater friendship stability than children in urban communities.

Findings in the present study were also mixed with regard to the impact of age on friendship stability. Several studies have established a general trend that friendship stability increases with age (Berndt & Hoyle, 1985; Horrocks & Buker, 1951; Thompson & Horrocks, 1947). In the present study, no relation between age and friendship in children's best friend networks was apparent. However, age did significantly predict stability in the friendship children shared with one very best friend.

Limitations of the Present Study

Wherever possible, a multisource, multimethod approach was applied in the present study. However, it was not within the scope of the present study to apply these procedures to several of the variables of interest. These include friendship stability and indicators of friends' aggression and friendship quality. Because children engage in friendships in a variety of settings, it is extremely difficult to both comprehensively sample a child's network of best friends, and to obtain multimethod, multisource information on such friendships. However, these difficulties might be overcome in a variety of ways in future studies. Though it does not allow children to provide data on all their friendships, restricting research to the school settings does allows researchers to more easily obtain data from both members of a friendship dyad and to engage in direct observations of friendships. Additionally, our knowledge of children's friendship might benefit from applying this single setting study design to other important contexts of friendship, such as children's neighborhoods and various clubs and community organizations. In the present study, friendships in these settings were not as common as school-based friendships, but still formed a substantial percentage (~25%) of children's very best friendships.

In a study such as the present one, collecting data on children's friendships from parents may be fruitful. However, parents are likely to vary widely in their awareness of children's friends and friendships, especially friendships that take place in the school setting. Parents that are prone to deficient parenting, such as care neglect, may be very poor reporters on features of their children's friendships. Additionally, there is likely to be variance in how able or willing parents are to arrange interactions between their child and a close friend that would provide observational indices of friend's aggression and friendship quality. In the parent study that facilitated the present study, children were randomly selected to engage in a play task with either an unknown peer or a friend. However, according to research assistant observation, parents tended to strongly influence which friend was selected for the play task, primarily based on how well the parent knew the friend's parents and how convenient it would be to arrange for the friend to join in the play task. In a sample of 68 children who provided friendship data and completed this play task with a friend, 35% of the participating friends were the VBF from the Friendship Interview, 19% were one of the other best friends nominated, 16% were listed as a "really good friend" but not a best friend, and 29% were not listed in the Friendship Interview at all. Additionally, parents with children in the friend condition sometimes had to default to the unknown peer condition when it was not convenient to bring a friend to the play task. In trying to obtain multimethod, multisource data on children's friendships with the assistance of parents, it seems researchers must either exclude children whose parents have little involvement in their child's close friendships or include friendships of less significance to the child. Though not ideal, either of these approaches could provide useful data on children's friendships, as long as the friendship parameters being explored were clearly defined. Additionally, phone and web-based interview techniques might be used to obtain information directly from friends nominated by participating children.

Another limitation of the present study was the sampling of data at only two time points. In the present study, time 1 externalizing behavior was associated with friendship stability in children's best friend networks one year later. However, it is unclear how long before time 1 the friendships examined were first established, which limits the causal implications that can be drawn from this result. Similarly, if a significant link had been established between friendship stability and time 2 behavior, causal conclusions would still have to be limited as both friendship stability and behavior were sampled over the same time interval. While sampling data at two time points is an improvement on previous cross sectional work, future work incorporating data from 3 or more time points could be analyzed using latent growth modeling techniques and be used to further explore potential causal relationships.

An unavoidable limitation of the present study was reliance on the less efficient WLSMV estimation technique when considering children's friendship stability with one very best friend. Differences in both efficiency and in the procedures used to handle missing data in WLSMV and FIML make it difficult to draw comparisons between predictors and outcomes associated with the two measures of friendship stability used in the present study. Future studies designed to systematically assess differences in the predictors and outcomes associated with various measures of friendship stability would prove useful.

Future Directions

A number of topics for future research are suggested by the present study. As the research on friendship stability remains fairly limited, there are ample possibilities for expansion. In the present study, the influence of a cumulative deficient parenting index on friendship stability was examined and found to be nonsignficiant. Further research might explore the possibility that different forms of deficient parenting have a unique influence on children's friendship stability.

Due to the age of the children in the present sample, and the robust relation between deficient parenting and child externalizing problems, the present study focused on child externalizing behavior in relation to friendship stability, both as a predictor and a potential outcome variable. However, there is also some evidence that child internalizing problems are significantly negatively correlated with friendship stability in older children and adolescents (Chan & Poulin, 2009; Prinstein et al., 2005). Additionally, there is evidence that instability in children's friendship networks predicts later impairments in self-image (Keefe & Berndt 1996). The relation of internalizing problems to friendship stability in late childhood and adolescence is another potentially fruitful area of inquiry.

It may also be worthwhile to compare the impact of various types of behavior problems on friendship stability. One study finding a link between ADHD symptoms and impairments in friendship stability during a 5 week day-camp experience found that patterns of instability varied depending on symptoms (Blachman & Hinshaw, 2002). Girls with Combined-type ADHD exhibited difficulties in maintaining friendships from the beginning to middle of camp, whereas girls with Inattentive-type ADHD demonstrated poor friendship stability from the middle to end of camp. Patterns of instability in friendship may vary with different behavior problems, and such differences are only beginning to be explored.

The role of rural or urban residence in predicting friendship stability merits further investigation and clarification. While early studies found that children in urban environments experienced greater friendship stability (Horrocks & Thompson, 1946; Thompson & Horrocks, 1947), the present study provides evidence that children in rural environments experience greater friendship stability. In the work by Thompson and Horrocks, rural and urban designation is not clarified beyond "two cities in New York state and one in Pennsylvania." These studies took place over a span of 2 weeks, rather than one year as in the present study. Additionally, participants in these early studies were between 11 and 18 years in age, notably older than participants in the present study.

The implications of rural or urban residence are also likely to have changed dramatically in the past 60 years. In the 40's, rural residence may have meant limited access to friends or limited choice in what friends were available for interaction at any given time. Today, with widespread electronic forms of communication, it may be that children in more insular, rural communities are now able to stay in close contact. It is also notable that rural or urban residence only predicted friendship stability in children's best friend networks, not with their very best friends. Further studies attempting to identify factors that bolster friendships stability in rural children's best friend networks are warranted to clarify the implications of this result.

The finding that age predicted stability in friendships with one very best friend but not in children's best friend networks also merits further examination. There is evidence that friendship stability gradually increases with age, but there is also evidence that this relationship is not linear—gains in friendship stability appear to ebb and flow based upon a variety of developmental factors (Poulin & Chan, 2010). It is not completely surprising then that the two measures of friendship used in the present study would be differentially impacted by age. It may be that between the ages of 6 and 10 children experience relatively little change in stability in their network of best friends, but developed stronger commitments to one, very best friend. Work to replicate this finding and expand in its implications is warranted.

Though no relation was evident between friendship stability and behavioral outcomes in the present study, further longitudinal data examining potential outcomes associated with friendship stability is needed. A variety of behavioral outcomes might be examined as an alternative to the multisource, multimethod measure of children's externalizing behavior utilized in the present study.

Conclusions and Implications

The present study used a multisource, multimethod approach wherever possible to examine potential predictors and outcomes associated with friendship stability over the course of one year. The impact of deficient parenting on friendship stability was explored for the first time. Additionally, children were invited to report on friendships occurring in any setting and stability was examined both in children's networks of 1-3 best friends and in children's relationships with one very best friend. The link between deficient parenting and child externalizing behavior was supported by the present study. The link between child externalizing behavior and friendship stability was also supported, though deficient parenting did not evidence a direct impact on friendship stability. Age was found to significantly predict friendship stability with one very best friend and residence in a rural or urban community was found to significantly predict friendship stability within children's networks of 1-3 best friends. These findings have several important implications for our understanding of children's friendships and how these relationships impact childhood development and mental health.

The present study provides further evidence that the relation between age and friendship stability is complex. Age did not predict stability in children's networks of 1-3 best friends. However, based on the results of the present study, children did appear to develop greater stability in their "very best friendships" between the ages of 6 and 10. These results provide some support for the notion that gains in friendship stability with age are not linear and may vary as different developmental needs become salient (Poulin & Chan, 2010; Sullivan, 1953).

The present study also provides evidence that children in rural Wisconsin experience greater stability in their networks of 1-3 best friends than children living in relatively urbanized areas of Iowa. Contextual factors beyond the family environment thus appear to play a role in fostering friendship stability. This finding provides further

evidence that broad contextual factors need to be considered when examining variables that may facilitate friendships and other relationships.

Deficient parenting robustly predicts child externalizing problems, and mounting evidence indicates that child externalizing problems impair friendship stability. Despite the fact that both these relationships were replicated in the present study, no direct link between deficient parenting and friendship stability was evident. This finding is encouraging in that children coping with deficient parenting do not appear to also be at risk of experiencing greater instability in their friendships.

The present study provides further evidence that child externalizing problems can impair friendship stability (Blachman & Hinshaw, 2002; Ellis & Zarbatany, 2007; Young et al., 2006; Hektner et al., 2000; Johnson & Foster, 2005). As the present study did not find any evidence that friendship stability predicts behavioral outcomes, this finding does not seem to present a direct threat to resilience in childhood. However, other studies investigating outcomes associated with friendship stability do provide evidence that instability in friendships can have a detrimental impact on outcomes including self image, peer acceptance, and adjustment to school (Drewry, & Clark, 1984; Keefe & Berndt 1996; Ladd, 1990). Thus, the impairment in friendship stability conferred by externalizing problems in the present study does represent a serious risk to adaptive development in childhood. Interventions for children with externalizing problems that focus on developing appropriate social skills and improving interpersonal interactions may help to mitigate some of the risk that externalizing problems pose for friendship stability and associated adaptive outcomes.

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