

PEER RELATIONSHIPS AND OPTIMISM IN MIDDLE CHILDHOOD

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A Dissertation

Presented to the Faculty

of

The Gordon F. Derner  
School of Psychology

Adelphi University

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In Partial Fulfillment

of the Requirements for the Degree

Doctor of Philosophy

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by

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September 2022

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I dedicate this work to the people who have taught me lifelong lessons about optimism.  
For my parents, my husband, my son, and my creative grandmother, who taught me how to make  
the most out of any situation.

## ACKNOWLEDGEMENTS

I am grateful to the many people who helped build this dissertation. I first want to thank my advisor, Dr. Laura Brumariu, for her continued guidance and support for this project. I am grateful for each of my committee members whose feedback were appreciated. I am especially grateful to Dr. Michael Moore for his invaluable statistical training throughout my program. Finally, thank you to my husband for all the support, encouragement, and patience he provided throughout this project.

### Abstract

The purpose of the present study was to investigate whether the quality of peer relationships, indexed as peer victimization, peer social competence, and greater friendship quality, relate to dispositional optimism in middle childhood. We also assessed whether the quality of earlier or later peer relationships is more relevant to optimism in 6<sup>th</sup> grade. We relied on data from the comprehensive NICHD Study of Early Child Care and Youth Development (SECCYD). Children's peer relationships were assessed six times from 1<sup>st</sup> to 6<sup>th</sup> grade ( $N = 1012$ ; 49.8% female). Children, parents, and teachers completed self-report measures of peer victimization, peer social competence, friendship quality, and dispositional optimism. Children also participated in observed peer interactions which were later coded for negative and positive friendship interactions. Constructs assessed at 1<sup>st</sup> to 3<sup>rd</sup> grade were operationalized as reflecting earlier middle childhood and those assessed at 4<sup>th</sup> to 6<sup>th</sup> grade were operationalized as reflecting later middle childhood. Results showed that peer victimization and friendship quality in earlier middle childhood (1<sup>st</sup> to 3<sup>rd</sup> grade) and peer victimization, peer social competence, and friendship quality in later middle childhood (4<sup>th</sup> to 6<sup>th</sup> grade) were significantly related to optimism in 6<sup>th</sup> grade. Regression analyses revealed that only children's perceived peer victimization and self-reported friendship quality emerged as unique correlates of their optimism level. Results also showed that greater quality peer relationships in later middle childhood are more relevant for children's greater levels of optimism at 6<sup>th</sup> grade. Findings suggest that overall, aspects of peer relationships are important to optimism in middle childhood and that interventions to promote dispositional optimism might focus on peer relationships in middle childhood.

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## Peer Relationships and Optimism in Middle Childhood

Colloquially, optimists view the future through rose-colored glasses and positively perceive a glass of water as half full (Segerstrom, 2009). Popular culture idioms refer to optimism as believing future events or experiences will have a favorable outcome. Dispositional optimism closely aligns with the colloquial definition of optimism. Specifically, a growing psychological literature generally defines dispositional optimism as a generalized tendency or expectation that the future will hold positive outcomes for events outside of one's control (Carver et al., 2010; Carver & Scheier, 2014; Nes & Segerstrom, 2006; Scheier et al., 1994; Scheier et al., 2021; Scheier & Carver, 1992). Dispositional optimism also refers to the degree to which one believes they may influence their future (Carver et al., 2010; Carver & Scheier, 2014; Gillham & Reivich, 2004).

Importantly, dispositional optimism is a global cognitive construct that applies to various contexts rather than to one specific situation (Segerstrom et al., 2007). Some further argue that dispositional optimism is a personality construct that is cognitive in nature (Hjelle 1996; Peterson & Bossio, 2001) and is a relatively stable trait (Carver et al., 2010). Cognitions related to time may be one mechanism through which optimism operates. Specifically, dispositional optimism refers to expectancies about the future. Future time perspective refers to a cognitive representation of the future, a future orientation, or anticipation of future events and consequences (Diaconu-Gherasim et al., 2017; Peetsma, 2000; Trommsdorf et al., 1982). Individuals with a greater future orientation are more likely to expect positive future outcomes and have greater optimism (Kazakina, 1999; Zimbardo & Boyd, 2015).

## **Benefits of Dispositional Optimism**

A large body of literature dedicated to investigating the positive physical and emotional outcomes of dispositional optimism across the lifespan suggests that there are advantages to a rosier perspective. Numerous studies have documented the association between optimism and positive physical health outcomes among children and adolescents (Carver & Scheier, 2014; Ek et al., 2004; Heinonen et al., 2005; Scheier et al., 2021; Scheier & Carver, 2018; Segerstrom, 2007). Children with greater levels of optimism reported higher quality of life and less pain among cancer patients (Mannix et al., 2009) and those experiencing lower ambulatory blood pressure (Raikkonen & Matthews, 2008), sufficient sleep quantity and greater sleep quality (Lemola et al., 2011). In addition, among children and adolescents from normative samples, those with greater levels of optimism reported more adaptive healthcare behaviors (Jones et al., 2008). Furthermore, an extensive literature provides evidence for the association between optimism and emotional well-being in childhood and adolescence. Specifically, children and adolescents with greater levels of optimism showed, greater life satisfaction, greater positive affect, and lower negative affect (Ben-Zur, 2003), fewer internalizing and externalizing behaviors (Lemola et al., 2010), fewer depressive symptoms, hopelessness, and suicidal ideation (Roberts et al., 1998), less substance use (Carvajal et al., 1998), and greater emotional well-being (Ey et al., 2005). Among young adults those with higher optimism showed higher academic motivation (Schulman, 1995), higher academic achievement (Yates, 2002), greater coping and adjustment when taking an exam (Chang, 1998), and greater adjustment to college and less distress (Aspinwall & Taylor, 1992; Brissette et al., 2002). There is an extensive body of research documenting the emotional and health benefits of greater optimism in adults including lower distress (Allison et al., 2000; Carver & Gains, 1987; Fitzgerald et al., 1993; Given et al.,

1993; Litt et al., 1992), lower depression symptoms (Carver & Gains 1987; Giltay et al., 2006), lower cardiovascular disease (Tindle et al., 2009), fewer strokes (Kim et al., 2011), and longer life span (Lee et al., 2019). Taken together, these findings provide evidence that dispositional optimism is related to positive outcomes across the life span.

### **Middle Childhood and Peer Interactions**

While decades of research have been dedicated to examining the association between optimism and positive outcomes, there is a paucity of research dedicated to investigating the development of optimism, and even fewer studies focused specifically on childhood. Between the ages of six to fourteen, children embark on the transition to elementary school and later to middle school, which encompass intellectual, social, and emotional challenges. In earlier middle childhood, children navigate 1<sup>st</sup> grade where they must adapt to an increase in the number of teachers compared to Kindergarten, and a gradual shift to more independent academic expectations (Spernes, 2020). They embark on a journey into a novel subject-based educational structure, greater independent responsibilities, pressure to succeed, and changing school expectations (Duchesne et al., 2012; Howe, 2011; Maltais, 2017).

Regarding peer interactions, in earlier middle childhood children engage in increasingly cooperative social play and larger group activities, interacting with a diverse range of peers, and cooperative problem-solving (Benenson et al., 1997; Hay et al., 2009; Robinson et al., 2003; Rubin et al., 2015). Moreover, children in earlier middle childhood engage in increasingly prosocial behaviors such as helping and sharing along with the development of Theory of Mind, the social-cognitive ability to understand others' mental states and attribute social behavior to mental states (Caputi et al., 2012; Rubin et al., 2015).

In later middle childhood, children navigate increasingly intricate social relationships, where peer interactions increase, complex group dynamics emerge, best friends and loyal friendships develop, and intimacy in relationships mature (Rubin et al., 2015; Sroufe, 2005). Children's abilities to navigate the dynamics of peer relationships increase such as simultaneously managing the intricacies of exchanges with same or other-gendered peers, functioning effectively in peer groups, and maintaining close friendships (Sroufe, 2005; Sroufe et al., 2009). Social relationships become more complex as children's abilities to understand others' thoughts, motivations, and emotions continue to improve (Izard, 2009) which in turn continues to increase their capacities in social-communicative competence, social skills, rule-governed games, and altruistic behavior (Eisenberg et al., 2006; Goldstein et al., 2002; Rubin et al., 1983; Rubin et al., 2015; Rubin & Rose-Krasnor et al., 1992; Spernes, 2020).

During a period of intense transformation, positive peer relationships and optimism are likely to benefit children and buffer distress towards a more positive transition. The literature suggests that optimism is associated with greater physical and psychological outcomes in children and that positive future expectations may provide motivation and adaptive coping strategies to reach the future expectation (Ben-Zur, 2003; Carver & Scheier, 2014; Ek et al., 2004; Heinonen et al., 2005; Scheier et al., 2021; Scheier & Carver, 2018; Segerstrom, 2007). Further, given the significant change that children navigate, developing positive future expectations may provide benefits towards the transition into adolescence as well as long-lasting benefits into adulthood. The Daukantaite & Bergman (2005) Finnish longitudinal study found that dispositional optimism at 13 years old was related to optimism at 43 years old among women, highlighting the importance of optimism in middle childhood and the long-lasting stability of optimism across the lifespan.

### *Peer Relationships and Optimism Among Children*

Several studies investigated various genetic, environmental, and social precursors to optimism in children (Carver 2010; Gillham & Reivich, 2004; Segerstrom, 2007; Tetzner, 2019). Prospective studies investigating factors related to dispositional optimism indicate a 25% heritability for optimism, suggesting that optimism may be heritable to some degree (Carver et al., 2010; Plomin et al., 1992). Additionally, environmental factors such as quality of parenting, perceived school support and connectedness, academic success, and greater socioeconomic resources promote optimism in childhood and adulthood (Ek et al., 2004; Hasan & Power, 2002; Heinonen et al., 2005; Oberle et al., 2013; Renaud et al., 2019; Tetzner et al., 2019; Thomson et al., 2015; Yu et al., 2019). Conversely, a history of childhood adversity may negatively impact the development of positive future expectancies (Broekhof et al., 2015; Korkeila et al., 2004; Taylor et al., 2020).

Although a small body of literature provides evidence for factors associated with optimism, little is known about the mechanism for which optimism operates and Fredrickson et al.'s (2004, 2008, 2013) Broaden and Build theory may explain one way optimism develops. The broaden and build theory posits that positive emotions broaden the scope of one's attention, thoughts, behavior, and perceptions. The expanded frame of attention then builds resources such as social connection, resilience, creativity, and optimal functioning. Moreover, Fredrickson suggests that positive affect promote greater positive emotions and resources. When children engage in successful social interactions and high-quality friendships, they experience positive emotions which broadens attention and perspective.

There is evidence to suggest that positive interactions with friends influences positive emotions in children. Children who are more socially competent as evidenced by peer ratings

express greater levels of positive emotions (Schultz et al., 2009). Additionally, strong social relationships among children 9 to 12 years old are associated with happiness (Holder & Coleman, 2009). Fredrickson's studies (2004, 2008) have found in an adult sample that positive emotions lead to broadened attentional and behavioral tendencies and that positive affect was associated with adjustment including optimism. As children experience success and positive feelings such as joy, love, and hope in social interactions, they may experience a broader perspective which in turn fosters attentional flexibility and adaptive coping strategies (Nes & Segerstrom, 2006). Positive affective experiences from positive social interactions in children may broaden cognition, fostering adaptive thought-action repertoires, and positive future expectancies (Frederickson, 2004).

Overall, prospective studies investigating factors associated with the development of dispositional optimism indicate genetic, environmental, and social factors. Additionally, because peer relationships become increasingly important in middle childhood (Rubin et al., 2015; Spernes, 2020), they may have a unique influence in the development of positive future expectancies and positive emotional outcomes. Positive emotions experienced in peer relationships which promote greater positive emotions and resources may explain one mechanism for which optimism develops. There is a scarcity of research that examines the relevance of peer relationship constructs and optimism among children. More specifically, investigation into the association of peer victimization, peer social competence, and quality of peer relationships with positive future expectancies is needed.

**Peer Victimization.** Peer victimization refers to the experience of being victim to peer harassment, which takes various forms such as verbal (teasing, spreading rumors) or physical harassment (physical aggression; Ladd & Ladd, 2001). The literature on peer victimization

encompasses both aggressive forms of peer harassment, also known as bully victims, and passive forms of peer harassment (Kochenderfer & Ladd, 1996a; Ladd & Ladd, 2001; Reijntjes et al., 2010). Peer victimization among children predicts higher levels of internalizing problems (Reijntjes et al., 2010), and is associated with decreased well-being (Guhn et al., 2013), greater somatic health issues (Gini & Pozzoli, 2009), and school drop-out (Cornell et al., 2013). The experience of peer victimization is likely to undermine the development of optimism by creating a sense that the world is unpredictable and dangerous. Three studies thus far have investigated the association between peer victimization and optimism in adolescents.

In a cross-sectional Spanish study, Orejudo et al. (2012) examined the extent to which family and peer factors influence optimism within an educational environment during adolescence. Orejudo et al., (2012) found that among boys 12 to 19 years old, being the victim of bullying at school was associated with pessimism while fewer experiences of peer victimization were associated with greater optimism. In another cross-sectional study, Cassidy & Taylor (2005) examined the relation between being bullied and optimism among a sample of 236 children ages 12 to 15 years old in the United Kingdom. The authors found that children who were bullied had significantly lower optimism scores compared to children who had not been bullied as assessed by an abbreviated version of the Beck Hopelessness Scale (Beck, 1981). Additionally, children who were victims of peer victimization (e.g., harassment) also reported greater feelings of helplessness in problem situations, exercised less problem-solving control, and experienced greater distress than non-bullied children. Jobe-Shields et al. (2011) prospectively investigated the relation between victimization, loneliness, and positive future expectancies related to peer relationships (peer optimism) over three years in middle childhood. The researchers found that as children's experiences of peer victimization increased between 3<sup>rd</sup>

and 6<sup>th</sup> grade (9 to 11 years old), children's positive future expectancies of positive peer relationships decreased. Taken together, these findings provide some evidence that peer victimization is associated with decreased optimism among children and may have an important influence in the development of optimism, thus highlighting the need for additional research.

Despite providing valuable contributions to the small body of literature, these studies also have various limitations. Two of the three studies did not utilize longitudinal study designs limiting investigation of directional relationships. Additionally, Cassidy & Taylor (2005) and Jobe-Shields (2011) assessed optimism via measures adapted to capture optimism specific to peer relationships. Jobe-Shields (2011) assessed expectations about future peer interactions and relations via the Peer Life Orientation Test (PLOT; Deptula et. al., 2006) an adaptation of the commonly used LOT-R (Scheier & Carver, 1985; Scheier et al., 1994) limiting the generalizability of their findings to dispositional optimism. To address these gaps, the present study hypothesized that greater peer victimization experienced at the beginning and end of middle childhood would be associated with lower optimism in 6<sup>th</sup> grade.

We also evaluated whether earlier or later peer victimization is more relevant to dispositional optimism in 6<sup>th</sup> grade, controlling for the effects of the other (earlier or later middle childhood peer victimization). We did not have specific hypotheses regarding whether earlier or later victimization is more relevant to optimism. Victimization experienced in earlier middle childhood (1<sup>st</sup> to 3<sup>rd</sup> grades) may be associated with lower optimism compared to victimization in later middle childhood as children may not be equipped with strategies and assertiveness skills to cope with bullying incidents and discourage further peer harassment (Smith et al., 2001), thus decreasing a child's expectations for positive future outcomes. Alternatively, peer harassment experienced in later middle childhood (4<sup>th</sup> to 6<sup>th</sup> grades) may be associated with lower optimism

as children's social and cognitive skills become more sophisticated, adversity may have a greater impact, in turn decreasing positive future expectancies (Crick & Dodge, 1994; Piaget & Inhelder, 1966; Rubin et al., 2015).

**Peer Social Competence.** Peer social competence may contribute to the development of optimism. Peer social competence, broadly defined, refers to effectiveness in social interactions with peers which may encompass communication, perspective-taking, peer status, and social skills (Rose-Krasnor, 1997; Semrud-Clikeman, 2007). Effectiveness in social relations may be an important element in positive expectancies about future social success as it may shape children's perspective, cognition, and self-confidence (Rose-Krasnor, 1997; Rose-Krasnor & Denham, 2009; Rubin et al., 2015). Social competence emerges through various interactions between a child and social partners (Rose-Krasnor & Denham, 2009). When individuals are optimistic, they make inferences from previous events and outcomes that future outcomes will also be successful and thus are more likely to behave in accordance with their previous behavior (Crick & Dodge, 1994; Yang & Urmitsky, 2015). Additionally, in social interactions children may achieve their intrapersonal goals and individual social development of self-efficacy (Rose-Krasnor & Denham, 2009) thus allowing the child to imagine and believe that they are likely to succeed in future social interactions. Self-confidence is related to optimism (Karademas, 2006). More specifically, the belief that one is capable and effective may motivate an individual to have high expectations for the future and have an internal locus of control. Brown & Marshall (2001) found that when individuals hold high expectations and positive expectancies for difficult tasks, they attribute success to their own traits.

To date, only two studies have investigated the relation between social competence and peer optimism in childhood. In a cross-sectional study, Deptula et al., (2006) tested the relation

between peer social competence and peer optimism among 232 3<sup>rd</sup> to 6<sup>th</sup> graders. A second aim of the research study was to adapt the Life Orientation Test Revised (LOT-R; Scheier & Carver, 1985; Scheier et al., 1994), a global measure of dispositional optimism for adults, to more specifically measure optimism related to peer relationships in children. The researchers assessed peer social competence via sociometric nominations, sociometric ratings, friendship nominations, peer behavior nominations, and loneliness (Deptula et al., 2006). The authors found that social competence was related to optimism in peer relations, which varied by sex (Deptula et al., 2006). Boys who had greater success in social relationships such as having many friends, being well-accepted, as well as experiencing lower levels of rejection, loneliness, and victimization were associated with greater self-reported peer optimism. Among girls, lower levels of social isolation were associated with greater optimism.

To build on their previous cross-sectional findings, Deptula et al. (2021) examined peer optimism change over time via empirically derived profiles or groups from Growth Mixture Modeling. The sample consisted of 114 children in 3<sup>rd</sup> and 4<sup>th</sup> grades who were reevaluated in 5<sup>th</sup> and 6<sup>th</sup> grades. The results revealed two groups of children with differing peer optimism paths over the course of a year. The first group consisted of a Low/Stable peer optimism group where children's peer optimism were low at 3<sup>rd</sup>/4<sup>th</sup> grade and remained at the same level at 5<sup>th</sup>/6<sup>th</sup> grade. The Low/Stable group made up 39.2% of the sample. The second group was the High/Increasing peer optimism group which were characterized as having high peer optimism in 3<sup>rd</sup>/4<sup>th</sup> grade and experienced a statistically significant increase in peer optimism at 5<sup>th</sup>/6<sup>th</sup> grade. The High/Increasing group made up 60.8% of the sample.

Deptula et al. (2021) also investigated the association between the peer optimism groups and peer social competence change over time. The authors found that the Low/Stable group were

associated with lower social competence including lower self-perceived social competence, lower social standing as assessed by peers (peer liking and popularity), greater relational aggression, and greater withdrawal behaviors. Conversely, the High/Increasing group were associated with greater self-perceived and peer-rated social competence indices and fewer relational aggression and withdrawal behaviors. Furthermore, Deptula et al., (2021) noted that among the High/Increasing group, higher levels of peer optimism was associated with greater peer social competence in 3<sup>rd</sup>/4<sup>th</sup> grade and that an increase in optimism was subsequently observed at the 5<sup>th</sup>/6<sup>th</sup> grade timepoint suggesting that social success at the earlier timepoint is likely to encourage expectancies about social success in the future.

The findings from these studies provide valuable insight into the association between social competence and peer optimism both cross-sectionally and longitudinally in middle childhood. However, a significant limitation to these studies is that optimism is limited to peer interactions and relations as the Peer Life Orientation Test (PLOT; Deptula et al., 2006) assessed peer optimism rather than dispositional optimism (LOT-R; Scheier & Carver, 1985; Scheier et al., 1994). The current study investigated the association between peer competence and dispositional optimism, a global cognitive domain which is likely to be generalizable to various domains of one's life aside from the social realm. Drawing from the Deptula et al. (2021) findings, we hypothesized that greater earlier and later social competence in middle childhood would be associated with greater dispositional optimism in 6<sup>th</sup> grade.

We also evaluated whether earlier or later peer competence is more relevant to dispositional optimism in 6<sup>th</sup> grade, controlling for the effects of the other (earlier or later middle childhood peer competence). Because previous findings provide evidence to suggest that peer competence among children in both earlier and later middle childhood relate to peer optimism,

we did not have specific hypotheses as to whether peer competence in earlier or later middle childhood would have a greater association with optimism. One hypothesis is that children in earlier middle childhood develop skills in social competence which becomes the foundation upon which further competence builds. This development leads to cumulative effects on social competence and dispositional optimism in later middle childhood, changing the course of development (Masten & Cicchetti, 2010). In other words, there are developmental cascades from earlier middle childhood which have lasting positive or negative consequences across domains and over time (Masten & Cicchetti, 2010). Social competence developed in the earlier years may serve as an important foundation highlighting the significance in the earlier years. Further, insufficient development in the earlier years may stunt later skill growth. Alternatively, social competence in later compared to earlier middle childhood may have a greater association to dispositional optimism in 6<sup>th</sup> grade given the progressive snowball effects built over many years.

**Friendship Quality.** Friendship quality refers to the valence and nature of interactions with friends (Rubin et al., 2015). Friendships between children and their partners differ in the qualitative characteristics and behavior in the dyadic relationship. The qualitative aspects of a friendship vary in the degree to which the relationship is characterized by companionship and recreation, validation and caring, help and guidance, intimate exchange, conflict and betrayal, conflict resolution, prosocial behavior, and similarities in attitudes and behaviors (Parker & Asher, 1993; Rubin et al., 2004; Rubin et al., 2015). Moreover, children experience greater satisfaction within higher quality friendships such as with a best friend (Parker & Asher, 1993). It is likely that higher quality peer relationships foster a sense of intimacy, support, safety, security, and well-being (Bukowski et al., 2009) which may influence positive future expectancies.

Another possible mechanism that friendship quality may promote dispositional optimism is through the influence of personal connection on the self-concept. The American psychiatrist Henry Stack Sullivan (1953) posited that the relationships children have with peers comprise their first true interpersonal experiences as they differ from hierarchical relationships with authority figures such as parents. Personal connection develops from the experience of positive-regard, care, mutual respect, reciprocity, and exchange in a close dyadic relationship. Sullivan thought that in middle childhood, children recognized and appreciated each other's personal characteristics which in turn made peers an important influence on the development of the self-concept. The quality of the interaction between peers may have an important impact on children's feelings of personal connection and reciprocity which in turn may influence self-confidence and optimism. The belief that one is capable of intimate social connection and maintaining a close relationship may influence their positive future expectancies and a sense that they are likely to succeed in future interactions (Rose-Krasnor & Denham, 2009).

To date, no research studies exist that examine the relation between friendship quality and optimism. One study focused on the outcome of a positive future expectancy and points to a possible association. Brissette et al., (2002) prospectively examined the degree to which dispositional optimism is associated with developing a friendship network in the first semester of college. The researchers found that greater optimism was associated with greater perceived social support at the start of the semester (Brissette et al., 2002). Brissette also found that students with greater dispositional optimism reported an increase in quality of social support but did not report an increase in quantity of relationships (Brissette et. al., 2002). Findings from this study provide some evidence that optimists are likely to report greater social support and higher quality positive friendships. However, studies specifically investigating the relation between

friendship quality and optimism in middle childhood are greatly needed. To address this gap, the present study hypothesized that higher quality peer relationships experienced at the beginning and end of middle childhood would be associated with greater optimism in 6<sup>th</sup> grade.

We also evaluated whether earlier or later friendship quality is more relevant to dispositional optimism in 6<sup>th</sup> grade, controlling for the effects of the other (earlier or later middle childhood peer friendship quality). We did not have specific hypotheses regarding whether earlier or later friendship quality is more relevant to optimism in 6<sup>th</sup> grade. Developmental cascades for the qualitative aspects of peer interactions may play an important role whereby skills learned in earlier and later middle childhood may have associations with various domains such as dispositional optimism in later middle childhood (Masten & Cicchetti, 2010). On one hand, during earlier middle childhood, developing adaptive skills that promote higher quality friendships may have valuable progressive effects that spread over time (Masten & Cicchetti, 2010). Moreover, maladaptive behavior in earlier middle childhood may alter the course of development towards a negative cascade in dyadic relationships (Masten & Cicchetti, 2010). On the other hand, higher quality friendships in later middle childhood may have a greater association to dispositional optimism given the cumulative effects of skills, behaviors, and interactions over time.

Given the paucity of literature dedicated to these peer relationship constructs, the current study aimed to ameliorate this gap in the literature. Further investigation into the extent to which peer victimization, peer social competence, and friendship quality is associated with dispositional optimism in earlier and later middle childhood is needed. It is likely that greater peer victimization in earlier and later middle childhood is associated with lower optimism in 6<sup>th</sup> grade. Further, it is likely that greater peer social competence and greater quality friendships in

earlier and later middle childhood is associated with greater optimism at 6<sup>th</sup> grade. In addition, we investigated whether earlier peer relationship factors are more relevant to later dispositional optimism above and beyond later peer relationship factors, and whether later peer relationship factors are more relevant to later dispositional optimism above and beyond earlier peer relationship factors. Importantly, gaining insight into the temporal association of these constructs with dispositional optimism in later middle childhood can provide evidence for well-timed interventions to promote adaptive or interrupt maladaptive functions and behaviors.

### **Study Hypotheses**

To summarize, the goal of this study was to evaluate whether peer relationship variables (peer victimization, peer social competence, and greater friendship quality) assessed in earlier and later middle childhood, relate to optimism assessed in later middle childhood. The study relied on data from a large longitudinal project, the National Institute of Child Health and Human Development (NICHD) Study of Early Child Care and Youth Development (SECCYD), where children were followed from 1<sup>st</sup> to 6<sup>th</sup> grade. For the purposes of this study earlier middle childhood was operationalized as 1<sup>st</sup> to 3<sup>rd</sup> grade (approximately 6 to 8 years old) while later middle childhood was operationalized as 4<sup>th</sup> to 6<sup>th</sup> grade (approximately 9 to 11 years old; Centers for Disease Control and Prevention [CDC], 2021a; CDC, 2021b; Kerns & Seibert, 2021; Uhlendorff, 2000). Thus, we expected that greater peer victimization in earlier and later middle childhood would be related to lower levels of optimism in 6<sup>th</sup> grade (Hypothesis 1). We also hypothesized that greater peer social competence (Hypothesis 2) and greater friendship quality (Hypothesis 3) in earlier and later middle childhood would be related to greater optimism in 6<sup>th</sup> grade. Additionally, we investigated whether earlier or later peer variables (peer victimization, peer social competence, and greater friendship quality) are more relevant to optimism in 6<sup>th</sup>

grade (Hypothesis 4). Given the novelty of the current study, we had no specific hypotheses regarding whether earlier or later peer variables are more relevant to optimism in 6<sup>th</sup> grade, but we believe it is important to gain insight into aspects of peer relationships and optimism during this critical developmental period as well as provide evidence for well-timed intervention to promote adaptive or interrupt maladaptive functions and behaviors.

## **Methods**

### **Study Design**

The present study is part of a larger longitudinal study, the National Institute of Child Health and Human Development (NICHD) Study of Early Child Care and Youth Development (SECCYD). The NICHD SECCYD is a comprehensive study that investigated childcare experiences and child development in the United States. The current study employed data from the larger study.

### **Participants**

Participants in this study were recruited as part of the NICHD study. Children and their families were recruited from 24 hospitals at 10 different sites across the United States. Mother-child dyads were approached at the hospital within 48 hours of the child's birth and, with their consent, were followed until the child reached age 15. There were four phases of data collection: Phase I (birth-36 months), Phase II (37 months-1<sup>st</sup> grade), Phase III (2<sup>nd</sup> grade-6<sup>th</sup> grade), and Phase IV (7<sup>th</sup> grade-9<sup>th</sup> grade). Participants were excluded from the study if the mother was under 18 years old, did not speak English, the family planned to move within one year, the infant or mother had serious medical issues, or the mother had difficulties with substance use. For additional details see the National Institute of Child Health and Human Development website (2019) and the original NICHD article (NICHD Early Child Care Research Network, 2001).

For the purposes of the present study, data from Phase II (54 months-1<sup>st</sup> grade) and Phase III (2<sup>nd</sup>–6<sup>th</sup> grade) were utilized. At the beginning of the study, a total of 1,364 families were recruited (48% female newborns). At Phases II and III approximately 1,226 and 1,061 families remained in the study respectively. For the present project, the selected sample included children who completed the optimism measure (Life Orientation Test; Scheier & Carver, 1985) at sixth grade. For analyses, we retained 1012 participants, 74.2% of the original sample.

Parents completed demographic questionnaires. At the start of the study the original sample was 75% Caucasian/non-Hispanic, 12.9% African American/non-Hispanic, 6.6% Hispanic, 1.5% Asian, 0.4% Native American, 3.7% Other. In terms of gender, 51.7% of the total sample were boys and 48.3% were girls. When the study child was one month old, 85.5% were intact households and 14.5% were a single parent household. When the study child was in 1<sup>st</sup> grade, 82% were intact households and 18% were a single parent household. When the child was in 6<sup>th</sup> grade, 80.8% of the families were intact and 19.2% were a single parent household. In terms of maternal education, 10.4% of the total sample completed some high school, 21.1% graduated high school, 33.2% completed some college, 20.8% received a bachelor's degree, and 14.5% completed graduate school or received a professional degree. Regarding income, the mean household income for the sample was higher than the national average ( $M = \$37,781.28$ ) and 18.8% of families were on public assistance.

Of the recruited sample, 49.8% of children were female, eight hundred and twenty-one (81%) identified themselves as Caucasian, one hundred and twenty-three (12%) as African American, fourteen (1%) as Asian or Pacific Islander, and fifty-four (5%) as other. Mother's level of education ranged from seven to twenty-one years  $M (SD) = 14.42 (2.44)$ . Approximately 11.9% ( $n = 85$ ), had not completed high school, 20% ( $n = 202$ ) had completed high school or

obtained a GED, 33.2% ( $n = 336$ ) had completed some college, and 38.4% ( $n = 389$ ) had a college or graduate degree. The presence or absence of the mother's partner in the home was examined between first to sixth grade and the variable "single parenting" indexed the number of those six assessments in which the partner was living in the home. Approximately 9.9% ( $n = 100$ ) did not have a partner in the home at any of these time points, 3.2% ( $n = 32$ ) had a partner at one time point, 5% ( $n = 51$ ) had a partner at two time points, 4.8% ( $n = 49$ ) had a partner at three time points, 8% ( $n = 81$ ) had a partner at four time points, 8.1% ( $n = 82$ ) had a partner at five time points, 61% ( $n = 617$ ) had a partner at all six time points. Family income-to-needs ratio was assessed at grade six,  $M (SD) = 4.54 (4.18)$ . Descriptive statistics for all variables are presented in Table 2.

### **Procedure**

Although participants attended lab sessions and participated in home visits we only describe measures relevant to the present study. The present study considered data collected between 1<sup>st</sup> to 3<sup>rd</sup> grade as earlier middle childhood and 4<sup>th</sup> to 6<sup>th</sup> grade as later middle childhood. Children completed the Peer Social Support, Bullying, and Victimization questionnaire (Kochenderfer & Ladd, 1997) at 3<sup>rd</sup> and 5<sup>th</sup> grades, and the study child's perceived victimization was assessed via the Victimization subscale. Friendship quality was assessed through observed friendship interaction coding at 1<sup>st</sup> grade and in 6<sup>th</sup> grade. Friendship quality was also assessed via the Friendship Quality Questionnaire (FQQ; Parker & Asher, 1993) completed by children in the 3<sup>rd</sup>, 4<sup>th</sup>, 5<sup>th</sup>, and 6<sup>th</sup> grades. Parent and teachers completed the Social Skills Rating System (SSRS; Gresham & Elliott 1990; Gresham, Elliott, & Evans, 1993) six times from 1<sup>st</sup> grade to 6<sup>th</sup> grade, yielding scores for social competence. Optimism was assessed with children's reports of the Life Orientation Test in a laboratory setting in the 6<sup>th</sup> grade.

## Measures

### *Peer Victimization*

Children completed the Victimization scale of the Peer Social Support, Bullying, and Victimization questionnaire (Kochenderfer & Ladd, 1997) at 3<sup>rd</sup>, 5<sup>th</sup> and 6<sup>th</sup> grades. The scale assesses children's perceived victimization by classmates. It included 4 items rated on a 5-point scale from 1 (never) to 5 (always). Higher ratings indicate having experienced a greater number of victimization behaviors from classmates. An example of items is "does anyone in your class pick on you at school?" The Perceived Victimization Score was computed as an average of the responses. Cronbach's alpha coefficient for the scale was .81. Kochenderfer & Ladd (1997) examined the construct validity of the Victimization scale and found a moderate correlation between children's self-reports and observer's ratings of children's exposure to victimization by peers. Regarding concurrent validity, Kochenderfer & Ladd (1997) found that the Victimization scale positively and significantly correlated with loneliness as measured by the Loneliness and Social Dissatisfaction Questionnaire (LSDQ; Cassidy & Asher, 1992) and negatively correlated with peer acceptance as measured by a sociometric measure that involves sorting photos of classmates (Asher et al., 1979). The researchers found the scale to be moderately stable over a four-to-six-month period (Kochenderfer & Ladd, 1997). We used the 3<sup>rd</sup> grade perceived victimization score as the earlier middle childhood assessment. Because perceived victimization scores at 5<sup>th</sup> and 6<sup>th</sup> grade were highly correlated ( $r=.55, p<.001$ ) we averaged them to obtain a later middle childhood victimization score.

### *Peer Social Competence*

Mothers and Fathers completed the Social Skills Rating System (SSRS; Gresham & Elliot 1990; Gresham et al., 1993) when their children were in 1<sup>st</sup>, 3<sup>rd</sup>, 4<sup>th</sup>, 5<sup>th</sup>, and 6<sup>th</sup> grade.

Teachers completed the SSRS annually from 1<sup>st</sup> grade to 6<sup>th</sup> grade. The social skills scale assesses positive social behaviors and children's ability to interact effectively with others grouped under four subscales of cooperation (20 items), assertion (10 items), responsibility (10 items), and self-control (10 items). Parents and teachers indicated how often a target behavior occurred from 0 (never) to 2 (very often). The subscales range in score from 0 to 20 and higher scores indicate greater demonstration of the positive social behavior as reported by the child's mother or alternate caregiver and teacher.

An a priori composite peer social competence scale was calculated and included various items from the four subscales such as "joins group activities without being told, responds appropriately when hit or pushed by other children, makes friends easily, and accepts friends' ideas for playing". Scores for this variable range from 0 to 20 and higher scores indicate a higher positive response from the child to their peers. Internal reliability Cronbach alpha coefficients for the current study's peer social competence score were .74 for 1<sup>st</sup> grade mother ratings, .68 for 1<sup>st</sup> grade father ratings, .85 for 1<sup>st</sup> grade teacher ratings, .88 for 2<sup>nd</sup> grade teacher ratings, .79 for 3<sup>rd</sup> grade mother ratings, .76 for 3<sup>rd</sup> grade father ratings, .87 for 3<sup>rd</sup> grade teacher ratings, .80 for 4<sup>th</sup> grade mother ratings, .80 for 4<sup>th</sup> grade father ratings, .86 for 4<sup>th</sup> grade teacher ratings, .77 for 5<sup>th</sup> grade mother ratings, .77 for 5<sup>th</sup> grade father ratings, and .87 for 5<sup>th</sup> grade teacher ratings. The Total Social Skills Scale has excellent internal consistency for parent ( $\alpha = .90$ ) and teacher ( $\alpha = .94$ ) reports (Gresham, 2001). The Total Social Skills Scale has good test-retest reliability ranging from .87 (parent report) to .85 (teacher report; Van Horn et al., 2007). Stability estimates for the Total Social Skills Scale range from .52 to .88 (*Mdn* = .70). Additional information regarding the psychometric properties of the scales is available in the Social Skills Rating System Manual (Gresham & Elliott, 1990).

For the purposes of this study, mother and father SSRS scores from 1<sup>st</sup> and 3<sup>rd</sup> grade were highly correlated and we averaged them respectively to obtain an earlier middle childhood mother SSRS score ( $r=.66, p<.001$ ) and father SSRS score ( $r=.55, p<.001$ ). Teacher SSRS scores from 1<sup>st</sup>, 2<sup>nd</sup>, and 3<sup>rd</sup> grade were highly correlated and we averaged them to obtain an earlier middle childhood teacher SSRS score (1<sup>st</sup> and 2<sup>nd</sup> grade  $r=.43, p<.001$ ; 2<sup>nd</sup> and 3<sup>rd</sup>  $r=.44, p<.001$ ; 1<sup>st</sup> & 3<sup>rd</sup> grade  $r=.37, p<.001$ ). Similarly, mother SSRS scores from 4<sup>th</sup>, 5<sup>th</sup>, and 6<sup>th</sup> grade were highly correlated and we averaged them to obtain a later middle childhood mother SSRS score (4<sup>th</sup> and 5<sup>th</sup> grade  $r=.73, p<.001$ ; 4<sup>th</sup> and 6<sup>th</sup> grade  $r=.68, p<.001$ ; 5<sup>th</sup> & 6<sup>th</sup> grade  $r=.70, p<.001$ ). Father SSRS scores from 4<sup>th</sup>, 5<sup>th</sup>, and 6<sup>th</sup> grade were highly correlated and we averaged them to obtain a later middle childhood father SSRS score (4<sup>th</sup> and 5<sup>th</sup> grade  $r=.68, p<.001$ ; 4<sup>th</sup> and 6<sup>th</sup> grade  $r=.66, p<.001$ ; 5<sup>th</sup> & 6<sup>th</sup> grade  $r=.69, p<.001$ ). Lastly, teacher SSRS scores from 4<sup>th</sup>, 5<sup>th</sup>, and 6<sup>th</sup> grade were highly correlated and we averaged them to obtain a later middle childhood teacher SSRS score (4<sup>th</sup> and 5<sup>th</sup> grade  $r=.48, p<.001$ ; 4<sup>th</sup> and 6<sup>th</sup> grade  $r=.38, p<.001$ ; 5<sup>th</sup> & 6<sup>th</sup> grade  $r=.46, p<.001$ ). Because the focus of interest for the present study is peer social competence rather than variation in scores by reporter type, the earlier mother, father, and teacher peer competence score was then averaged for one earlier middle childhood peer social competence score. Similarly, the later middle childhood mother, father, and teacher scores were averaged for one later middle childhood peer social competence score.

### ***Friendship quality***

**Observed friendship interactions.** At 1<sup>st</sup> grade and 6<sup>th</sup> grade children were observed during play sessions with peers. At the 1<sup>st</sup> grade time point, children were observed during unstructured peer interactions (recess) with classmates during non-teacher directed play time for approximately 20 minutes. The observations were conducted in various settings including

outside playgrounds, in gymnasiums, multipurpose rooms, in the study child's classroom, or in lunchrooms.

At the 6<sup>th</sup> grade time point, children were videotaped during a semi-structured play session with their close friend in a lab setting. The study child identified a "best friend" to participate in the observation with them. The study team then approached the child and family to participate in the study. The study child and friend completed four interactive and discussion sessions: Snack, Jenga Game, Pictionary Game, and Plan a Kids' Only Vacation. During the first Snack task, the dyad was provided with various snacks and two different drinks. The task was designed to prompt negotiation over the available resources for seven minutes. In the second task, the children participated in an eight-minute game of Jenga, and the winner opened a small prize. In the third task, the dyad played the game Pictionary as a team for seven minutes. In the fourth task, the children participated in a seven-minute planning activity in which they made decisions about a hypothetical kids-only vacation such as the destination, guest list, mode of transportation, itinerary, packing list, allowance etc.

***Coding of Interactions.*** For the 1<sup>st</sup> grade time point (earlier middle childhood), trained coders observed the study child in 30 second interval cycles: observing for 30-seconds and recording behavior ratings for 30-seconds. The observers recorded the frequency of target behaviors including solitary/independent play, interacting with 1-2 peers, interacting with 3 or more peers, sharing enjoyment of a mutual activity with peer(s), rough and tumble play or chasing a friend (initiated by the study child), rough and tumble play or chasing the study child (initiated by a peer), physical aggression toward a peer, other negative behavior toward a peer, tattling on a peer, being the target of physical aggression or other negative behavior from a peer. Observers also rated the study child on overall qualitative characteristics at the end of the

observation period. They rated the level of the child's play involvement as engaged, unoccupied, or inappropriate (i.e. aggressive or dangerous behavior). The observers also gave qualitative rating on a scale of 1-7, where 1 is "uncharacteristic" and 7 is "extremely characteristic", for overall positive affect, negative affect, and prosocial behavior (sharing and turn-taking, expressions of concern and caring). The experimenters created two composite scores: Dyadic Negative/Aggressive Play Composite and Positive Peer Interaction Composite. The Dyadic Negative/Aggressive Play Composite consists of three behavior frequency ratings (physical aggression toward a peer, other negative behavior toward a peer, receiving physical aggression or other negative behavior from a peer) and one qualitative rating (study child negative affect). Higher scores in this composite indicate greater aggressive behavior. The Positive Peer Interaction Composite consists of two behavior ratings (study child level of engagement, sharing enjoyment of a mutual activity) and two qualitative ratings (study child positive affect, study child prosocial behavior). Because these composites consist of behavior ratings and qualitative ratings with different scoring systems, the subscale scores were first standardized with a mean of 0 and a standard deviation of 1 and then summed for ease of comparability. To assess for interrater reliability the authors calculated intraclass correlations which range from .71 (negative affect) to .98 (solitary/independent play). The authors also calculated a reliability estimate correlation based on repeated measures ANOVA which takes into account differences in the raters and range from .82 (negative affect) to .99 (solitary/independent play). The experimenters reported that the Dyadic Negative/Aggressive Play Composite had a correlation of .72 and a correlation of .83 after controlling for differences in the raters. The Positive Peer Interaction Composite had a correlation of .90 and a correlation of .95 after controlling for differences in the raters. In terms of internal reliability, the authors reported  $\alpha = .68$  for the Dyadic

Negative/Aggressive Play Composite and  $\alpha = .64$  for the Positive Peer Interaction Composite.

To this writer's knowledge, this variable has not yet been examined in previous research to date.

For the 6<sup>th</sup> grade time point (later middle childhood), trained coders rated the study child and dyad on seven behavior subscale scores for each play session. Five of the subscale scores apply to the study child's behavior (study child positive social behavior, negative behavior, competitiveness, self-disclosure, agency) and two apply to the dyadic interaction (negative interaction, overall friendship quality). For all ratings, coders used a 5-point Likert scale with 5 being the most characteristic. Experimenters rated the dyads at the end of each play session and ratings were averaged across the four segments. The experimenters created two composite scores: Positive Friendship Interaction Score and Negative Friendship Interaction Score. The Positive Friendship Interaction Score consists of the means of the child positive social behavior and child agency subscale scores. Scores ranged from 1 to 5 with higher scores indicating a more positive friendship rating. The Negative Friendship Interaction Score consists of the means of the child negative behavior, child competitiveness, and dyad negative interaction subscale scores. Scores ranged from 1 to 5 with higher scores indicating a more negative friendship rating. To assess for interrater reliability intraclass correlations were used for 10% of the cases with two raters, and the estimates were .85 (child positive social behavior), .84 (negative behavior), .88 (competitiveness), .86 (self-disclosure), .83 (agency), .85 (negative interaction), and .84 (overall friendship quality). After controlling for rater differences, the correlations were .92 (study child positive social behavior), .91 (negative behavior), .93 (competitiveness), .92 (self-disclosure), .90 (agency), .91 (negative interaction), and .91 (overall friendship quality). The Positive Friendship Interaction Score has a correlation of .89 and after controlling for rater differences, the correlation is .94. The Negative Friendship Interaction Score has a correlation of .91 and after

controlling for rater differences, the correlation is .95. The items used to create the Positive Friendship Interaction Score have modest internal reliability ( $\alpha = 0.63$ ) and is highly correlated with the overall friendship quality score ( $r = .71$ ). The items used to create the Negative Friendship Interaction Score have modest internal reliability ( $\alpha = .61$ ) and has a negative low correlation ( $r = -.26$ ) with the overall friendship quality score.

**Friendship Quality Questionnaire.** Children completed the Friendship Quality Questionnaire (FQQ; Parker & Asher, 1993) at 3<sup>rd</sup>, 4<sup>th</sup>, 5<sup>th</sup> and 6<sup>th</sup> grade. The FQQ is a 21-item questionnaire that assesses children's perception of their friendship with their very best friend. Children rated how much they felt each item was true for them on a scale of 1 to 5 (1 = not at all true, 2 = a little true, 3 = somewhat true, 4 = mostly true, and 5 = really true). Higher values indicate more positive friendship behaviors from and with the best friend. The questionnaire consists of six subscales: Companionship and Recreation (2 items), Validation and Caring (5 items), Helping and Guidance (2 items), Intimate Disclosure (3 items), Conflict and Betrayal (4 items), Conflict Resolution (2 items). Four additional items provide information about the length, amount of contact, and quality of the friendship. Items include statements such as “[My friend] and I always sit together at lunch” (Companionship and Recreation), “[My friend] tells me I'm good at things” (Validation and Caring), “[My friend] and I loan each other things all the time” (Helping and Guidance), “[My friend] and I are always telling each other our problems” (Intimate Disclosure), “[My friend] and I get mad at each other a lot (Conflict and Betrayal), “[My friend] and I always make up easily when we have a fight” (Conflict Resolution). The subscale scores were obtained based on the mean of item scores. Parker & Asher (1993) reported acceptable internal consistency (all  $\alpha$ s .73-.90). Alpha coefficients for the current study at 3<sup>rd</sup> grade were .54 for Companionship and Recreation, .81 for Validation and Caring, .75 for

Helping and Guidance, .73 for Intimate Disclosure, .72 for Conflict and Betrayal, .63 for Conflict Resolution. Alpha coefficients for the current study at 5<sup>th</sup> grade were .60 for Companionship and Recreation, .84 for Validation and Caring, .77 for Helping and Guidance, .79 for Intimate Disclosure, .76 for Conflict and Betrayal, .77 for Conflict Resolution. Parker & Asher (1993) found that the FQQ has good internal consistency with a mean coefficient of .80 (Conflict Resolution  $\alpha = .73$ , Companionship and Recreation  $\alpha = .75$ , Conflict and Betrayal  $\alpha = .84$ , Intimate Exchange  $\alpha = .86$ , Help and Guidance  $\alpha = .90$ , Validation and Caring  $\alpha = .90$ ). Parker & Asher (1993) performed a principle-components analysis (oblique rotation) to construct the six subscales and the intercorrelations among five of the subscales were positive, with absolute magnitude ranging from .16 to .75. Parker & Asher (1993) found that the positive friendship qualities (including validation and caring, companionship and recreation, help and guidance, and intimate exchange) correlated significantly and positively with greater satisfaction in their friendship. Conversely, greater perceptions of conflict and betrayal were correlated with lower satisfaction in friendship (Parker & Asher, 1993). Friendship Quality Questionnaire scores at 3<sup>rd</sup> and 4<sup>th</sup> grade were highly correlated ( $r=.47, p<.001; \alpha=.01$ ) and we averaged them to obtain an earlier middle childhood FQQ score. Similarly, because FQQ scores at 5<sup>th</sup> and 6<sup>th</sup> grade were highly correlated ( $r=.47, p<.001; \alpha=.01$ ) we averaged them to obtain a later middle childhood FQQ score.

### ***Dispositional Optimism***

Children completed the Life Orientation Test (LOT; Scheier & Carver, 1985) at 6<sup>th</sup> grade. The LOT is an eight-item questionnaire assessing generalized expectancies for positive outcomes. Children were asked to indicate the degree to which they agree or disagree with a statement about themselves and the future on a 5-point Likert scale. Some examples of

statements include, “In uncertain times, I usually expect the best” and “I hardly ever expect things to go my way” where the response scale ranges from 0 (*strongly disagree*) to 4 (*strongly agree*). Four of the eight items are scored in a positive direction and four items are scored in a negative direction. The Cronbach’s alpha coefficient for the current study was .73. The LOT has good internal consistency ( $\alpha = .76$ ) and good test-retest reliability ( $\alpha = .79$ ; Scheier & Carver, 1985). In terms of convergent validity, the LOT correlated significantly and positively with internal locus of control (Rotter, 1966) and self-esteem (Rosenberg’s Self-Esteem Scale; Rosenberg 1965). Conversely, the LOT correlated significantly and negatively with hopelessness (Beck et al., 1974), depression (Beck Depression Inventory; Beck, 1967), and perceived stress (Cohen 1983; Scheier & Carver, 1985; Scheier et al., 1994).

### **Total Sample and Selected Sample**

A comparison between the total and selected sample on demographic characteristics are presented in Table 2. At sixth grade, 1012 children completed the optimism measure (74.2% of the original sample and having completed this measure was an inclusion criteria). There was not a statistically significant association between the total sample and selected sample on gender ( $\chi^2 (1) = 3.48, p = .06$ ), ethnicity ( $\chi^2 (1) = 1.23, p = .27$ ), or socioeconomic status at Grade 6 ( $t(977) = .41, p = .68$ ). Caucasian children (81.1%) were more likely to return to the study than minority children (18.9%). Families included in the present study were more likely to have a partner in the home from 1<sup>st</sup> to 6<sup>th</sup> grade ( $M = 4.66, SD = 2.05$ ) than those not included ( $M = 2.57, SD = 1.79$ ), a statistically significant difference,  $M = 2.09, 95\% CI [1.72, 2.46], t(1143) = 11.21, p < .001, d = .002$ . However, there was not a statistically significant difference between single parents in the total and selected sample at 6<sup>th</sup> grade ( $\chi^2 (1) = .56, p = .56$ ). Further, mothers included in the study had more years of education ( $M = 14.42, SD = 2.44$ ) than those who were not included ( $M$

= 13.71,  $SD = 2.64$ ), a statistically significant difference with a very small effect size,  $M = 0.71$ , 95%  $CI [0.40, 1.01]$ ,  $t(1361) = 4.57$ ,  $p < .001$ ,  $d = 0.0005$ .

### Missing Data

Some variables had missing data (out of the 1012 participants selected based on the outcome variable): earlier peer victimization (8%), earlier peer social competence (1%), earlier observed friendship quality, negative interactions (14%), earlier observed friendship quality, positive interactions (14%), earlier self-reported friendship quality (2%), later peer victimization (2%), later peer social competence (0%), later observed friendship quality, negative interactions (10%), later observed friendship quality, positive interactions (10%), and later self-reported friendship quality (0%).

To assess whether the missing data was related to the predictor variables we compared the included sample (the 1012 participants who completed the optimism measure) to the excluded sample (participants who did not complete the optimism measure) on the peer relationship variables. We found only one statistically significant difference between the included ( $M = 1.57$ ,  $SD = 0.47$ ) and excluded ( $M = 2.22$ ,  $SD = 0.19$ ) sample for later observed friendship quality, negative interactions ( $M = 0.65$ , 95%  $CI [0.122, 1.19]$ ,  $t(911) = 2.42$ ,  $p = 0.02$ ),  $d = 1.40$ ). Please note that the comparison sample was small; Among participants who completed the observed friendship quality negative interactions (1012), there were 910 participants who completed the optimism measure and only 3 who did not.

There was no statistically significant difference for: earlier peer victimization between the included ( $M = 1.84$ ,  $SD = 0.03$ ) and excluded ( $M = 1.85$ ,  $SD = 0.09$ ) sample ( $M = 0.008$ , 95%  $CI [-0.19, 0.21]$ ,  $t(992) = .08$ ,  $p = .94$ ); later peer victimization between the included ( $M = 1.78$ ,  $SD = 0.66$ ) and excluded ( $M = 1.63$ ,  $SD = 0.62$ ) sample ( $M = -0.15$ , 95%  $CI [-0.38, 0.08]$ ,

$t(1026) = -1.28, p = 0.20$ ); earlier peer competence between the included ( $M = 15.40, SD = 2.21$ ) and excluded ( $M = 15.25, SD = 2.76$ ) sample ( $M = -0.15, 95\% CI [-0.66, 0.37], t(139.11) = -0.56, p = 0.58$ ); later peer competence between the included ( $M = 15.37, SD = 2.40$ ) and excluded ( $M = 14.84, SD = 3.16$ ) sample ( $M = -0.53, 95\% CI [-1.30, 0.24], t(74.6) = -1.38, p = 0.17$ ); earlier self-reported friendship quality between the included ( $M = 3.97, SD = 0.57$ ) and excluded ( $M = 3.98, SD = 0.56$ ) sample ( $M = 0.006, 95\% CI [-0.13, 0.14], t(1068) = 0.09, p = 0.93$ ); later self-reported friendship quality between the included ( $M = 4.17, SD = 0.52$ ) and excluded ( $M = 4.21, SD = 0.54$ ) sample ( $M = 0.04, 95\% CI [-0.13, 0.22], t(1043) = 0.47, p = 0.64$ ); earlier observed friendship quality, positive interactions between the included ( $M = 0.03, SD = 2.76$ ) and excluded ( $M = -0.26, SD = 2.78$ ) sample ( $M = 0.30, 95\% CI [-0.87, 0.30], t(960) = -0.96, p = 0.34$ ); later observed friendship quality, positive interactions between the included ( $M = 3.45, SD = 0.66$ ) and excluded ( $M = 3.17, SD = 0.58$ ) sample ( $M = -0.29, 95\% CI [-1.04, 0.46], t(911) = -0.75, p = 0.45$ ); or earlier observed friendship quality, negative interactions between the included ( $M = 0.01, SD = 2.87$ ) and excluded ( $M = -0.07, SD = 2.75$ ) sample ( $M = -0.09, 95\% CI [-0.69, 0.52], t(960) = -0.28, p = 0.78$ ).

Overall, the present study missing data is most likely unrelated to the peer relationship variables or dispositional optimism. Thus, the missing data is most likely Missing at Random (MAR; Schafer & Graham, 2002). Therefore, we decided to use Full Information Maximum Likelihood (FIML) estimation (Schafer & Graham, 2002).

### **A Posteriori Power Analysis**

To assess the power of the statistical analyses we completed post hoc power analyses via G\*Power 3.1 software (Faul et al., 2009). We ran the power analyses after the statistical analyses

were complete because the current study utilizes archival data where the study has already been completed and a priori power analysis is not possible.

For the first set of power analyses addressing Hypotheses 1-3, we used the following input: 1) Test Family: Exact; 2) Statistical Test: Correlation: Bivariate normal model; 3) Post hoc: Compute achieved power – given  $\alpha$ , sample size, and effect size (Heinrich Heine University of Dusseldorf Department of General Psychology and Industrial Psychology, 2021). Additionally, we used the following input parameters given the study findings: 1) Tail(s): Two; 2) Correlation  $\rho$   $H_1$ : (this ranged from .07 to .30 [very small to small] depending on the variable); 3)  $\alpha$  err prob: .05; 3) Total sample size: (this ranged from 866 to 1012 depending on the variable); 4) Correlation  $\rho$   $H_0$ : 0. Results for the associations with the earlier peer relationship variables ranged from .54 to .57 (low power) and associations with the later peer variables ranged from .97 to 1 (high power).

To complete the second power analysis, addressing Hypothesis 4, we used with the following input: 1) Test Family: F Tests; 2) Statistical Test: Linear multiple regression: Fixed model,  $R^2$  deviation from zero; 3) Post hoc: Compute achieved power – given  $\alpha$ , sample size, and effect size (Heinrich Heine University of Dusseldorf Department of General Psychology and Industrial Psychology, 2021). We chose to use the  $R^2$  deviation from zero because this addressed Hypothesis 4: investigating whether earlier or later peer variables are more relevant to optimism. Additionally, we used the following input parameters given the study findings: 1) Effect size  $f^2$ : 0.18; 2)  $\alpha$  err prob: .05; 3) Total sample size: 1012; 4) Number of predictors: 10. Results from the second power analysis indicates that the current study achieved high power (power = 1).

## Overview of Analysis

First, we compared the total sample and selected sample on demographic characteristics. Second, we assessed the relations of demographic variables with optimism at 6<sup>th</sup> grade to evaluate if we need to control for the effect of any demographic variable in the subsequent analyses. Third, to address Hypotheses 1-3, we tested whether optimism is related to peer relationships and calculated correlations between optimism and scores for peer victimization, peer social competence, and friendship quality during earlier and later middle childhood. Next, to evaluate Hypothesis 4, we completed two hierarchical linear regression analyses. The first regression assessed how the three peer relationship dimensions (peer victimization, peer social competence, and friendship quality) collectively and uniquely predict dispositional optimism. Earlier middle childhood peer relationship scores were entered in Step 1, and later middle childhood peer relationship scores were entered in Step 2. These analyses tested whether later peer relationship factors predict optimism after controlling for earlier peer relationship factors. Finally, to examine whether earlier peer relationship factors predict optimism after controlling for later peer relationship factors, we used an additional hierarchical linear regression analysis in which later middle childhood peer relationship scores were entered at Step 1, and earlier middle childhood peer relationship scores were entered at Step 2.

Data cleaning and preliminary analyses were completed using IBM SPSS Statistics software. We used the open-source software, JASP, to complete the main analyses. More specifically, we completed the regressions using the Structural Equation Modeling module and Lavaan syntax. The benefit of this module was that it allowed us to incorporate Full Information Maximum Likelihood (FIML) estimation for missing data given that there were a varying number of participants per variable likely due to wave non-response and attrition in the

longitudinal NICHD study. FIML estimation effectively handles missing data (Schafer & Graham, 2002). Because JASP results for these specific analyses did not provide the  $F$ -statistic and the associated degrees of freedom, they are not reported in the present paper.

## Results

### Preliminary Analyses

Descriptive statistics for all variables are presented in Table 3. Preliminary analyses compared the selected sample on demographic variables (child sex, ethnicity, parent education, single parenting, and socioeconomic status) and the optimism variable using chi-squared and  $t$ -tests. Optimism was not related to participant gender ( $t(1010) = -.53, p = .60$ ) or ethnicity (white and non-white;  $t(1010) = 1.55, p = .12$ ). Further, neither single parenting nor SES were statistically significantly correlated with optimism  $r = .002, p = .96$  (SES  $r = .02, p = .64$ ). Parent education was negatively correlated with optimism  $r = -.04, p = .18$ . There was no evidence of selection effects for the demographic and optimism variable.

### Associations Among the Peer Relationships Variables

As presented in Table 4, among earlier peer relationship variables, peer victimization was related to peer competence ( $r = -.23, p < .001$ ), observed friendship quality negative/aggressive interactions ( $r = .09, p < .01$ ), and self-reported friendship quality ( $r = -.12, p < .001$ ) with a very small to small effect size. Earlier peer social competence was associated with earlier observed friendship quality negative/aggressive interactions ( $r = -.14, p < .001$ ), earlier observed friendship quality positive interactions ( $r = .16, p < .001$ ), and earlier self-reported friendship quality ( $r = .11, p < .001$ ) with a small effect size. Earlier observed friendship quality negative/aggressive interactions were related to earlier observed friendship quality positive interactions ( $r = -.16, p$

<.001) with a small effect size. Earlier observed positive interactions were associated with earlier self-reported friendship quality ( $r = .08, p = .02$ ) with a very small effect size.

Among later peer relationship variables, peer victimization was related to peer competence ( $r = -.27, p < .001$ ), observed friendship quality negative interactions ( $r = .09, p = .005$ ), observed friendship quality positive interactions ( $r = -.07, p = .04$ ) and self-reported friendship quality ( $r = -.24, p < .001$ ) with a very small to small effect size. Later peer social competence was associated with later observed friendship quality negative interactions ( $r = -.13, p < .001$ ), later observed friendship quality positive interactions ( $r = .20, p < .001$ ), and later self-reported friendship quality ( $r = .26, p < .001$ ) with a small effect size. Later observed friendship quality negative interactions were related to earlier observed friendship quality positive interactions ( $r = -.16, p < .001$ ) and later self-reported friendship quality ( $r = -.09, p < .001$ ) with a small effect size. Earlier observed friendship quality positive interactions were associated with earlier self-reported friendship quality ( $r = .11, p < .001$ ) with a small effect size.

Regarding the associations between earlier and later peer relationship variables, associations with a large to moderate effect size were between earlier and later peer social competence ( $r = .75, p < .001$ ), earlier and later self-reported friendship quality ( $r = .53, p < .001$ ), and earlier and later peer victimization ( $r = .43, p < .001$ ).

Associations with a small effect size were between earlier peer victimization and later peer social competence ( $r = -.22, p < .001$ ), earlier peer social competence and later peer victimization ( $r = -.22, p < .001$ ), earlier peer social competence and later observed friendship quality positive interactions ( $r = .20, p < .001$ ), earlier peer social competence and later self-reported friendship quality ( $r = .20, p < .001$ ), earlier observed friendship quality negative/aggressive interactions and later peer social competence ( $r = -.16, p < .001$ ), earlier

observed friendship quality positive interactions and later peer competence ( $r = .14, p < .001$ ), earlier self-reported friendship quality and later peer victimization ( $r = -.21, p < .001$ ), earlier self-reported friendship quality and later peer social competence ( $r = -.21, p < .001$ ), and earlier self-reported friendship quality and later observed friendship quality negative interactions ( $r = -.10, p < .01$ ).

The weakest associations were between earlier and later observed friendship quality negative/aggressive interactions ( $r = .09, p = .01$ ), earlier observed friendship quality positive interactions and later peer victimization ( $r = -.09, p = .009$ ), earlier and later observed friendship quality positive interactions ( $r = .09, p = .01$ ), earlier self-reported friendship quality and later observed friendship quality, positive interactions ( $r = .09, p < .001$ ).

### **Associations Between Dispositional Optimism and Peer Relationship Variables**

To test whether optimism is related to peer relationships, we computed correlations between optimism and peer victimization, peer social competence, and friendship quality during earlier and later middle childhood. Correlations for earlier middle childhood represent the earlier association between peer relationship factors assessed between 1<sup>st</sup> and 3<sup>rd</sup> grade and dispositional optimism assessed at 6<sup>th</sup> grade. Correlations for later middle childhood represent the later associations between peer relationship factors assessed between 4<sup>th</sup> and 6<sup>th</sup> grade and dispositional optimism assessed at 6<sup>th</sup> grade.

Regarding earlier middle childhood variables, as shown in Table 5, there was a small statistically significant association between optimism and self-reported friendship quality ( $r = .24, p < .001$ ), and very small associations between optimism and peer victimization ( $r = -.07, p < .05$ ), and optimism and observed friendship quality positive interactions ( $r = .07, p < .05$ ). No

other associations were statistically significant (associations between optimism and earlier peer competence, and earlier observed friendship quality negative interaction).

Regarding later middle childhood variables there were small statistically significant associations between optimism and later self-reported friendship quality ( $r = .30, p < .001$ ) and optimism and later peer victimization ( $r = -.21, p < .001$ ). There was a very small association between optimism and later peer social competence ( $r = .12, p < .001$ ). No other associations were statistically significant (the associations between optimism and later observed friendship quality, negative interaction, and positive interactions).

### **Multivariable Prediction of Dispositional Optimism**

We completed two hierarchical linear regression analyses to assess how the three peer relationship dimensions (peer victimization, peer social competence, and friendship quality) collectively and uniquely predict dispositional optimism. Earlier middle childhood peer relationship scores were entered in Step 1, and later middle childhood peer relationship scores were entered in Step 2. These analyses tested whether later peer relationship factors predict optimism after controlling for earlier peer relationship factors.

#### ***Regression Analyses***

The first hierarchical multiple regression investigated the degree to which peer relationship factors predict dispositional optimism. Earlier middle childhood peer relationship scores, entered at Step 1, were not statistically significant predictors of dispositional optimism. Only self-reported friendship quality in earlier middle childhood was significantly associated with optimism ( $\beta = .24, p < .001$ ). (Because JASP did not provide partial correlation statistics, we were unable to calculate the effect sizes of the regression coefficients.)

Later middle childhood peer relationship variables, entered at Step 2, explained an additional 8% of the variance in dispositional optimism with a small effect size ( $f^2$  (step 2 only) = .08,  $f^2$  (full model) = .18). As presented in Table 6, earlier friendship quality as assessed by observed negative/aggressive interactions ( $\beta = .08, p = .02, 95\% \text{ CI } [.08, .18]$ ), self-reported friendship quality ( $\beta = .11, p = .009, 95\% \text{ CI } [.14, .98]$ ), later peer victimization ( $\beta = -.21, p < .001, 95\% \text{ CI } [-1.28, -.60]$ ), and later self-reported friendship quality ( $\beta = .19, p < .001, 95\% \text{ CI } [.59, 1.55]$ ) uniquely predicted dispositional optimism. Scores for later peer social competence and friendship quality as assessed by observation were not statistically significant predictors of dispositional optimism.

To examine whether earlier peer relationship factors predict optimism after controlling for later peer relationship factors, we used an additional hierarchical linear regression analysis in which later middle childhood peer relationship scores were entered at Step 1, and earlier middle childhood peer relationship scores were entered at Step 2 (presented in Table 7).

Later middle childhood peer relationship variables were not statistically significant predictors of dispositional optimism. Only later peer victimization ( $\beta = -.21, p < .001, 95\% \text{ CI } [-1.22, -0.57]$ ) and later self-reported friendship quality ( $\beta = .25, p < .001, 95\% \text{ CI } [1.02, 1.80]$ ) uniquely predicted dispositional optimism.

Earlier middle childhood peer relationship variables, entered at Step 2, indicated that earlier peer relationship variables accounted for an additional 2.2% of variance in dispositional optimism after controlling for later peer relationship variables with a small effect size ( $p < .001, f^2$  (Step 2 only) = .02,  $f^2$  (full model) = .18). Only later peer victimization ( $\beta = -.21, p < .001, 95\% \text{ CI } [-1.32, -0.56]$ ) and later self-reported friendship quality ( $\beta = .19, p < .001, 95\% \text{ CI } [-1.32, -0.56]$ )

statistically significantly predicted dispositional optimism. Earlier peer relationship variables were not statistically significant predictors of dispositional optimism (presented in Table 7).

### **Discussion**

Optimism in middle childhood is a marker of healthy functioning. However, little is known regarding the associations between the quality of peer relationships, a key aspect of functioning in middle childhood, and their level of optimism. The current study extends a growing body of literature and is the first to investigate the extent to which peer relationship variables (peer victimization, peer social competence, and friendship quality) are associated with dispositional optimism in earlier and later middle childhood via a longitudinal design. Findings from the present study suggest that there are meaningful associations between aspects of peer relationships and optimism in middle childhood.

First, we hypothesized that greater peer victimization in earlier and later middle childhood would be related to lower levels of optimism in 6<sup>th</sup> grade (Hypothesis 1). We found that both earlier and later peer victimization were associated with dispositional optimism. Interestingly, although the effect size was greater for the association in later middle childhood both effect sizes were modest in size. In other words, children who experienced greater peer victimization in earlier and later middle childhood had lower dispositional optimism in 6<sup>th</sup> grade, and this association was greater for later middle childhood.

These findings are consistent with previous research suggesting that greater experiences of bullying are associated with lower optimism, and this is especially important for children in 5<sup>th</sup> and 6<sup>th</sup> grade (10 to 12 years old; Cassidy & Taylor, 2005; Jobe-Shields et al., 2011; Orejudo et al., 2012). Perhaps, victimization in later middle childhood may have a greater impact because

children's social and cognitive skills become more sophisticated around this time which may make bullying more salient for children (Crick & Dodge, 1994; Piaget & Inhelder, 1966; Rubin et al., 2015). Earlier experiences of victimization may create a sense that the world is unpredictable and dangerous, and in turn undermine the development of optimism. Additionally, similar to the Jobe-Shields et al. (2011) findings, it is likely that there is a cumulative effect of victimization such that as experiences of peer victimization increase and build up, children's dispositional optimism decrease. Future studies are needed to further investigate whether more sophisticated cognitive and social skills in middle childhood increase the negative impact of peer victimization, in turn hindering positive future expectancies. In addition, future research should investigate the cumulative and temporal effects of peer victimization in middle childhood on dispositional optimism to assist in designing well-timed preventative and remedial interventions.

Second, we hypothesized that greater peer social competence in earlier and later middle childhood would be related to greater optimism (Hypothesis 2). Later peer competence was significantly related to optimism and was small in effect size. Contrary to our expectations, earlier peer competence was not associated with optimism. We speculate that one possibility is that our measure captured broad aspects of the construct. Peer social competence is a broad construct which includes elements of positive social behaviors such as aspects that were captured in this study via the Social Skills Rating System: cooperation, assertion, responsibility, and self-control. It is possible that there are other elements of peer competence that were not captured in this study but may have a greater relation to optimism for example sociometric rating (being popular or well-liked), communication skills, perspective-taking, and social skills. Alternatively, peer competence indeed may not be a key correlate of optimism.

Our findings are consistent with previous research focused on peer optimism in later middle childhood suggesting that peer competence in later middle childhood is related to optimism (Deptula et al., 2006; Deptula et al., 2021). However, of note, the constructs of peer optimism measured in the Deptula et al. (2006) and Deptula et al. (2021) studies are slightly different to dispositional optimism, though overlapping. Perhaps, small yet foundational aspects of peer competence begin to develop in earlier middle childhood which may later lead to increase social competence and dispositional optimism in later middle childhood. Additionally, peer competence develops via various social interactions, where children accomplish intrapersonal goals and develop individual self-efficacy within a social environment, thus reinforcing the expectation that future social interactions will continue to be successful (Rose-Krasnor & Denham, 2009). Future research is needed to more extensively examine specific elements of peer social competence that may promote social self-efficacy and in turn encourage generalized expectancies to promote positive outcomes.

Third, we hypothesized that greater friendship quality in earlier and later middle childhood would be related to greater optimism (Hypothesis 3). We used both self-report and observational measures in earlier and later middle childhood to assess friendship quality. Interestingly, our results varied based on the measurement approach. We found that both earlier and later self-reported friendship quality as well as earlier observed friendship quality, focused on positive interactions, were associated with optimism. Although the effect sizes were greater for the association with earlier and later self-reported friendship quality, all effect sizes were modest in size. Positive interactions with friends in earlier middle childhood predicted optimism, suggesting that positive experiences with friends may broaden the scope of children's attention,

thoughts, behaviors, and perceptions, in turn building on positive emotions, skills, and positive future expectancies in earlier middle childhood (Fredrickson, 2004; Nes & Segerstrom, 2006).

Contrary to our expectations, later observed friendship quality, focused on positive interactions, were not associated with optimism. One possibility for this finding may be that as children become more advanced in navigating peer relationships, positive interactions (positive social behavior and agency) become less important aspects of friendship quality whereas other more sophisticated aspects of relationships may become more important such as validation and caring, conflict resolution, intimate exchange, and similarities in attitudes and behaviors. Earlier and later observed friendship quality as assessed by negative interactions were not associated with optimism. We speculate that one possibility is that a majority of children displayed positive interactions and few children displayed negative and aggressive behavior. Thus, there may not have been sufficient power for this measure to capture negative and aggressive aspects of friendship quality. It is also possible that negative interactions may not be a key correlate of optimism.

Interestingly, of the friendship quality measures, self-reported friendship quality had a greater relation with optimism suggesting that the subjective experience of a higher quality friendship and greater satisfaction in the relationship may promote dispositional optimism. Although subjective friendship quality was associated with optimism in earlier and later middle childhood, there was a slightly greater relation in later middle childhood, perhaps reflecting the accumulation of skills, behaviors, and interactions which might be gained throughout middle childhood. Results may also reflect closer temporal assessments among the constructs of interest. This is the first study to investigate the relation between friendship quality and dispositional optimism. Future research is greatly needed to investigate the extent to which other aspects of

friendship quality are associated with dispositional optimism in earlier and later middle childhood. In addition, to clarify whether there are cumulative effects for self-reported friendship quality, it is important to study this construct over time.

Although we did not have specific hypotheses, we also investigated whether earlier or later peer variables (peer victimization, peer social competence, and friendship quality) are more relevant to optimism in 6<sup>th</sup> grade (Hypothesis 4). Investigating whether earlier or later peer variables are more relevant is important to both improving our understanding of development as well as to increase our knowledge on when to intervene.

First, we evaluated whether later middle childhood peer relationship variables are significant after controlling for the effects of earlier middle childhood variables. The results supported the study hypothesis. We found that later peer relationship variables collectively explained 8% of the variance in optimism with a small effect size. Earlier middle childhood peer relationship scores had a minimal effect on later optimism. Interestingly, when all earlier peer relationships variables were taken into account, only later peer victimization, earlier observed friendship quality (negative interactions), and children's self-reported friendship quality remained significant predictors. These results suggest that observations of negative aspects of friendship quality, children's later perception of their victimization and later perception of friendship quality are key aspects related to their optimism level. All other observations of earlier and later friendship quality (negative and positive) were not significant predictors. These results suggest that children's subjective experience of friendship quality in earlier and later middle childhood are more important to dispositional optimism. Alternatively, observational methods may not have completely captured aspects of peer relationship important for optimism such as sense of satisfaction in the relationship, feeling of validation and caring, and level of intimate exchange.

The results of the additional regression analysis, where we reversed the entry of earlier and later peer relationship scores, were consistent with the results above. More specifically, although the first regression step was not significant, children's self-reported peer victimization and self-reported friendship quality in later middle childhood emerged as unique predictors at Step 1. We found that earlier peer relationship variables collectively explained 2.2% of the variance in optimism with a very small effect size. None of the variables at Step 2 reached significance.

Taken together, the results of the second regression suggest that aspects of peer relationships in later middle childhood, grade four and above, might be more relevant to children's dispositional optimism than those from earlier grades. It is likely that more recent peer interactions may have a greater importance to optimism later in middle childhood, perhaps because they are closer in time (temporal contiguity). Again, this finding may also reflect cumulative effects of peer victimization and friendship quality which may also broaden and build over time (Fredrickson, 2004; Masten & Cicchetti, 2010; Nes & Segerstrom, 2006). Lastly, these findings may suggest that developmental changes in later middle childhood may be more important to dispositional optimism in later middle childhood such as developing cognitive skills and Theory of Mind. These results are consistent with previous literature which focused on children in 3<sup>rd</sup> grade and above and found associations between aspects of peer relationships (peer victimization and peer competence) with dispositional optimism (Cassidy & Taylor, 2005; Deptula et al., 2006; Deptula et al., 2021; Jobe-Shields et al., 2011; Orejudo et al., 2012). Overall, these findings suggest that it may be important to focus interventions to decrease peer victimization and promote subjective friendship quality, particularly in later middle childhood.

There are several strengths of this study. First, the current study is part of the larger National Institute of Child Health and Human Development (NICHD) Study of Early Child Care and

Youth Development (SECCYD) and relies on a large sample size limiting Type II error and increasing precision. Additionally, the current study utilizes longitudinal data, rather than a cross-sectional snapshot, allowing for a broader picture of peer relationships as well as differential relations to later optimism across middle childhood. There are many strengths to the measures included in the current study. We used robust measures with high interrater reliability, construct validity, and criterion validity. Moreover, we used both self-report measures from different reporters (parents, children, teachers) as well as observational data to minimize self-report bias and gain a more comprehensive picture. Lastly, peer relationships are complex and the current study employed various aspects of peer relationships.

There are several limitations to consider in this study. First, these findings do not imply causation as they do not rely on experimental designs. Second, the current study measured dispositional optimism at one timepoint. However future research should investigate optimism in earlier middle childhood to gain a better understanding into aspects of peer relationships and optimism during this critical developmental period. Perhaps aspects of earlier peer relationships may be more relevant to optimism in earlier middle childhood and could give insight into timing for interventions. Third, this study included a majority Caucasian sample limiting the generalizability of findings. Future research should include more ethnically and economically diverse samples. It is likely there may be differences in peer relationship quality and peer victimization which may manifest differently in different groups. Finally, although a strength of this study is the high power due to a large sample size, future research should continue to interpret effect size statistics rather than solely interpreting p-values.

In summary, this study highlights the importance between aspects of peer relationships and optimism in middle childhood. We found that 1) peer victimization, peer competence, and

friendship quality are associated with optimism and, 2) that peer relationships in later middle childhood have a greater relevance to optimism in middle childhood. There are several lines of research that future studies may address. It is important to evaluate whether the relation between peer relationships and optimism are embedded in other factors that are relevant for optimism, such as how peer relationships and academic achievement (Schulman, 1995; Yates, 2002), children's social-cognitive abilities like Theory of Mind (Rubin et al., 2015; Caputi et al., 2012), or parent-child relationships (Kiernan & Brumariu, 2019) are related to dispositional optimism. Future studies should explore whether peer relationships in specific contexts, such as relationships at school, within their neighborhood, or extracurricular activities are more relevant to optimism. Children's peer relationships within different contexts may vary and thus may have different associations to optimism in middle childhood. Finally, intervention studies could be conducted to gain greater insight into the temporal association of these constructs, such as developmental cascades, and related factors to promote adaptive or interrupt maladaptive functions and behaviors. For example, intervention studies could investigate whether efforts to decrease peer victimization or increase coping skills may promote dispositional optimism in middle childhood.

## References

- Allison, P. J., Guichard, C., & Gilain, L. (2000). A prospective investigation of dispositional optimism as a predictor of health-related quality of life in head and neck cancer patients. *Quality of life research*, 9(8), 951-960.
- Armor, D. A., & Taylor, S. E. (1998). Situated optimism: Specific outcome expectancies and self-regulation. *Advances in experimental social psychology*, 30, 309-379.
- Asher, S. R., Singleton, L. C., Tinsley, B. R., & Hymel, S. (1979). A reliable sociometric measure for preschool children. *Developmental Psychology*, 15(4), 443.
- Aspinwall, L. G., & Richter, L. (1999). Optimism and self-mastery predict more rapid disengagement from unsolvable tasks in the presence of alternatives. *Motivation and Emotion*, 23(3), 221-245.
- Aspinwall, L. G., & Taylor, S. E. (1992). Modeling cognitive adaptation: A longitudinal investigation of the impact of individual differences and coping on college adjustment and performance. *Journal of Personality and Social Psychology*, 61, 755-765.
- Bandura, A. (1994). *Self-efficacy: Encyclopedia of Human behavior* (Vol. 4, pp. 71-81). Academic Press.
- Beck, A.T. (1981). *The hopelessness scale*. Consulting Psychologists Press.
- Beck, A. T., Weissman, A., Lester, D., & Trexler, L. (1974). The measurement of pessimism: the hopelessness scale. *Journal of consulting and clinical psychology*, 42(6), 861.
- Beck, A. T. (1967). *Depression. Clinical, Experimental and Theoretical Aspects*. New York (Hoeber) 1967.

- Benenson, J. F., Apostoleris, N. H., & Parnass, J. (1997). Age and sex differences in dyadic and group interaction. *Developmental psychology*, 33(3), 538.
- Ben-Zur, H. (2003). Happy adolescents: The link between subjective well-being, internal resources, and parental factors. *Journal of Youth and Adolescence*, 32, 67–79.
- Bowker, J., Fredstrom, B., Rubin, K., Rose-Krasnor, L., Booth-LaForce, C., & Laursen, B. (2010). Distinguishing those children who form new best friends from those who do not. *Journal of Social and Personal Relationships*, 27, 707-725. doi: 10.1177/0265407510373259
- Brissette, I., Scheier, M. F., & Carver, C. S. (2002). The role of optimism in social network development, coping, and psychological adjustment during a life transition. *Journal of Personality and Social Psychology*, 82, 102–111.
- Broekhof, R., Rius-Ottenheim, N., Spinhoven, P., van der Mast, R. C., Penninx, B. W., Zitman, F. G., & Giltay, E. J. (2015). Long-lasting effects of affective disorders and childhood trauma on dispositional optimism. *Journal of Affective Disorders*, 175, 351-358.
- Brown, J. D., & Marshall, M. A. (2001). *Great expectations: Optimism and pessimism in achievement settings*. In E. C. Chang (Ed.), *Optimism & pessimism: Implications for theory, research, and practice* (p. 239–255). American Psychological Association. <https://doi.org/10.1037/10385-011>
- Bukowski, W. M., Motzoi, C., & Meyer, F. (2009). Friendship as process, function, and outcome. In K. H. Rubin, W. M. Bukowski, & B. Laursen (Eds.) *Handbook of Peer Interactions, Relationships, and Groups* (pp. 217-231). The Guilford Press.

- Caputi, M., Lecce, S., Pagnin, A., & Banerjee, R. (2012). Longitudinal effects of theory of mind on later peer relations: the role of prosocial behavior. *Developmental psychology, 48*(1), 257.
- Carver, C. S., & Scheier, M. F. (2014). Dispositional optimism. *Trends in cognitive sciences, 18*(6), 293-299.
- Carver, C. S., Scheier, M. F., & Segerstrom, S. C. (2010). Optimism. *Clinical psychology review, 30*(7), 879-889.
- Carver, C. S., & Gaines, J. G. (1987). Optimism, pessimism, and postpartum depression. *Cognitive Therapy and Research, 11*, 449-462.
- Carver, C.S., Pozo, C., Harris, S.D., Noriega, V., Scheier, M.F., Robinson, D.S., Ketcham, A.S., Moffat, F.L., & Clark, K.C. (1993). How coping mediates the effect of optimism on distress: A study of women with early stage breast cancer. *Journal of Personality and Social Psychology, 65*, 375-390.
- Carvajal, S. C., Clair, S. D., Nash, S. G., & Evans, R. I. (1998). Relating optimism, hope, and self-esteem to social influences in deterring substance use in adolescents. *Journal of Social and Clinical Psychology, 17*(4), 443-465.
- Carlson, E. A., Sroufe, L. A., Collins, W. A., Jimerson, S., Weinfield, N., Hennighausen, K., ... & Meyer, S. E. (1999). Early environmental support and elementary school adjustment as predictors of school adjustment in middle adolescence. *Journal of adolescent research, 14*(1), 72-94.
- Cassidy, T., & Taylor, L. (2005). Coping and psychological distress as a function of the bully victim dichotomy in older children. *Social Psychology of Education, 8*(3), 249-262.

- Cassidy, J., & Asher, S. R. (1992). Loneliness and peer relations in young children. *Child development, 63*(2), 350-365.
- Centers for Disease Control and Prevention. (2021a, February 22). Middle Childhood (6-8 years of age). <https://www.cdc.gov/ncbddd/childdevelopment/positiveparenting/middle.html>
- Centers for Disease Control and Prevention. (2021b, September 23). Middle Childhood (9-11 years of age).  
<https://www.cdc.gov/ncbddd/childdevelopment/positiveparenting/middle2.html>
- Chang, E.C. (1998). Dispositional optimism and primary and secondary appraisal of a stressor: Controlling for confounding influences and relations to coping and psychological and physical adjustment. *Journal of Personality and Social Psychology, 74*, 1109–1120.
- Cohen, S., Kamarck, T., & Mermelstein, R. (1983). A global measure of perceived stress. *Journal of health and social behavior, 385-396*.
- Cornell, D., Gregory, A., Huang, F., & Fan, X. (2013). Perceived prevalence of teasing and bullying predicts high school dropout rates. *Journal of educational psychology, 105*(1), 138.
- Crick, N. R., & Dodge, K. A. (1994). A review and reformulation of social information-processing mechanisms in children's social adjustment. *Psychological Bulletin, 115*(1), 74–101. <https://doi.org/10.1037/0033-2909.115.1.74>.
- Daukantaite, D., & Bergman, L. R. (2005). Childhood roots of women's subjective well-being: The role of optimism. *European psychologist, 10*(4), 287-297.
- Deptula, D. P., Cohen, R., Phillipsen, L. C., & Ey, S. (2006). Expecting the best: The relation between peer optimism and social competence. *The Journal of Positive Psychology, 1*(3), 130-141.

- Deptula, D. P., Banks, G. G., Barnes, S. E., & Cohen, R. (2020). A Person-Centered Analysis of Change in Children's Peer Optimism and Its Relation to Peer Social Competence. *Journal of Happiness Studies*, 1-22.
- Diaconu-Gherasim, L. R., Bucci, C. M., Giuseppone, K. R., & Brumariu, L. E. (2017). Parenting and adolescents' depressive symptoms: The mediating role of future time perspective. *The Journal of psychology*, 151(7), 685-699.
- Duchesne, S., Ratelle, C. F., & Roy, A. (2012). Worries about the middle school transition and subsequent adjustment: The role of classroom goal structure. *Journal of Early Adolescence*, 32, 681–710. <http://dx.doi.org/10.1177/0272431611419506>
- Eisenberg, N., Fabes, R. A., & Spinrad, T.L (2006). Prosocial development. In W. Damon & R.M. Lerner (Series Ed.) & N. Eisenberg (Vol. Ed.), *Handbook of child psychology: Vol. 3. Social, emotional, and personality development* (6th ed., pp. 646-718). New York: Wiley.
- Ek, E., Remes, J., & Sovio, U. (2004). Social and developmental predictors of optimism from infancy to early adulthood. *Social Indicators Research*, 69, 219–242.
- Ellis, W. E., & Zarbatany, L. (2007). Explaining friendship formation and friendship stability: The role of children's and friends' aggression and victimization. *Merrill-Palmer Quarterly* (1982-), 79-104.
- Ey, S., Hadley, W., Allen, D. N., Palmer, S., Klosky, J., Deptula, D., ... & Cohen, R. (2005). A new measure of children's optimism and pessimism: the youth life orientation test. *Journal of child psychology and psychiatry*, 46(5), 548-558.

- Fitzgerald, T. E., Tennen, H., Affleck, G., & Pransky, G. S. (1993). The relative importance of dispositional optimism and control appraisals in quality of life after coronary artery bypass surgery. *Journal of behavioral medicine*, *16*(1), 25-43.
- Fredrickson, B. L. (2013). Positive emotions broaden and build. In *Advances in experimental social psychology* (Vol. 47, pp. 1-53). Academic Press.
- Fredrickson, B. L. (2004). The broaden-and-build theory of positive emotions. *Philosophical Transactions of the Royal Society B: Biological Sciences*, *359*(1449), 1367–1377.
- Fredrickson, B. L. (2001). The role of positive emotions in positive psychology: The broaden-and-build theory of positive emotions. *American Psychologist*, *56*(3), 218–226. <https://doi.org/10.1037/0003-066X.56.3.218>
- Fredrickson, B. L., Cohn, M. A., Coffey, K. A., Pek, J., & Finkel, S. M. (2008). Open hearts build lives: Positive emotions, induced through loving-kindness meditation, build consequential personal resources. *Journal of Personality and Social Psychology*, *95*(5), 1045–1062.
- Fredrickson, B. L., Tugade, M. M., Waugh, C. E., & Larkin, G. R. (2003). What good are positive emotions in crisis? A prospective study of resilience and emotions following the terrorist attacks on the United States on September 11th, 2001. *Journal of Personality and Social Psychology*, *84*(2), 365–376. doi: 10.1037/0022-3514.84.2.365.
- Friedman, L. C., Nelson, D. V., Baer, P. E., Lane, M., Smith, F. E., & Dworkin, R. J. (1992). The relationship of dispositional optimism, daily life stress, and domestic environment to coping methods used by cancer patients. *Journal of Behavioral Medicine*, *15*, 127–141.
- Gillham, J., & Reivich, K. (2004). Cultivating optimism in childhood and adolescence. *The Annals of the American Academy of Political and Social Science*, *591*(1), 146-163.

- Gillham, J. E., Reivich, K. J., & Shatté, A. J. (2001). Building optimism and preventing depressive symptoms in children. In E. C. Chang (Ed.), *Optimism & pessimism: Implications for theory, research, and practice* (301-320). Washington, DC, US: American Psychological Association.
- Giltay, E. J., Geleijnse, J. M., Zitman, F. G., Buijsse, B., & Kromhout, D. (2007). Lifestyle and dietary correlates of dispositional optimism in men: The Zutphen Elderly Study. *Journal of psychosomatic research*, *63*(5), 483-490.
- Gini, G., & Pozzoli, T. (2009). Association between bullying and psychosomatic problems: A meta-analysis. *Pediatrics*, *123*(3), 1059-1065.
- Given, C. W., Stommel, M., Given, B., Osuch, J., Kurtz, M. E., & Kurtz, J. C. (1993). The influence of cancer patients' symptoms and functional states on patients' depression and family caregivers' reaction and depression. *Health psychology*, *12*(4), 277.
- Goldstein, H., Kaczmarek, L.A., & English, K.M. (2002). *Promoting social communication: Children with developmental disabilities from birth to adolescence*. Baltimore: Brookes.
- Gresham, F. M. (2001). Assessment of social skills in children and adolescents. *Handbook of psychoeducational assessment: A practical handbook*, 325-355.
- Gresham, F. M., Elliott, S. N., & Evans-Fernandez, S. E. (1993). Student Self-Concept Scale. Circle Pines, MN: American Guidance Service.
- Gresham, F. M., & Elliott, S. N. (1990). The social skills rating system. Circle Pines, MN: American Guidance Service.
- Guhn, M., Schonert-Reichl, K. A., Gadermann, A. M., Hymel, S., & Hertzman, C. (2013). A population study of victimization, relationships, and well-being in middle childhood. *Journal of Happiness Studies*, *14*(5), 1529-1541.

- Hafen, C.A., Laursen, B., Kerr, M., & Stattin, H. (2011). Homophily in stable and unstable adolescent friendships: Similarity breeds constancy. *Personality and Individual Differences, 51*, 607-613. doi: 10.1016/j.paid.2011.05.027
- Hasan, N., & Power, T. G. (2002). Optimism and pessimism in children: A study of parenting correlates. *International Journal of Behavioral Development, 26*(2), 185-191.
- Harris, A. J., & Hahn, U. (2011). Unrealistic optimism about future life events: A cautionary note. *Psychological review, 118*(1), 135.
- Harter, S., & Whitesell, N. R. (1996). Multiple pathways to self-reported depression and psychological adjustment among adolescents. *Development and psychopathology, 8*(4), 761-777.
- Hay, D.F., Caplan, M. & Nash, A. (2009). The beginnings of peer relations. In Rubin, K., Bukowski, W.M., & Laursen, B. (Eds.) *Handbook of peer interactions, relationships, and groups* (pp. 121-143). Guilford Press.
- Heinonen, K., Räikkönen, K., & Keltikangas-Järvinen, L. (2005). Dispositional optimism: Development over 21 years from the perspectives of perceived temperament and mothering. *Personality and Individual Differences, 38*, 425–435.
- Heinonen, K., Räikkönen, K., Matthews, K. A., Scheier, M. F., Raitakari, O. T., Pulkki, L., . . . Keltikangas-Järvinen, L. (2006). Socioeconomic status in childhood and adulthood: Associations with dispositional optimism and pessimism over a 21-year followup. *Journal of Personality, 74*, 1111–1126.
- Hjelle, L. A., Busch, E. A., & Warren, J. E. (1996). Explanatory style, dispositional optimism, and reported parental behavior. *The Journal of genetic psychology, 157*(4), 489-499.

- Holder, M. D., & Coleman, B. (2009). The contribution of social relationships to children's happiness. *Journal of happiness studies*, *10*(3), 329-349.
- Howe, A., (2011). Introduction. Exploring the Great Divide. In Howe A. and Richards V. (Eds.), *Bridging the Transition from Primary to Secondary School*, (pp. 1–13). Routledge.
- Izard, C.E. (2009). Emotion theory and research: Highlights, unanswered questions, and emerging issues. *Annual Review of Psychology*, *60*, 1-25.
- Jobe-Shields, L., Cohen, R., & Parra, G. R. (2011). Patterns of change in children's loneliness: Trajectories from third through fifth grades. *Merrill-Palmer Quarterly (1982-)*, *25*-47.
- Jones, T., DeMore, M., Cohen, L. L., O'Connell, C., & Jones, D. (2008). Childhood healthcare experience, healthcare attitudes, and optimism as predictors of adolescents' healthcare behavior. *Journal of clinical psychology in medical settings*, *15*(3), 234-240.
- Karademas, E. C. (2006). Self-efficacy, social support and well-being: The mediating role of optimism. *Personality and individual differences*, *40*(6), 1281-1290.
- Kazakina, E. (1999). *Time perspective of older adults: Relationships to attachment style, psychological well-being, and psychological distress*. Columbia University.
- Kerns, K. A., Klepac, L., & Cole, A. (1996). Peer relationships and preadolescent perceptions of security in the child-mother relationship. *Developmental Psychology*, *32*, 457–466.  
doi:10.1037/ 0012-1649.32.3.457
- Kerns, K. A., & Seibert, A. C. (2021). Promising approaches to assessing attachment in middle childhood: Navigating the options. *Measuring attachment*, 194-236.
- Kiernan, C.M., Brumariu, L.E., (2019, November). *Optimism in Middle Childhood: Links with Security in P-C Relationships and Parenting Strategies*. Poster presented at the 53rd

Annual Convention of the Association for Behavioral and Cognitive Therapies, Atlanta, Georgia.

Klein, W. M. P., & Zajac, L. E. (2009). Imagining a rosy future: The psychology of optimism. In K. D. Markman, W. M. P. Klein, & J. A. Suhr (Eds.), *Handbook of imagination and mental simulation* (pp. 313–329). Psychology Press.

Kochenderfer, B. J., & Ladd, G. W. (1996). Peer victimization: Cause or consequence of school maladjustment? *Child Development*, 67, 1305-1317.

Kochenderfer, B. J., & Ladd, G. W. (1996b). Peer victimization: Manifestations and relations to school adjustment in kindergarten. *Journal of School Psychology*, 34, 267-283.

Kochenderfer, B. J., & Ladd, G. W. (1997). Victimized children's responses to peers' aggression: Behaviors associated with reduced versus continued victimization. *Development and Psychopathology*, 9, 59-73.

Ladd, B. K., & Ladd, G. W. (2001). Variations in peer victimization. In J. Juvonen & S. Graham (Eds.) *Peer harassment in schools. The plight of the vulnerable and victimized*, (pp. 25-48). The Guilford Press.

Ladd, G. W., Kochenderfer, B. J., & Coleman, C. C. (1997). Classroom peer acceptance, friendship, and victimization: Distinct relational systems that contribute uniquely to children's school adjustment? *Child Development*, 68, 1181-1197.

Lemola, S., Räikkönen, K., Scheier, M. F., Matthews, K. A., Pesonen, A. K., Heinonen, K., ... & Kajantie, E. (2011). Sleep quantity, quality and optimism in children. *Journal of sleep research*, 20(1pt1), 12-20.

- Lemola, S., Räikkönen, K., Matthews, K. A., Scheier, M. F., Heinonen, K., Pesonen, A. K., ... & Lahti, J. (2010). A new measure for dispositional optimism and pessimism in young children. *European Journal of personality, 24*(1), 71-84.
- Litt, M. D., Tennen, H., Affleck, G., & Klock, S. (1992). Coping and cognitive factors in adaptation to in vitro fertilization failure. *Journal of behavioral medicine, 15*(2), 171-187.
- Lucas-Thompson, R., & Clarke-Stewart, K. A. (2007). Forecasting friendship: How marital quality, maternal mood, and attachment security are linked to children's peer relationships. *Journal of Applied Developmental Psychology, 28*(5-6), 499-514.
- Mannix, M. M., Feldman, J. M., & Moody, K. (2009). Optimism and health-related quality of life in adolescents with cancer. *Child: care, health and development, 35*(4), 482-488.
- Maltais, C., Duchesne, S., Ratelle, C. F., & Feng, B. (2017). Learning climate, academic competence, and anxiety during the transition to middle school: Parental attachment as a protective factor. *European Review of Applied Psychology, 67*(2), 103-112.
- Masten, A. S., & Cicchetti, D. (2010). Developmental cascades. *Development and psychopathology, 22*(3), 491-495.
- Masten, A. S., Roisman, G. I., Long, J. D., Burt, K. B., Obradovic, J., Riley, J. R., et al. (2005). Developmental cascades: Linking academic achievement and externalizing and internalizing symptoms over 20 years. *Developmental psychology, 41*, 733-746.
- Masten, A. S., & Coatsworth, J. D. (1998). The development of competence in favorable and unfavorable environments: Lessons from research on successful children. *American Psychologist, 53*, 205-220.

- Neff, L. A., & Geers, A. L. (2013). Optimistic expectations in early marriage: A resource or vulnerability for adaptive relationship functioning?. *Journal of personality and Social Psychology, 105*(1), 38.
- Nes, L. S., & Segerstrom, S. C. (2006). Dispositional optimism and coping: A meta-analytic review. *Personality and social psychology review, 10*(3), 235-251.
- NICHD Early Child Care Research Network. (2001). Nonmaternal care and family factors in early development: An overview of the NICHD Study of Early Child Care. *Journal of Applied Developmental Psychology, 22*(5), 457-492.
- Oberle, E., Schonert-Reichl, K. A., Guhn, M., Zumbo, B. D., & Hertzman, C. (2014). The role of supportive adults in promoting positive development in middle childhood: A population-based study. *Canadian Journal of School Psychology, 29*(4), 296-316.
- Orejudo, S., Puyuelo, M., Fernández-Turrado, T., & Ramos, T. (2012). Optimism in adolescence: A cross-sectional study of the influence of family and peer group variables on junior high school students. *Personality and Individual Differences, 52*(7), 812-817.
- Peterson, C., & Bossio, L. M. (2001). Optimism and physical well-being. In E. C. Change (Eds.), (pp.127-145). *Optimism & pessimism: Implications for theory, research, and practice*. American Psychological Association.
- Peterson, C., & Villanova, P. (1988). An expanded attributional style questionnaire. *Journal of Abnormal Psychology, 97*(1), 87.
- Piaget, J., & Inhelder, B. (2008). *The psychology of the child*. Basic books.
- Plomin, R., Scheier, M. F., Bergeman, C. S., Pedersen, N. L., Nesselroade, J. R., & McClearn, G. E. (1992). Optimism, pessimism and mental health: A twin/adoption analysis. *Personality and individual differences, 13*(8), 921-930.

- Raikkonen, K., & Matthews, K. A. (2008). Do dispositional pessimism and optimism predict ambulatory blood pressure during schooldays and nights in adolescents?. *Journal of personality, 76*(3), 605-630.
- Reijntjes, A., Kamphuis, J. H., Prinzie, P., & Telch, M. J. (2010). Peer victimization and internalizing problems in children: A meta-analysis of longitudinal studies. *Child abuse & neglect, 34*(4), 244-252.
- Roberts, R. K., Roberts, C. R., & Chen, Y. R. (1998). Suicidal thinking among adolescents with a history of attempted suicide. *Journal of the American Academy of Child & Adolescent Psychiatry, 37*(12), 1294-1300.
- Robinson, C. C., Anderson, G. T., Porter, C. L., Hart, C. H., & Wouden-Miller, M. (2003). Sequential transition patterns of preschoolers' social interactions during child-initiated play: Is parallel-aware play a bidirectional bridge to other play states?. *Early Childhood Research Quarterly, 18*(1), 3-21.
- Rose-Krasnor, L. & Denham, S., (2009). Social-emotional competence in early childhood. In K. H. Rubin, W. M. Bukowski, & B. Laursen (Eds.) *Handbook of Peer Interactions, Relationships, and Groups* (pp. 162-179). The Guilford Press.
- Rose-Krasnor, L. (1997). The nature of social competence: A theoretical review. *Social development, 6*(1), 111-135.
- Rubin, K. H., Coplan, R. Chen, X., Bowker, J.C., McDonald, K. & Heverly-Fitt, S. (2015). Peer relationships in childhood. In M. H. Bornstein & M.E. Lamb (Eds.), *Developmental Science: An Advanced Textbook*. (7th edition). pp. 591-649. Psychology Press.

- Rubin, K.H., Dwyer, K.M., Booth, C.L., Kim, A.H., Burgess, K.B., & Rose-Krasnor, L. (2004). Attachment, friendship, and psychosocial functioning in early adolescence, *Journal of Early Adolescence*, 24, 326-356. doi: 10.1177/0272431604268530
- Rubin, K.H. & Rose-Krasnor, L. (1992). Interpersonal problem solving. In V.B. Van Hassat & M. Hersen (Eds.), *Handbook of Social Development* (pp. 283-323). New York: Plenum.
- Rubin, K.H., Fein, G.G. & Vandenberg, B. (1983). Play. In E.M. Hetherington (Ed.), *Handbook of child psychology, Vol. 4, Socialization, personality, and social development*. (4th edition). New York: Wiley.
- Schafer, J. L., & Graham, J. W. (2002). Missing data: our view of the state of the art. *Psychological methods*, 7(2), 147.
- Scheier, M. F., & Carver, C. S. (1992). Effects of optimism on psychological and physical well-being: Theoretical overview and empirical update. *Cognitive therapy and research*, 16(2), 201-228.
- Scheier, M. F., Carver, C. S., & Bridges, M. W. (1994). Distinguishing optimism from neuroticism (and trait anxiety, self-mastery, and self-esteem): a reevaluation of the Life Orientation Test. *Journal of personality and social psychology*, 67(6), 1063.
- Scheier, M. F., Swanson, J. D., Barlow, M. A., Greenhouse, J. B., Wrosch, C., & Tindle, H. A. (2021). Optimism versus pessimism as predictors of physical health: A comprehensive reanalysis of dispositional optimism research. *American Psychologist*, 76(3), 529.
- Segerstrom, S. (2009). *The glass half-full*. Constable & Robinson.
- Semrud-Clikeman, M. (2007). Social competence in children. In *Social competence in children* (pp. 1-9). Springer.

- Smith, P.K., Shu, S., Madsen, K., (2001). Characteristics of Victims of School Bullying: Developmental Changes in Coping Strategies and Skills. In J. Juvonen & S. Graham (Eds.) *Peer harassment in schools. The plight of the vulnerable and victimized*, (pp. 332-351). The Guilford Press.
- Spernes, K. (2020). The transition between primary and secondary school: a thematic review emphasising social and emotional issues. *Research Papers in Education*, 1-18.
- Sroufe, L. A., Egeland, B., Carlson, E. A., & Collins, W. A. (2009). *The development of the person: The Minnesota study of risk and adaptation from birth to adulthood*. Guilford Press.
- Sroufe, L. A. (2005). Attachment and development: A prospective, longitudinal study from birth to adulthood. *Attachment & human development*, 7(4), 349-367.
- Taylor, Z. E., Kittrell, N., Nair, N., Evich, C. D., & Jones, B. L. (2020). Developmental antecedents of adolescent optimism in rural midwestern US Latinx youth. *Journal of community psychology*, 48(2), 448-463.
- Tetzner, J., & Becker, M. (2019). Why are you so optimistic? Effects of sociodemographic factors, individual experiences, and peer characteristics on optimism in early adolescents. *Journal of personality*, 87(3), 661-675.
- Tindle, H. A., Chang, Y. F., Kuller, L. H., Manson, J. E., Robinson, J. G., Rosal, M. C., ... & Matthews, K. A. (2009). Optimism, cynical hostility, and incident coronary heart disease and mortality in the Women's Health Initiative. *Circulation*, 120(8), 656-662.
- Thomson, K. C., Schonert-Reichl, K. A., & Oberle, E. (2015). Optimism in early adolescence: Relations to individual characteristics and ecological assets in families, schools, and neighborhoods. *Journal of Happiness Studies*, 16(4), 889-913.

- Kim, E. S., Park, N., & Peterson, C. (2011). Dispositional optimism protects older adults from stroke: the Health and Retirement Study. *Stroke*, *42*(10), 2855-2859.
- Lee, L. O., James, P., Zevon, E. S., Kim, E. S., Trudel-Fitzgerald, C., Spiro, A., ... & Kubzansky, L. D. (2019). Optimism is associated with exceptional longevity in 2 epidemiologic cohorts of men and women. *Proceedings of the National Academy of Sciences*, *116*(37), 18357-18362.
- Logis, H.A., Rodkin, P.C., Gest, S.D., & Ahn, H. (2013). Popularity as an organizing factor of preadolescent friendship networks: Beyond prosocial and aggressive behavior. *Journal of Research on Adolescence*, *23*, 413-423. doi: 10.1111/jora.12033
- Renaud, J., Barker, E. T., Hendricks, C., Putnick, D. L., & Bornstein, M. H. (2019). The developmental origins and future implications of dispositional optimism in the transition to adulthood. *International journal of behavioral development*, *43*(3), 221-230.
- McDonald, K.L., Dashiell-Aje, E., Oh, W., Bowker, J.C., Rubin, K.H., & Menzer, M. (2013). Contributions of racial and sociobehavioral homophily to friendship stability and quality among same-race and cross-race friends *Journal of Early Adolescence*. *33*(7), 897–919. doi: 10.1177/0272431612472259
- Mehta, C.M & Strough, J. (2009). Sex segregation in friendships and normative contexts across the life span. *Developmental Review*, *29*, 201-220. doi: 10.1016/j.dr.2009.06.001
- National Institute of Child Health and Human Development (NICHD). (2019, June 10). *NICHD Study of Early Child Care and Youth Development (SECCYD) Historical/For Reference Only*. National Institute of Health (NIH).  
<https://www.nichd.nih.gov/research/supported/seccyd>

- Nes, L. S., & Segerstrom, S. C. (2006). Dispositional optimism and coping: A meta-analytic review. *Personality and social psychology review, 10*(3), 235-251.
- NICHD Early Child Care Research Network. (2001). Nonmaternal care and family factors in early development: An overview of the NICHD Study of Early Child Care. *Journal of Applied Developmental Psychology, 22*(5), 457-492.
- Parker, J.G. & Asher, S.R. (1993). Friendship and friendship quality in middle childhood: Links with peer group acceptance and feelings of loneliness and social dissatisfaction. *Developmental Psychology, 29*, 611-621.
- Peetsma, T. T. D. (2000). Future time perspective as a predictor of school investment. *Scandinavian Journal of Educational Research, 44*, 177–192. doi:10.1080/713696667
- Preacher, K. J., & Hayes, A. F. (2008). Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models. *Behavior research methods, 40*(3), 879-891.
- Rotter, J. B. (1966). Generalized expectancies for internal versus external control of reinforcement. *Psychological monographs: General and applied, 80*(1), 1.
- Rosenberg, M. (2015). *Society and the adolescent self-image*. Princeton university press.
- Scheier, M. F., & Carver, C. S. (1985). Optimism, coping, and health: assessment and implications of generalized outcome expectancies. *Health psychology, 4*(3), 219.
- Scheier, M. F., & Carver, C. S. (1992). Effects of optimism on psychological and physical well-being: Theoretical overview and empirical update. *Cognitive therapy and research, 16*(2), 201-228.

- Scheier, M. E. F., Carver, C. S., & Bridges, M. W. (1994). Distinguishing optimism from neuroticism (and trait anxiety, self-mastery, and self-esteem): a reevaluation of the Life Orientation Test. *Journal of Personality and Social Psychology*, 67(6), 1063.
- Scheier, M. F., & Carver, C. S. (2018). Dispositional optimism and physical health: A long look back, a quick look forward. *American Psychologist*, 73(9), 1082.
- Schulman, P. (1995). Explanatory style and achievement in school and work. *Explanatory style*, 159-171.
- Schultz, D., Tharp-Taylor, S., Haviland, A., & Jaycox, L. (2009). The relationship between protective factors and outcomes for children investigated for maltreatment. *Child abuse & neglect*, 33(10), 684-698.
- Seligman, M. E. P., Reivich, K., Jaycox, L., & Gillham, J. (1995). *The optimistic child*. Houghton, Mifflin and Company.
- Seligman, M. E. (2006). *Learned optimism: How to change your mind and your life*. Vintage.
- Shatte, A. J., Reivich, K., Gillham, J. E., & Seligman, M. E. (1999). Learned optimism in children. *Coping: The psychology of what works*, pp.165-181. Oxford University Press.
- Spernes, K. (2020). The transition between primary and secondary school: a thematic review emphasising social and emotional issues. *Research Papers in Education*, pp.1-18.
- Sullivan, H.S. (1953). *The interpersonal theory of psychiatry*. Norton.
- Trommsdorf, G., Burger, C., & Fuchsle, T. (1982). Social and psychological aspects of future orientation. In M. Irle (Ed.), *Studies in Decision Making* (pp. 167–194). De Gruyter.
- Uhlendorff, H. (2000). Parents' and children's friendship networks. *Journal of Family Issues*, 21(2), 191-204.

- Van Horn, M. L., Atkins-Burnett, S., Karlin, E., Ramey, S. L., & Snyder, S. (2007). Parent ratings of children's social skills: Longitudinal psychometric analyses of the Social Skills Rating System. *School Psychology Quarterly, 22*(2), 162.
- Wentzel, K. R. (1994). Relations of social goal pursuit to social acceptance, classroom behavior, and perceived social support. *Journal of Educational Psychology, 86*(2), 173.
- Weinstein, C. S. (1989). Teacher education students' preconceptions of teaching. *Journal of teacher education, 40*(2), 53-60.
- Woodcock, R. W., & Johnson, M. B. (1990). Tests of achievement, WJ-R examiner's manual. Allen, TX: DLM Teaching Resources.
- Yang, A. X., & Urminsky, O. (2015). The foresight effect: Local optimism motivates consistency and local pessimism motivates variety. *Journal of Consumer Research, 42*(3), 361-377.
- Yates, S. M. (2002). The influence of optimism and pessimism on student achievement in mathematics. *Mathematics Education Research Journal, 14*(1), 4-15.
- Yu, J., Putnick, D. L., Hendricks, C., & Bornstein, M. H. (2019). Long-term effects of parenting and adolescent self-competence for the development of optimism and neuroticism. *Journal of youth and adolescence, 48*(8), 1544-1554.
- Yilmaz, V., & Turkum, A. S. (2008). Factors affecting hopelessness levels of Turkish preteenagers attending primary school: a structural equation model. *Social Behavior and Personality: an international journal, 36*(1), 19-26.
- Zimbardo, P. G., & Boyd, J. N. (2015). Putting time in perspective: A valid, reliable individual-differences metric. In *Time perspective theory; review, research and application* (pp. 17-55). Springer, Cham.

**Table 1**

Measure Name (Construct)	Data Collection Timepoint					
	Earlier Middle Childhood			Later Middle Childhood		
	1st Grade	2nd Grade	3rd Grade	4th Grade	5th Grade	6th Grade
Peer Social Support, Bullying, & Victimization (Victimization)			Peer Social Support, Bullying, & Victimization (Victimization)		Peer Social Support, Bullying, & Victimization (Victimization)	Peer Social Support, Bullying, & Victimization (Victimization)
Friendship Interaction Coding (Friendship quality)	Friendship Interaction Coding (Friendship quality)					Friendship Interaction Coding (Friendship quality)
Friendship Quality Questionnaire (FQQ; (Friendship quality)			FQQ (Friendship quality)	FQQ (Friendship quality)	FQQ (Friendship quality)	FQQ (Friendship quality)
Social Skills Rating System - SSRS (Social competence)	SSRS (Social competence)	SSRS (Social competence)	SSRS (Social competence)	SSRS (Social competence)	SSRS (Social competence)	SSRS (Social competence)
Life Orientation Test (Optimism)						Life Orientation Test (Optimism)

*Note.* The NICHD measures and the individual timepoints when they were collected.

**Table 2**

Comparison of the total and selected samples

Variables	Total Sample, <i>n</i> (%)	Selected Sample, <i>n</i> (%)	Comparison of the Selected and Original Samples
Gender			$X^2 (1) = 3.48$
Male	705 (51.7%)	508 (50.2%)	
Female	659 (48.3%)	504 (49.8%)	
Ethnicity			$X^2 (1) = 1.23$
Caucasian	1,097 (80.4%)	821 (81.1%)	
Other	297 (19.6%)	191 (18.9%)	
Type of household at 1 month			-
Partner does not live with mother	1,166 (85.5%)	-	
Partner lives with mother	198 (14.5%)	-	
Type of household at Grade 6			$X^2 (1) = .56$
Partner does not live with mother	197 (19.2%)	190 (19.1%)	
Partner lives with mother	828 (80.8%)	805 (80.9%)	
Type of household/single parenting, grades 1 to 6			$t(1143) = 11.21^{**}$
Partner does not live with mother	116 (10.1%)	100 (9.9%)	
Partner lives with mother at one time point	59 (5.2%)	32 (3.2%)	
Partner lives with mother at two time points	81 (7.1%)	51 (5.0%)	
Partner lives with mother at three time points	68 (5.9%)	49 (4.8%)	
Partner lives with mother at four time points	98 (8.6%)	81 (8.0%)	
Partner lives with mother at five time points	96 (8.4%)	82 (8.1%)	
Partner lives with mother at all time points	627 (54.8%)	617 (61.0%)	
Income-to-needs ratio at Grade 6, <i>M</i> ( <i>SD</i> )	4.54 (4.15)	4.54 (4.18)	$t(977) = .41$
Maternal level of education, <i>M</i> ( <i>SD</i> )	14.23 (2.51)	14.42 (2.44)	$t(1361) = 4.57^{**}$

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

**Table 3**Descriptive statistics for the main variables ( $N = 1012$ )

Variables	<i>M</i>	<i>SD</i>	<i>Minimum</i>	<i>Maximum</i>	<i>Range</i>
<b>Peer Relationship Scores (Earlier Middle Childhood)</b>	-	-	-	-	-
1. Peer Victimization	1.84	0.79	1	5	4
2. Peer Social Competence	15.40	2.21	6.50	19.67	13.17
3. Friendship Quality	-	-	-	-	-
Observed Friendship Interactions, Dyadic Negative Play Composite	0.01	2.87	-1.15	26.98	28.13
Observed Friendship Interactions, Positive Peer Interaction Composite	0.02	2.76	-8.58	9.88	18.46
Friendship Quality Questionnaire	3.98	0.57	2.30	5	2.7
<b>Peer Relationship Scores (Later Middle Childhood)</b>	-	-	-	-	-
4. Peer Victimization	1.78	0.66	1	5	4
5. Peer Social Competence	15.37	2.40	7.11	19.67	12.55
6. Friendship Quality	-	-	-	-	-
Observed Friendship Interactions, Negative Friendship Interaction Score	1.57	0.47	1	4.67	3.67
Observed Friendship Interactions, Positive Friendship Interaction Score	3.45	0.66	1	5	4
Friendship Quality Questionnaire	4.17	0.52	2.24	2.76	2.76
Dispositional Optimism (LOT)	18.93	2.96	7	24	17

**Table 4**Associations between earlier and later middle childhood peer relationship aspects ( $N = 1012$ )

Variables	1	2	3a	3b	3c	4	5	6a	6b
<b>Peer Relationship Scores in Earlier Middle Childhood</b>									
1. Peer Victimization	-	-	-	-	-	-	-	-	-
2. Peer Social Competence	-.23**	-	-	-	-	-	-	-	-
3. Friendship Quality									
3a. Observed Negative Friendship Interactions	.09**	-.14**	-	-	-	-	-	-	-
3b. Observed Positive Friendship Interactions	-.04	.16**	-.16**	-	-	-	-	-	-
3c. Friendship Quality Questionnaire	-.12**	.11**	-.001	.08*	-	-	-	-	-
<b>Peer Relationship Scores in Later Middle Childhood</b>									
4. Peer Victimization	.43**	-.22**	.06	-.09**	-.21**	-	-	-	-
5. Peer Social Competence	-.22**	.75**	-.16**	.14**	.12**	-.27**	-	-	-
6. Friendship Quality									
6a. Observed Negative Friendship Interactions	.06	-.06	.09*	.02	-.10**	.09**	-.13**	-	-
6b. Observed Positive Friendship Interactions	-.03	.20**	-.04	.09*	.09*	-.07*	.20**	-.16**	-
6c. Friendship Quality Questionnaire	-.05	.20**	.02	.06	.53**	-.24**	.26**	-.09**	.11**

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

**Table 5**

Associations between earlier and later middle childhood peer relationship aspects with optimism ( $N = 1012$ )

Variables	Optimism Middle Childhood
<b>Peer Relationship Scores in Earlier Middle Childhood</b>	
1. Peer Victimization	-.07*
2. Peer Social Competence	.06
3. Friendship Quality	-
Observed Friendship Interactions, Dyadic Negative/Aggressive Play Composite	.05
Observed Friendship Interactions, Positive Peer Interaction Composite	.07*
Friendship Quality Questionnaire	.24***
<b>Peer Relationship Scores in Later Middle Childhood</b>	
4. Peer Victimization	-.21***
5. Peer Social Competence	.12***
6. Friendship Quality	-
Observed Friendship Interactions, Negative Friendship Interaction Score	-.004
Observed Friendship Interactions, Positive Friendship Interaction Score	.02
Friendship Quality Questionnaire	.30***

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

**Table 6**

Summary of the first hierarchical regression analysis predicting dispositional optimism from earlier (1<sup>st</sup> to 3<sup>rd</sup> grade) and later (4<sup>th</sup> to 6<sup>th</sup> grade) peer relationship scores ( $N = 1012$ )

Predictor	<i>SE</i>	$\beta$
<b>Step 1: Peer Relationship Scores in Earlier Middle Childhood</b>		
1. Earlier Peer Victimization	0.13	-.04
2. Earlier Peer Social Competence	0.05	.06
3. Earlier Friendship Quality		
Observed Friendship Interactions, Dyadic Negative/Aggressive Play Composite	0.04	.06
Observed Friendship Interactions, Positive Peer Interaction Composite	0.04	.05
Friendship Quality Questionnaire	0.18	.24***
<b>Step 2: Peer Relationship Scores in Later Middle Childhood</b>		
1. Earlier Peer Victimization	0.14	.04
2. Earlier Peer Social Competence	0.07	-.03
3. Earlier Friendship Quality		
Observed Friendship Interactions, Dyadic Negative/Aggressive Play Composite	0.04	.08*
Observed Friendship Interactions, Positive Peer Interaction Composite	0.04	.04
Friendship Quality Questionnaire	0.21	.11**
4. Later Peer Victimization	0.18	-.21***
5. Later Peer Social Competence	0.07	.08
6. Later Friendship Quality		
Observed Friendship Interactions, Negative Friendship Interaction Score	0.22	.04
Observed Friendship Interactions, Positive Friendship Interaction Score	0.15	-.02
Friendship Quality Questionnaire	0.24	.19***

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

**Table 7**

Summary of the second hierarchical regression analysis predicting dispositional optimism from later (4<sup>th</sup> to 6<sup>th</sup> grade) and earlier (1<sup>st</sup> to 3<sup>rd</sup> grade) peer relationship scores ( $N = 1012$ )

Predictor	<i>SE</i>	$\beta$
<b>Step 1: Peer Relationship Scores in Later Middle Childhood</b>		
1. Later Peer Victimization	0.16	-.21***
2. Later Peer Social Competence	0.04	.02
3. Later Friendship Quality		
Observed Friendship Interactions, Dyadic Negative/Aggressive Play Composite	0.19	.04
Observed Friendship Interactions, Positive Peer Interaction Composite	0.13	-.02
Friendship Quality Questionnaire	0.20	.25***
<b>Step 2: Peer Relationship Scores in Earlier Middle Childhood</b>		
1. Later Peer Victimization	0.19	-.21***
2. Later Peer Social Competence	0.07	.08
3. Later Friendship Quality		
Observed Friendship Interactions, Dyadic Negative/Aggressive Play Composite	0.21	.04
Observed Friendship Interactions, Positive Peer Interaction Composite	0.15	-.02
Friendship Quality Questionnaire	0.27	.19***
4. Earlier Peer Victimization	0.15	.04
5. Earlier Peer Social Competence	0.07	-.03
6. Earlier Friendship Quality		
Observed Friendship Interactions, Negative Friendship Interaction Score	0.04	.08
Observed Friendship Interactions, Positive Friendship Interaction Score	0.04	.04
Friendship Quality Questionnaire	0.22	.11

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

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