

Co-Occurring Trajectories of Children's Peer Victimization and Internalizing Problems: Patterns
and Predictors of Change

by

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ABSTRACT

Research has established the link between children's peer victimization and internalizing problems, but less is known about the direction of associations between these two constructs. This study used an accelerated longitudinal research design to examine four models testing the co-occurrence and directional associations between children's peer victimization and internalizing problems from early to middle childhood (from age 4.5 to 10.5 years). The baseline covariation model was examined first to test the hypothesis that levels and change in peer victimization co-occur with levels and change in internalizing problems. This model was used as the basis from which to build the following directional models. Next, the peer victimization-driven model tested the hypothesis that children's early experiences of peer victimization contribute to change in internalizing problems. The internalizing problems-driven model tested the hypothesis that early internalizing problems contribute to change in peer victimization. Last, the transactional tested the hypothesis that both early peer victimization and early internalizing problems contribute to change in each other. Gender and dimensions of teacher-child relationship quality (closeness, conflict, and dependency) were also tested as predictors of change in peer victimization and internalizing problems and as moderators of associations between these two constructs. Overall, the internalizing problems-driven model best explained the directional associations between peer victimization and internalizing problems. When the average 5.5 year old child had higher levels of internalizing problems this predicted slower increases in their peer victimization through age 10.5 years. Teacher-child conflict also moderated this association; younger children who experienced higher levels of internalizing and who had more conflictual relations with teachers showed slower increases in their peer victimization through to age 10.5 years than children with less conflicted teacher-child relations.

PREFACE

This thesis is an original work by Teresa Mejia. The research project, of which this thesis is a part, received research ethics approval from the University of Alberta Research Ethics Board, Project Name “Classroom Experiences and Social Relationships”, No. 00015225, June 24, 2010.

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TABLE OF CONTENTS

CHAPTER I: Introduction and Literature Review	1
Theoretical Framework	3
Developmental Patterns of Change in Peer Victimization and Internalizing Problems	6
Models of Associations between Peer Victimization and Internalizing Problems	8
Covariation Model	8
Peer Victimization-Driven Model	9
Internalizing Problems-Driven Model	10
Transactional Model	11
Inter-Individual Differences in Peer Victimization and Internalizing Problems	12
Gender	12
Teacher-Child Relationship Quality	13
Current Study	15
CHAPTER II: Methodology	17
Design and Participants	17
Procedures	17
Measures	19
Peer Victimization	19
Internalizing Problems	19
Student-Teacher Relationship Quality	20
Data Analytic Plan	20
Missing Data	23
CHAPTER III: Results	26
Measurement Invariance	26
Gender	26
Grade	27
Across Waves	27

Descriptive Statistics	27
Unconditional Accelerated Latent Growth Curve Models	28
Unconditional Parallel Process Latent Growth Models	30
Conditional Parallel Process Latent Growth Curve Models	30
CHAPTER IV: Discussion	33
Peer Victimization and Internalizing Problems: Patterns of Change	33
Directionality in Associations between Peer Victimization and Internalizing Problems	35
Gender Differences	38
The Significance of Teacher-Child Relationship Quality	39
Limitations and Future Research	43
References	63

LIST OF TABLES

Table 1: Range of Ages Represented in the Accelerated Design and Amount of Overlap for Each Cohort	46
Table 2: Measurement Invariance by Gender at Wave 1	47
Table 3: Measurement Invariance by Grade at Wave 1	48
Table 4: Measurement Invariance across Waves	49
Table 5: Descriptive Statistics of Peer Victimization, Internalizing Problems and Year 1 Dimensions of Teacher-Child Relationship Quality (Overall and by Gender)	50
Table 6: Grade Differences in Mean Levels of Children’s Peer Victimization, Internalizing Problems and Relationship Quality	52
Table 7: Bivariate Correlations among Peer Victimization, Internalizing Problems, and Teacher-Child Relationship Quality	53
Table 8: Latent Growth Curve Model Comparisons for Peer Victimization and Internalizing Problems	54
Table 9: Random Intercept, Random Slope Latent Growth Curve Models for Peer Victimization and Internalizing Problems	55
Table 10: Parallel Process Latent Growth Curve Model Comparisons	56

LIST OF FIGURES

Figure 1: Hypothesized Associations between Peer Victimization and Internalizing Problems	57
Figure 2: Trajectory (Overall and by Cohort) of Peer Victimization from 4.5 to 10.5 Years of Age	58
Figure 3: Best Fitting Model of Change for Children’s Peer Victimization	59
Figure 4: Trajectory (Overall and by Cohort) of Children’s Internalizing Problems from 4.5 to 10.5 Years of Age	60
Figure 5: Best Fitting Model of Change for Children’s Internalizing Problems	61
Figure 6: Internalizing Problems-Driven Model for Associations between Peer Victimization and Internalizing Problems	62

CHAPTER I

Introduction and Literature Review

In the past decade, approximately 20% of Canadian school children reported being victimized by peers (Craig & Edge, 2011). Peer victimization occurs when socially or physically less powerful children experience repeated and intentional acts of aggression at the hands of their peers (Olweus, 1995). These acts of peer aggression often occur in the school setting and can manifest in a number of ways, including physical (e.g., hitting children), relational (e.g., excluding children) and verbal (e.g., teasing children) acts (Craig, Pepler, & Atlas, 2000; Crick & Grotpeter, 1996; Turner, Finkelhor, Hamby, Shattuck, & Ormrod, 2010). Experiences of peer victimization are distressing and can be harmful to children both immediately and as they continue to develop.

One aspect of children's development that is consistently linked to experiences of peer victimization is their experiences of internalizing problems (e.g., symptoms of depression and anxiety; Hanish & Guerra, 2002; Hoggund & Chisholm, 2014; Rudolph, Troop-Gordon, Hessel, & Schmidt, 2011). Approximately 10% of Canadian children suffer from clinical levels of internalizing problems that include symptoms of anxiety and depression (Waddell, Offord, Shepherd, Hua, & McEwan, 2002). When children experience internalizing problems in early childhood this can put them at risk for increased severity and chronicity of internalizing symptomatology through adolescence (Ashford, Smit, van Lier, Cuijpers, & Koot, 2008; Bornstein, Hahn, & Haynes, 2010; Gotlib, Lewinsohn, & Seeley, 1995; Kovacs & Devlin, 1998).

Little research has investigated how peer victimization and internalizing problems co-occur as children transition from early to middle childhood and the directional associations between peer victimization and internalizing problems. Some research indicates that victimization predicts later internalizing problems, which supports a peer victimization-driven

model (Rudolph et al., 2011; Zwierynska, Wolke, & Lereya, 2013). However, other research indicates that internalizing problems predict later peer victimization, which supports an internalizing problems-driven model (Hoglund & Chisholm, 2014; Kochel, Ladd, & Rudolph, 2012; Vaillancourt, Brittain, McDougall, & Duku, 2013). There is also some evidence that children's experiences of peer victimization and internalizing problems may mutually influence one another over time (Reijntjes, Kamphuis, Prinzie, & Telch, 2010). The direction of associations between peer victimization and internalizing problems is still unclear, particularly for children in early to middle childhood.

Thus, the current study tests four alternative models of the associations between peer victimization and internalizing problems (see Figure 1): The covariation model, our baseline model, proposes that early levels and change in peer victimization and internalizing problems co-occur positively across early to middle childhood. The peer victimization-driven model builds from our covariation model and proposes that early levels of peer victimization predict change in internalizing problems from early to middle childhood. The internalizing problems-driven model also builds from the covariation model but proposes that early levels of internalizing problems predict change in peer victimization from early to middle childhood. Last, the transactional model integrates each of these three previous models to propose that early levels of peer victimization and internalizing problems both predict change in each other from early to middle childhood. The direction of the hypothesized associations in the proposed models are expected to be positive, such that as children experience more victimization this will predict increases in their levels of internalizing and as children experience higher levels of internalizing this will predict increases in their experiences of victimization.

Based on previous research, children's experiences of victimization and internalizing and the associations between victimization and internalizing may differ depending on specific child characteristics (i.e., child gender) and specific interpersonal relationships in a child's life (i.e., teacher-child relationships; Hoglund & Chisholm, 2014; Davidson & Demaray, 2007; Reavis, Keane, & Calkins, 2010). As a result, the current study further investigates whether children's gender and relationship quality with their teachers predict mean levels of peer victimization and internalizing problems and moderate the concurrent and prospective associations between peer victimization and internalizing problems. Specifically, the current study uses an accelerated longitudinal research design to investigate: 1) levels and change in peer victimization and internalizing problems over an accelerated 6-year period, from age 4.5 to 10.5 years; 2) the covariation between peer victimization and internalizing problems over this accelerated 6-year period, and the effects of early levels of peer victimization and internalizing problems on change in children's internalizing problems and peer victimization, respectively; and 3) child gender and teacher-child relationship quality as predictors of the peer victimization and internalizing problems growth parameters and as moderators of associations between peer victimization and internalizing problems. The sections below review theoretical and empirical support for the primary foci of the current study.

Theoretical Framework

Overall, a few key theoretical perspectives support why levels and rates of change in peer victimization and internalizing problems may co-vary and the direction of associations between these from early to middle childhood (from age 4.5 to 10.5 years). Socio-ecological theories of development (Bronfenbrenner, 1977; Espelage & Swearer, 2003; Swearer & Doll, 2001) and developmental systems theories (e.g., Sameroff, 2000) support the idea that levels of

victimization and internalizing problems transact over time. These theories posit that peer victimization is an ecological phenomenon established by children's intra- (e.g., internalizing, self-concept) and inter-personal characteristics (e.g., relationships with peers and teachers). Thus, children's experiences of victimization and their individual development cannot be understood without accounting for different contexts that may influence children and the reciprocal interplay between individual children and their surrounding contexts (e.g., interactions with peers; Swearer & Doll, 2001). Following the transition to elementary school, children who experience more peer victimization may develop feelings of sadness over time because they do not feel they belong to a peer group (Baumeister & Leary, 1995). As these children get older, they may also be more anxious about interacting with peers and worry more about when they will be aggressed upon next (Veenstra, Lindenberg, De Winter, Zijlstra, & Verhulst, 2007). The transition to elementary school may also elicit more feeling of sadness and anxiety in children as they adjust to a new school environment. Children may subsequently withdraw from their classmates and be less willing to take part in classroom activities because they feel insecure in the classroom (Rubin, Coplan, & Bowker, 2009; Rubin & Mills, 1991). Over time, other children may see them as less desirable playmates and as easy targets for acts of aggression (Leadbeater & Hoglund, 2009; Rubin et al., 2009). The reciprocity between experiences of victimization and internalizing may be particularly likely to elevate children's risks for maladjustment as they transition from early to middle childhood.

Although developmental theories and previous research support bi-directional associations between victimization and internalizing, these directional associations need to be investigated to address conflicting empirical evidence. Research has found that children's early experiences of victimization can predict increases in their internalizing problems (e.g., Hansih &

Guerra, 2002) while other research has found that children's early experiences of internalizing problems can predict increases in their experiences of victimization (e.g., Vaillancourt et al., 2013). Thus, investigation of the directional associations between victimization and internalizing problems is needed to clarify which directional model may best characterize these associations from early to middle childhood.

Children's experiences of peer victimization and internalizing problems may also differ by gender based on how children are socialized in their peer groups, characterized as powerful socialization environments (Maccoby, 1990). Research has found that among their peers, girls are socialized to worry more about how they are perceived by others, to ruminate more about stressors, and to be more emotionally expressive (Rose & Rudolph, 2006). Meanwhile, boys are socialized to engage in rougher play, to engage in more acts of peer aggression, and to seek less support (Rose & Rudolph, 2006). Thus, girls may experience more internalizing problems because they become more distressed when in conflict with peers. Alternatively, boys may experience more victimization because of increased exposure to acts of peer aggression in their rougher style of play. Child gender may also moderate how victimization and internalizing relate to each other because girls may become more distressed when they are victimized, compared to boys who may not become as distressed because they are more accustomed to these acts of peer aggression.

From an attachment perspective, teachers are like parents in their ability to influence children's development by acting as a secure base (Pianta, 1999; Sroufe, Fox, & Pancake, 1983). After the transition to elementary school, children may use their teachers as a secure base by depending on them for care and support when in school (Sroufe et al., 1983). The ways that teachers provide care and support are by comforting children in times of distress and facilitating

positive peer interactions among children (Farmer, McAuliffe Lines, & Hamm, 2011; Pianta, 1999). Unfortunately, not all children develop caring and supportive relationships with their teachers, perhaps due to child characteristics (Mejia & Hoglund, 2016), and this may leave them susceptible to maladjustment. Thus, the type of relationship a child has with their teacher may affect children's experiences of peer victimization and internalizing problems and influence differential associations between these two constructs from early to middle childhood. Children with positive teacher-child relationships may experience less peer victimization and feel less sad and anxious in school, relative to children with negative relationships, because teachers in these relationships may monitor children's peer interactions more, intervene if necessary, and provide comfort if children become distressed (Reavis, Keane, & Calkins, 2010; Troop-Gordon, 2015). Positive teacher-child relationships may act as a buffer and help children cope with early experiences of victimization and internalizing so that these early experiences are not as strongly associated with more victimization and internalizing as children progress through middle childhood (Davidson & Demaray, 2007). However, when children have negative relationships with teachers, their early experiences of victimization and internalizing may be more strongly linked to subsequent internalizing and victimization because they cannot rely on the teacher to help them cope or ease their distress (Davidson & Demaray, 2007; Reavis et al., 2010).

Developmental Patterns of Change in Peer Victimization and Internalizing Problems

Research has assessed how children's experiences of peer victimization change from early to middle childhood (Barker et al., 2008; Giesbrecht et al., 2011; Reavis et al., 2010; Rudolph et al., 2011). During early childhood (e.g., the preschool years), children tend to have less stable experiences of peer victimization. Although children report more experiences of victimization, these acts of aggressions tend to be more transient and less focused on specific

children (Kochenderfer & Ladd, 1996; Monks, Smith, & Swettenham, 2005). Preschoolers may experience more sporadic episodes of peer victimization because they are beginning to learn how to appropriately interact and socialize with other children in their classrooms (Monks et al., 2005). As children transition from early to middle childhood (moving from preschool to elementary school), experiences of peer victimization tend to become more targeted and directed at specific children who experience more chronic episodes of victimization (Reavis et al., 2010; Rudolph et al. 2011). Overall, average levels of victimization tend to be low and stable or decrease from early to middle childhood (Boivin, Petitclerc, Feng, & Barker, 2010; Bonnet, Gooseens, & Shuengel, 2011; Giesbrecht et al., 2011; Reavis et al., 2010; Rudolph et al. 2011). However, as many as 4-14% of children are chronic recipients of peer victimization across early to late childhood (Boivin et al., 2010; Kochenderfer-Ladd & Wardrop, 2001).

Throughout childhood, children also tend to experience varying degrees of internalizing problems. Clinical symptoms of depression and anxiety have been reported in children as young as 2 years old (Luby et al., 2003; Luby, 2010; Mathiesen et al., 2009). With a large sample of children followed from age 2 to 11 years of age, Sterba, Prinstein, and Cox (2007) found that about 70% of children experienced low to moderate, stable trajectories of internalizing problems. Another 30% of children experienced increasing or high, stable trajectories of internalizing problems. This research suggests it may be normative for children to experience some degree of sadness and worry as they age from early through middle childhood. Other research that followed children from 4 to 15 years old found that most children (68%) exhibited low, stable trajectories of internalizing problems across this age period (Weeks et al., 2014). However, 12% of children showed moderate levels of internalizing problems that were stable over time. Thus, it appears most children tend to experience low to moderate levels of internalizing problems that

are stable or decrease across childhood (Fanti & Henrich, 2010; Keiley, Bates, Dodge, & Petit, 2000; Sterba et al., 2007).

Changes in peer victimization and in internalizing problems have been examined independent of each other and research tends to highlight internalizing problems as a main covariate, outcome or predictor of negative peer experiences (Goldbaum, Craig, Pepler, & Connolly, 2003; Reijntjes et al., 2010). However, less is known about how change in peer victimization and internalizing problems may co-occur from early to middle childhood.

Models of Associations between Peer Victimization and Internalizing Problems

Baseline Covariation Model. Acting as the baseline model that the subsequent directional models build from, the baseline covariation model proposes that children's experiences of peer victimization co-occur with their levels of internalizing problems (see the proposed within-time association in the peer victimization and internalizing problems intercepts, Figure 1). This model generally builds from research that indicates victimization and internalizing tend to be highly correlated within time. With peer victimization experiences theorized to be so closely linked to children's internalizing problems, it follows that change in one construct is likely linked to or travels with change in the other (see associations between the peer victimization and internalizing problems linear slopes as well as the quadratic slopes, Figure 1).

In support of the covariation model, cross-sectional studies have found that children's experiences of peer victimization are concurrently related to their levels of internalizing problems (for reviews see Hawker & Boulton, 2000; Storch & Ledley, 2005). Across early to late childhood positive and moderate associations are usually reported between children's peer victimization and internalizing problems (Galand & Hospel, 2013; Hoglund & Chisholm, 2014;

Troop-Gordon & Quennette, 2010; Vaillancourt et al., 2013). Based on the current literature, it is plausible, both theoretically and empirically, that victimization and internalizing follow similar developmental patterns of change and that change in one construct is related to change in the other.

Peer Victimization-Driven Model. Building from the covariation model, the peer victimization-driven model proposes that, beyond the covariation of levels and change in victimization and internalizing, children's early experiences of peer victimization will also predict changes in their internalizing problems across early to middle childhood (see Figure 1). When children first transition into elementary school they have to adjust to a new environment and to a new peer group (Monks, 2011). Consequently, some children may be targeted for peer abuse (Boivin et al., 2010; Kochenderfer-Ladd & Wardrop, 2001). These early peer victimization experiences can leave children feeling left out and as a result they may struggle to adapt in the school setting (Lynch & Cicchetti, 1997). Such negative peer experiences may be detrimental to children's emotional development because it violates their need to belong and develop positive interpersonal relationships with other children (Baumeister & Leary, 1995). Due to this lack of peer support, children may develop feelings of sadness and anxiety in school.

Hanish and Guerra (2002) found that experiences of peer victimization in early elementary school were associated with more symptoms of depression and anxiety two years later. Similarly, Rudolph et al. (2011) found that when children experienced more peer victimization in grade 2 this contributed to more depressive symptoms in grade 5. This predictive association between peer victimization and change in internalizing problems has also been

observed in children from middle childhood to early adolescence (Zwierzynska, Wolke, & Lereya, 2013). Thus, early experiences of peer victimization may contribute to changes in children's levels of internalizing problems as they develop through middle childhood.

Internalizing Problems-Driven Model. Also building from the covariation model but in contrast to the peer victimization-driven model, the internalizing problems-driven model proposes that, beyond the covariation between victimization and internalizing, children's early internalizing problems predict changes in their experiences of peer victimization as they transition through middle childhood (see Figure 1). Children with higher levels of internalizing problems may be increasingly victimized by peers because these children are seen as easy targets who will not fight back (Rubin et al., 2009). These children may also withdraw from their peers to avoid future acts of aggression (Rubin & Mills, 1988; Veenstra et al., 2007). However, this withdrawal does not go unnoticed by peers and may heighten children's risks for ongoing peer victimization (Boivin et al., 2010; Veenstra et al., 2007).

Studies have implicated children's internalizing problems as a key risk factor for susceptibility to and maintenance of peer victimization. Among grade 5 to 7 children, Goldbaum, Craig, Pepler, and Connolly (2003) found that children's experiences of internalizing problems seemed to precede their peer victimization experiences. Other studies have also tested the directionality of the associations between mean levels of peer victimization and internalizing problems and have typically found that internalizing problems predicted prospective peer victimization (Kochel et al., 2012; Vaillancourt et al., 2013). In these instances, children's anxious and depressive symptomatology may act as a red flag for later peer victimization experiences (Vaillancourt et al., 2013).

Transactional Model. This model builds from each of the three models described above to posit that children's early peer victimization and internalizing problems likely co-occur and also contribute to change in each other across middle childhood (see Figure 1). Based on socio-ecological (Bronfenbrenner, 1977; Espelage & Swearer, 2003; Swearer & Doll, 2001) and developmental systems theories (e.g., Sameroff, 2000), it could be that children's early interpersonal (e.g., peer victimization) and intra-personal (e.g., internalizing problems) characteristics mutually influence change in each other as children get older. On the one hand, children who experience more peer victimization at a young age may increasingly feel sad and anxious as they transition through middle childhood because they no longer feel secure interacting with peers for fear of repeated acts of victimization (Veenstra et al., 2007). On the other hand, children who experience more symptoms of depression and anxiety soon after the transition to elementary school may be targeted more for peer victimization through middle childhood because they are less likely to defend themselves (Card & Hodges, 2008).

Research has identified support for the reciprocal associations between peer victimization and internalizing problems. With a sample of children in grades 3 and 7 who were followed over one school year, Hodges and Perry (1999) found that children's peer victimization predicted later internalizing problems and, reciprocally, internalizing problems predicted later peer victimization. Research examining the directional associations between peer victimization and internalizing problems across one school term with a sample of children in kindergarten to grade 3 also found that internalizing problems transacted with peer victimization (Hoglund & Chisholm, 2014); initial levels of internalizing problems contributed to prospective levels of peer victimization 8 weeks later and reciprocally peer victimization contributed to prospective levels of internalizing problems. These findings exemplify how peer victimization and internalizing

problems may be both antecedents and outcomes of each other (Reijntjes et al., 2010). However, less is known about how patterns of change in both constructs co-occur and influence one another from early through middle childhood (Reijntjes et al., 2010).

Inter-Individual Differences in Peer Victimization and Internalizing Problems

Gender. There are inconsistencies in the literature about whether boys or girls experience similar levels of peer victimization and internalizing problems. Some studies find that boys experience more peer victimization (Hanish, Martin, & Fabes, 2005; Troop-Gordon & Kopp, 2015), others find that girls experience more peer victimization (Hoglund & Chisholm, 2014; Vaillancourt et al., 2013), and still others find no gender differences in children's experiences of peer victimization (Bonnet et al., 2011; Rudolph et al., 2011). There are fewer gender inconsistencies for children's internalizing problems. Girls and boys tend to experience similar levels of internalizing problems in early and middle childhood (Hoglund & Chisholm, 2014; Mathiesen et al., 2009; Rudolph et al., 2011) but by late childhood girls tend to experience more internalizing problems than boys (Sterba, Prinstein, & Cox, 2007; Zahn-Waxler, Klimes-Dougan, & Slattery, 2000). Research has also found that average patterns of change in peer victimization and internalizing problems are similar for boys and girls in early and middle childhood. Troop-Gordon and Ladd (2005) found that while boys tended to experience greater initial levels of victimization than girls at 9 years old, boys and girls did not differ in their rate of change from 9 to 11 years old. Findings from Sterba et al. (2007) showed that average patterns of change in internalizing may also be similar for girls and boys, with both groups exhibiting linear declines from 2 to 11 years old. Thus, it may be that girls and boys differ in levels of peer victimization when they first transition into elementary school, but show similar patterns of change in victimization and internalizing across middle childhood.

The associations between peer victimization and internalizing problems could differ between girls and boys. Some studies found comparable associations between peer victimization and internalizing problems for girls and boys (Davidson & Demaray, 2007; Hoglund & Chisholm, 2014). However, others studies found that associations between peer victimization and internalizing problems were stronger for boys than girls (Hanish & Guerra, 2002). It could be that differences in how boys and girls experience peer victimization and internalizing problems is reflected by how strongly these two constructs relate to one another as children transition from early to middle childhood.

Teacher-Child Relationship Quality. Another characteristic that may explain some of the variability in children's experiences of peer victimization and internalizing problems and associations between these two constructs is the quality of relationship they share with their teacher (Averdijk, Eisner, & Ribeaud, 2014; Davidson & Demaray, 2007; Farmer et al., 2011; Mejia & Hoglund, 2016). There are three dimensions of teacher-child relationship quality that are typically examined: closeness (e.g., warmth and open communication), conflict (e.g., tension and anger), and dependency (e.g., clinginess and overreliance; Birch & Ladd, 1997). Some children may end up struggling more in school because of the quality of relationship they share with their teacher and the powerful influence these relationships can have on children's peer interactions and emotional adjustment in school (Farmer et al., 2011; Howes, Hamilton, & Matheson, 1994; Murray & Murray, 2004; Troop-Gordon, 2015). Thus, levels of and associations between victimization and internalizing may differ depending on dimensions of relationship quality.

Children with close teacher-child relationships may experience less peer victimization because their teacher is more likely to intervene and protect them from acts of aggression

(Reavis et al., 2010). Children who can rely on their teacher for support may also experience fewer internalizing problems in early elementary school (Baker, 2006). Close teacher-child relationships may further protect children who experience peer victimization from experiencing later adjustment problems because these children are able to turn to their teacher for emotional support and may not feel completely ostracized in the school setting (Troop-Gordon & Kuntz, 2013).

In the same vein, conflictual teacher-child relationships may put children at risk for more peer victimization because other children perceive that these children are liked less by teachers and are less likely to intervene if peers aggress upon this child (Reavis et al., 2010). Conflict in teacher-child relations may also elevate risks for internalizing problems because children may feel more distressed and alone in school without the support of their teacher (Troop-Gordon & Kuntz, 2013). More conflictual relationships may also magnify the positive associations between peer victimization and adjustment problems because children may feel even more alienated in school when they are in conflict with their peers and teacher, leaving them more emotionally distraught (Troop-Gordon & Kuntz, 2013).

Similar to conflictual relationships, teacher-child dependency is also associated with children experiencing more peer victimization (Troop Gordon & Kopp, 2011) and higher levels of internalizing problems (Hughes, Bullock, & Coplan, 2014; Mejia & Hoglund, 2016). Children may miss opportunities to interact and build relationships with peers when they are too reliant on teachers and may feel sad because they do not belong. Dependent relationships may also intensify associations between children's peer victimization and internalizing problems because children dependent on teachers interact with peers less and, as a result, peers may choose to target these children for victimization (Troop-Gordon & Kopp, 2011). Overly dependent children

may become more sad and anxious over time because they now fear their peers and are uneasy unless in close proximity to their teacher.

The Current Study

In sum, the current study uses an accelerated longitudinal research design to investigate patterns of change in peer victimization and internalizing problems and the co-occurrence and directional associations between peer victimization and internalizing problems from early to middle childhood (age 4.5 to 10.5 years; see Figure 1). This study further examines child gender and teacher-child relationship quality (closeness, conflict, dependency) as predictors of change in peer victimization and internalizing problems and moderators of the associations between these constructs. Specifically, this study asks: 1) What are the average growth trajectories of peer victimization and internalizing problems from early through middle childhood? Is there variation in these trajectories? 2) Do the trajectories of peer victimization and internalizing problems co-vary across early to middle childhood? Do children's early peer victimization experiences predict change in their internalizing problems from early to middle childhood? Or do early internalizing problems predict change in their peer victimization experiences? Or do peer victimization and internalizing problems transact to predict change in one another? 3) Do gender and teacher-child relationship quality (closeness, conflict, dependency) predict mean level differences in peer victimization and internalizing problems and moderate the associations between peer victimization and internalizing problems?

It is expected that: 1) average growth trajectories of children's peer victimization and internalizing problems will decrease over an accelerated 6-year period, with significant variability in these average trajectories, as children get accustomed to the school setting and learn social expectations for interacting with peers (Giesbrecht et al., 2011; Henrich & Fanti,

2010; Reavis et al., 2010; Rudolph et al., 2011; Weeks et al., 2014); 2) peer victimization and internalizing problem trajectories will co-vary positively over the accelerated 6-year period, with the transactional model providing the best fit to the data (Hoglund & Chisholm, 2014; Reijntjes et al., 2010); 3) gender will predict mean levels of peer victimization and internalizing problems, with girls experiencing higher levels of victimization and internalizing, based on studies with similar sample characteristics (Hoglund & Chisholm, 2014; Sterba et al., 2007). Gender will also moderate the co-occurrence between the peer victimization and internalizing problems trajectories in the best fitting models, with stronger associations between victimization and internalizing for boys than girls (Hanish & Guerra, 2002); and 4) closer teacher-child relationships will predict lower mean levels of peer victimization and internalizing problems and weaken the association between peer victimization and internalizing problems. Alternatively, it is expected that children who share more conflictual or dependent relationships with their teachers will show higher mean levels of peer victimization and internalizing problems and the associations between peer victimization and internalizing will be stronger for these children (Mejia & Hoglund, 2016; Troop-Gordon & Kopp, 2011; Troop-Gordon & Kuntz, 2013).

CHAPTER II

Methodology

Design and Participants

Participants included 506 children (average age = 6.9 years, $SD = 1.2$ years) and their 65 teachers (average age = 37.38 years, $SD = 11.2$ years) recruited from kindergarten to grade 3 classrooms ($N = 63$) in 10 public elementary schools. According to school board records, all participating schools were ranked in the top 25th quartile of high needs schools in the district (based on rates of student mobility, proportion of Aboriginal students, English language learners, and students with behavioral needs). The sample was equally represented by gender (51% girls) and grade: 27.1 % kindergarten ($n = 137$, average age = 5.49, $SD = .37$, age range = 4.25 - 6.42), 28.7% grade 1 ($n = 145$, average age = 6.48, $SD = .37$, age range = 5.92 – 7.58), 21.9% grade 2 ($n = 111$, average age = 7.55, $SD = .42$, age range = 6.17 – 8.83), 22.3% grade 3 ($n = 113$, average age = 8.55, $SD = .35$, age range = 7.83 – 9.42). The sample was also ethnically diverse: 50.5% Caucasian, 12.5% Aboriginal, 10.3% Black/African Canadian, 8.8% Southeast and East Asian, 6.6% South and West Asian, 6.3% Latino/Hispanic, and 5.0% reported multiple ethnicities. Based on parent reports, 35.9% of children were first- or second-generation Canadians, 58.4% of families spoke a language other than English in the home “once in a while” to “all the time”, 31% of children lived in single-parent households, 21.5% of mothers and 25.4% of fathers did not graduate high school, and 40.2% of mothers and 14.4% of fathers were not employed.

Procedures

Following University and School Board Research Ethics Approval, consent packages were sent home in predominant languages spoken in schools (English, Spanish, Somalian,

Tagalog) to all parents of children kindergarten to grade 3 to inform them about the study and to seek parental consent for their child to participate. The researchers also attended parent-teacher evenings to inform parents about the research projects and to answer any questions. Teachers were also asked to give regular reminders to parents to return their consent forms. Parents were asked to return the consent form whether consent was given or not. Consent was requested at each wave for children new to the school or who had not previously returned a consent form. Overall, 66% (range = 64-66% across waves) of parent consent forms were returned and of those returned most parents granted consent (~80%). Of all eligible children, 43% (range = 37-48% across waves) had parental consent to participate. Children were also asked to assent to data collection at each wave. Overall, 83.1% of teachers ($N = 54$) consented to complete surveys on their teaching and on their relationship quality with each child in their class who had parental consent to participate. In total, 348 of 506 children (68.8%) had teacher-rated data. Missing teacher-rated data were due to teacher non-consent or survey non-completion.

All data were collected on six occasions across two school years, with each collection period lasting approximately one month across the 10 schools. Baseline data (wave 1) were collected in winter of year 1 (January 2010). Follow-up data were collected in early spring (wave 2) and late spring (wave 3) of year 1 and in the fall (wave 4), winter (wave 5), and late spring (wave 6) of year 2. The age range for the entire sample across the 2 year study period was 4.25-years-old to 10.58-years-old (see Table 1).

Children rated their peer victimization in small class groups ($n = 5$ to 20) during a 40 minute in-class block and rated their internalizing problems one-on-one with a research assistant during a 30 minute class period. All questions were read aloud by a research assistant. For the in-class sessions, a second research assistant was also present to help children fill out the surveys

appropriately (e.g., placement of responses). Children who did not have consent or who did not assent ($n = 4$) worked on a different activity at their desk. Data collection was rescheduled in a 2 week period for absent children.

Measures

Peer Victimization. Children reported on their experiences of victimization using the Social Experiences Questionnaire (Crick & Grotpeter, 1996). Items representing physical (e.g., “hit you at school”, “push or shove you at school”; 4 items), relational (e.g., “try to keep other from liking you by saying mean things about you”; 4 items), and verbal (e.g., “yell at you or call you mean names”; 1 item) victimization were assessed. One of the five original items was removed from the relational victimization dimension (“leave you out on purpose when it is time to play or do an activity”) as reliability analysis indicated a low item-total correlation and a confirmatory factor analysis indicated that this item did not load well on the latent construct. Items were rated on a 3-point scale that was also depicted visually with three different sized bubbles (0 = *Never*, 1 = *Sometimes*, 2 = *All the time*). Internal consistencies were moderate to high across waves for the victimization subscales (α s = .66 - .81). The subscales were moderately to highly correlated at each wave (r s = .49-.72, $p < .05$). Scores from the three subscales were averaged to compute an overall peer victimization score at each wave.

Internalizing Problems. Children also reported on their internalizing problems using the Behaviour Assessment System for Children II (Reynolds & Kamphaus, 2004). Internalizing problems were assessed from two subscales: the depression subscale assesses symptoms of sadness and loneliness (e.g., “I feel sad”, “nothing is fun anymore”; 12 items); the anxiety subscale assesses worries and nervousness (e.g., “little things bother me”, “I worry about what is going to happen”; 13 items). Children rated how often they experienced these depression and

anxiety symptoms on a 3-point scale that was depicted visually (0 = *Never*, 1 = *Sometimes*, 2 = *All the time*). Internal consistencies were high across waves ($\alpha = .82 - .92$). The two internalizing subscales were also highly correlated ($r_s = .73-.82$, $p < .05$) at each wave. Scores from the two subscales were averaged to compute an overall internalizing score at each wave.

Teacher-Child Relationship Quality. Teachers reported on their relationship quality with participating children using the Student-Teacher Relationships Scale (Pianta & Steinberg, 1992). Three dimensions of relationships quality were assessed: closeness (e.g., “it is easy to be in tune with what this child is feeling”, “I share an affectionate, warm relationship with this child”; 7 items), conflict (e.g., “this child easily becomes angry with me”, “dealing with this child drains my energy”; 7 items), and dependency (e.g., “this child is overly dependent on me”, “this child reacts strongly to separation from me”; 5 items). Items were rated on a 5-point scale (0 = *Definitely does not apply*, 1 = *Does not really apply*, 2 = *Neutral*, 3 = *Applies somewhat*, 4 = *Definitely applies*). Across year 1 of the study (waves one to three), internal consistencies were high for closeness ($\alpha = .79-.82$) and conflict ($\alpha = .85-.91$) and moderate for dependency ($\alpha = .68-.73$). Scores were averaged across the first three waves of the study to compute an overall relationship quality score for each dimension (average score across year 1).

Data Analytic Plan

Analyses are presented in 5 sections. First, the measurement invariance of the criterion constructs by gender and grade at wave 1 and across the six waves of data were examined using confirmatory factor analysis (CFA). These analyses established whether the peer victimization and internalizing problems constructs represented the same construct for boys and girls, for younger and older children, and across the six waves. Second, descriptive statistics of the constructs, overall and by gender and grade, were examined. Bivariate correlations of the

constructs were also examined. Third, a series of accelerated latent growth curve models were tested to determine the best fitting model of change for peer victimization and internalizing problems across age 4.5 to 10.5 years. The latent growth curve models used children's age as the time scale as opposed to time of assessment to capture the individually-varying times of assessment and to estimate a 6-year accelerated pattern of change. Adjacent segments of data from the four different cohorts were linked to create an overall growth curve that modeled change over a longer temporal period (Laursen et al., 2012; Singer & Willett, 2003; Willett, Singer & Martin, 1998). This design accounts for the time of assessment in conjunction with the age of participants and can increase confidence in the generalizability of the results (Laursen et al., 2012; Willett et al., 1998). When wave of assessment is used as the metric of time it does not take into account children's age at each assessment or the chronological distance between measurement occasions (Singer & Willett, 2003). Findings from accelerated longitudinal designs have been found to be comparable to true longitudinal designs and to adequately estimate the developmental trend (Duncan, Duncan & Hops, 1996). To establish age as the metric of time in this study, age variables were created at each wave of data collection and were centered based on the mean age of our youngest cohort (kindergarten children, $M = 5.49$ years, $SD = .37$). Thus, the models presented may represent how a typical kindergarten child experienced peer victimization and internalizing problems upon entry into elementary school and across to age 10.5 years (Collins, 2006; Muthén & Muthén, 2004).

Fourth, a series of parallel process latent growth curve models were tested to assess the directional associations between early levels and rates of change in children's peer victimization and internalizing problems from age 4.5 to 10.5 years. The baseline covariation model tested whether the intercepts and slopes of the two parallel processes (i.e., peer victimization and

internalizing problems) co-varied across age. The peer victimization-driven model tested whether average levels of peer victimization at age 5.5 years predicted change in internalizing problems from age 4.5 to 10.5 years. The internalizing problems-driven model tested whether average levels of internalizing problems at age 5.5 years predicted change in children's peer victimization experiences from age 4.5 to 10.5 years. Lastly, a transactional model tested whether average levels of children's experiences of peer victimization and internalizing problems at age 5.5 years contributed to growth in the other construct from age 4.5 to 10.5 years.

Last, gender and year 1 dimensions of teacher-child relationship quality (closeness, conflict, and dependency) were assessed as predictors of levels and rates of change for peer victimization and internalizing problems and as moderators of the directional associations between peer victimization and internalizing problems. Predictors were added separately in the best fitting parallel process latent growth curve model. Moderators were tested in two ways. Multiple group-models were used to test gender as a moderator and interaction terms were added into the best fitting parallel process latent growth curve model to test teacher-child relationship quality as a moderator. Interaction terms were created between the relationship quality dimensions (closeness, conflict, dependency) and the intercepts of peer victimization or internalizing problems (depending on the best fitting model).

All analyses were conducted using Mplus 7.3 (Muthén & Muthén, 2015). For the invariance models, model fit was assessed with the Chi-Square statistic (χ^2) and approximate fit indices: Confirmatory Fit Index (CFI), Root Mean Square Error of Approximation (RMSEA), Standardized Root Mean Square Residual (SRMR), and the Bayesian Information Criterion (BIC) (Kline, 2011). Non-significant chi-square values signify a good fit of the data to the model (Kline, 2011). CFI values of .95 or greater signify excellent model fit and values of .90-.94

signify adequate fit. RMSEA and SRMR values of .05 or lower signify excellent model fit, while values of .06-.08 indicate adequate model fit (Kline, 2011). Chi-square difference tests ($\Delta\chi^2$) were conducted to compare nested models, with non-significant chi-square values indicating that the fit of the more constrained model was comparable to the fit of the less constrained model (Kline, 2011). The Bayesian Information Criterion was used to compare non-nested models (e.g., peer victimization-driven vs. internalizing problems-driven) with lower values signifying better fit of the data to the model.

Latent growth curve models and parallel process latent growth curve models were conducted using the MLF estimator (maximum likelihood estimation with standard errors based on first-order derivatives). This estimator is considered equivalent to MLR (maximum likelihood estimation with robust standard errors) when models are correctly identified and have larger sample sizes (Asparouhov & Muthén, 2012). Modeling growth using individually-varying time scores does not produce the typical chi-square statistic and approximate fit indices as there is a variance/covariance matrix for each value of x rather than a single matrix. Therefore, a deviance statistic ($-2[\log\text{-likelihood}]$) was used to compare the fit of nested models (e.g., peer victimization-driven vs. transactional; Singer & Willett, 2003). This statistic compared log-likelihood values for nested models (e.g., peer victimization-driven vs. transactional).

Missing Data. This study had planned missing data due to the accelerated longitudinal design. Each cohort had a different pattern of planned missing data and had at least three waves of overlap with another cohort across the 2 year study period (e.g., the kindergarten cohort had three waves of overlap with the grade 1 cohort; the grade 1 cohort had an additional three waves of overlap with the grade 2 cohort; see Table 1). The first three waves of data for the

kindergarten cohort contributed solely to initial levels and early growth in peer victimization and internalizing problems (about 4.5 to 6.5 years) and the last three waves of the grade 3 cohort contributed solely to the last years of the accelerated age span (about 9 to 10.5 years). Planned missing data is generally considered to be missing at random and poses less of a risk to interpretations of the findings (Laursen et al., 2012). Children were included in the analyses if they contributed data to at least one out of six waves. Maximum likelihood estimation was used to estimate missing data.

Data were also missing due to child new entrant status and attrition. Two children (0.4%) were missing data at all waves and were dropped from the analyses. Of the 504 children included in the analyses, 264 (52.2%) had child-rated data at all six waves, 67 (13.2%) had data at five waves only, 22 (4.3%) had data at four waves only, 102 (20.2%) had data at three waves, 32 (6.3%) had data at two waves, and 17 (3.4%) had data at one wave only. Comparisons between children with data at all waves versus children missing data at one or more waves indicated no significant differences by gender ($\chi^2 [1] = .09, ns$), age ($F[1] = .60, ns$), teacher-reported internalizing problems ($F[1] = 0.30, ns$) at wave 1, or by year 1 teacher-child closeness ($F[1] = .05, ns$), conflict ($F[1] = 0.04, ns$), or dependency ($F[1] = 0.10, ns$).

Some children were also missing teacher-rated data. Of the 504 children included in the analyses, 348 (68.8%) children had teacher-rated data in year 1 of the study and 156 (30.8%) were missing teacher-rated data in year 1. Comparisons between children with teacher-rated data in year 1 and children missing teacher-rated data in year 1 indicated no significant differences by gender ($\chi^2[1] = 1.27, ns$) or child-reported victimization ($F[1] = 0.74, ns$) and internalizing problems ($F[1] = 0.61, ns$) at wave 1. However, there was a significant age difference ($F[1] =$

14.47, $p < .01$). Children with no teacher-rated data in year 1 were older (average age = 7.21, $SD = 1.18$) compared to children with teacher-rated data in year 1 (average age = 6.78, $SD = 1.18$).

CHAPTER III

Results

Measurement Invariance

The confirmatory factor analysis (CFA) examining the measurement invariance of peer victimization and internalizing problems parceled the respective scale items based on the subscale they represented (Widaman, Ferrer, & Conger, 2010). Thus, the peer victimization factor had 3 indicators (physical, relational, verbal) and the internalizing problems factor had 2 indicators (anxiety and depression). Three levels of invariance were tested: configural, metric, and scalar (Widaman et al., 2010). Configural invariance tested whether the overall factor structure was consistent across both gender, grade, and waves. To achieve configural invariance, factor loadings of each indicator were examined for their significance and indicators that significantly loaded onto the factor were required to be consistent across groups or waves. Metric invariance models tested whether the factor loadings of the indicators were invariant between groups and across waves. In these models, all factor loadings were constrained to be equal across groups or waves. Scalar invariance models tested whether the intercepts of the indicators were invariant between groups and across waves. In these models, the intercepts of the indicators were constrained to be equal across groups or waves. When this level of invariance was not achieved partial scalar invariance (e.g., when one or more intercepts of indicators are unconstrained across groups) was examined (Little, Preacher, Selig, & Card, 2007).

Gender. CFA models assessing a unidimensional factor structure of peer victimization and internalizing problems across gender at wave 1 each achieved scalar invariance (see Table 2). This indicated that any differences between boys and girls in reports of their peer

victimization and internalizing problems represented genuine group differences in these constructs.

Grade. CFA models that tested a unidimensional factor structure of peer victimization and internalizing problems across grades at wave 1 each achieved partial scalar invariance (see Table 3). For peer victimization, the verbal victimization intercept was free to vary across all grades. For internalizing problems, the anxiety intercept was free to vary between kindergarten and grades 1 to 3 (which were constrained to be equal). These findings indicated that the same factor of peer victimization and internalizing problems factors were measured across grades. However, some indicators exhibited mean differences across grade not attributed to differences in the latent factor. Partial scalar invariance is deemed acceptable when investigating mean differences in study constructs across groups (Little et al., 2007).

Across waves. The CFA models assessing measurement invariance in the peer victimization and internalizing problems constructs across the six occasions of measurement, with adjacent residuals allowed to be correlated, both achieved partial scalar invariance (see Table 4). For peer victimization, intercepts of all indicators at wave 1 were free to vary from the wave 2-6 intercepts. Intercepts at waves 2-4 were constrained to be equal and intercepts at waves 5-6 were constrained to be equal. For internalizing problems, wave 1 intercepts were free to vary from the wave 2-6 intercepts. The variance of the anxiety indicator was fixed to zero at waves 1 and 4 for the model to converge.

Descriptive Statistics

On average, children reported low levels of peer victimization and low to moderate levels of internalizing problems at each wave. Teachers reported high levels of closeness in their relationships with children and low levels of conflict and dependency in the first year of the

study. These findings were similar across boys and girls with a few exceptions (see Table 5). Girls reported more experiences of peer victimization at waves 2 and 3 and internalizing problems at wave 3, relative to boys. There were no gender differences in the average closeness, conflict or dependency experienced in the teacher-child relationship. No grade differences were found in children's overall experiences of peer victimization or in their levels of internalizing problems (see Table 6). However, children in kindergarten to grade 2 showed closer relationships with teachers compared to children in grade 3.

Bivariate correlations between the criterion constructs indicated that peer victimization and internalizing problems demonstrated moderate to high stability across waves (see Table 7). Peer victimization and internalizing problems were also weakly to moderately correlated within and across waves. Teacher-child closeness was moderately and negatively associated with teacher-child conflict (but not with teacher-child dependency) and weakly and negatively associated with peer victimization at wave 4 only. Teacher-child closeness was not associated with internalizing problems. Teacher-child conflict was strongly and positively associated with dependency and weakly and positively associated with peer victimization at each wave (except wave 5) and with internalizing problems at waves 1 to 3. Teacher-child dependency was weakly and positively associated with peer victimization at waves 1 and 3 and with internalizing problems at wave 1.

Unconditional Accelerated Latent Growth Curve Models

A series of unconditional accelerated latent growth curve models were examined next to assess the best fitting model of change for peer victimization and internalizing problems from age 4.5 to 10.5 years. Each of these models were conducted using a random slopes analysis (TYPE = RANDOM in the Mplus command) to capture the individually-varying times of

observation. Using this type of analysis, fixed intercept models were tested first where the intercept of each construct was estimated, but the variance of the intercept was constrained to zero. These models signify no variability among children in initial levels of peer victimization or internalizing problems. Second, the random intercept models with the intercept growth factor allowed to vary were tested. Third, the fixed linear slopes models were estimated where a linear rate of change was examined but the variances were constrained to be zero, indicating no variability in the linear rate of change. Fourth, the random linear slopes models where the variance was estimated for the linear slope factor for each construct were examined. Fifth, fixed quadratic slope models were examined to assess a curvilinear rate of change (e.g., a slowing down in linear decreases over time). Sixth, the random quadratic slopes models were tested where the variability in the quadratic slopes were estimated. In the final models, fixed cubic slopes were estimated.

For peer victimization, the random intercept and linear slope model was retained as the best fitting model of change across the accelerated longitudinal period of 6 years (see Table 8). This model indicated that peer victimization decreased significantly and linearly across the accelerated 6 year period, from 4.5 to 10.5 years (see Table 9). Figure 2 provides a graphical representation of the accelerated peer victimization trajectory along with each cohorts' peer victimization trajectory. This demonstrated that each cohort followed a similar peer victimization trajectory to that estimated by the accelerated model (see Figure 3). There was also a significant, negative covariance between the intercept and linear slope for peer victimization, indicating that higher early levels of peer victimization were associated with greater linear decreases in peer victimization as the average kindergarten child matured to age 10.5 years (see Figures 3).

For internalizing problems, the random intercept and linear and quadratic slope model was retained as the best fitting model of change across the accelerated longitudinal period of 6 years (see Table 8). Children's internalizing problems decelerated significantly from 4.5 years to 10.5 years (see Table 9). Each cohort's internalizing problems trajectory also followed similar patterns of change to the accelerated internalizing problems trajectory (see Figure 4). There was significant variability in the intercept and linear slope factors but not quadratic slope, which only reached a trend level of significance indicating that while children varied in their initial levels and linear decreases in internalizing problems, there was no variation among children in how quickly these linear decreases slowed down (see Table 9 and Figure 5).

Unconditional Parallel Process Latent Growth Models

A series of unconditional parallel process latent growth curve models were tested to assess the directional associations between peer victimization and internalizing problems (see Figure 1). Statistically, based on model comparisons, the transactional model provided the better fit to the data. However, the only significant path in the transactional model was from the internalizing intercept to the linear peer victimization slope, denoted by a negative regression coefficient between these two factors. Thus, based on model estimates, the internalizing problems-driven model was retained as the preferred model (see Table 10 and Figure 6). In this model, average levels of peer victimization at age 5.5 years co-varied positively with average levels of internalizing problems at age 5.5 years. Unexpectedly, children who reported higher levels of internalizing problems at age 5.5 years exhibited slower increases in peer victimization across the 6-year accelerated longitudinal period. The slope parameters did not co-vary significantly.

Conditional Parallel Process Latent Growth Curve Models

The intercept and slope factors from the internalizing-driven parallel process model were each regressed on gender and a year 1 teacher-child relationship quality dimensions (closeness, conflict, dependency) in 3 separate models. There was a significant positive effect of gender on the internalizing problems intercept ($\beta = .13, SE = .06, p < .05$), indicating that the average 5.5 year old girl experienced higher levels of internalizing problems compared to boys. There was also a significant positive effect of year 1 teacher-child conflict on the intercepts of peer victimization ($\beta = .07, SE = .03, p < .05$) and internalizing problems ($\beta = .06, SE = .03, p < .05$). This indicated that the average 5.5 year old child who experienced more conflict in their teacher-child relationship showed significantly higher levels of peer victimization and internalizing problems. There were no main effects of teacher-child closeness or dependency on the victimization or internalizing growth factors.

Next, a series of multiple-group and interaction models tested whether gender and teacher-child relationship quality, respectively, moderated the associations between peer victimization and internalizing problems in the internalizing problems-driven model. Multiple-group models indicated significant gender differences in the covariation between the peer victimization and internalizing problems intercepts ($\Delta D [3] = 11.7, p < .01$), with this positive covariation stronger for the average 5.5 year old girl ($\beta = .08, SE = .02, p < .01$) compared to the average 5.5 year old boy ($\beta = .05, SE = .01, p < .01$).

When the teacher-child relationship quality and internalizing interaction term was added to the accelerated models it prevented the models from converging. Thus the interaction term was assessed using traditional parallel process latent growth curve models rather than accelerated models. Only year 1 teacher-child conflict interacted with the internalizing intercept to predict change in peer victimization ($\beta = -.16, SE = .07, p < .05$). Specifically, children with higher

initial levels of internalizing problems experienced fewer increases in peer victimization over the 6 waves when they shared more ($\beta = -.69, SE = .15, p < .01$) relative to less ($\beta = -.38, SE = .12, p < .01$) conflictual relationships with teachers.

Given that this finding was not supported by previous research and theory, a supplemental analysis was conducted to determine if an additional control variable could account for this result. A baseline measure of children's teacher-reported externalizing problems was included in the model assessing the interaction between children's initial levels of internalizing problems and year 1 teacher-child conflict. Teacher-rated externalizing problems was chosen as a supplementary control because of its tendency to be moderately and positively correlated with children's experiences of internalizing problems. A baseline measure of children's externalizing was also deemed adequate as a control because externalizing tends to be highly stable across time ($r_s = .59 - .92, p < .05$ across the 6 waves in the current study). The findings for teacher conflict were consistent across the models that did and did not control for externalizing problems.

CHAPTER IV

Discussion

Using methodologically advanced analytical techniques, the current study assessed change in victimization and internalizing problems over an accelerated 6-year period from early to middle childhood. Extending previous research on the associations between these constructs, the current study also tested four alternative models of associations between children's experiences of peer victimization and internalizing problems (covariation, peer victimization-driven, internalizing problems-driven, and transactional) and examined how specific individual (i.e., gender) and interpersonal (i.e., teacher-child relationship quality) characteristics predicted children's peer victimization and internalizing problems. The internalizing problems-driven model characterized the direction of associations between children's peer victimization and internalizing problems best. Conflict in the teacher-child relationship also interacted with children's early internalizing problems to predict change in their peer victimization experiences. Overall, these findings indicate that children's early experiences with sadness and anxiety may be what determines the degree to which children may be victimized by peers as they get older. The following discussion addresses these findings, study limitations, and future directions for research on children's peer victimization and internalizing problems.

Peer Victimization and Internalizing Problems: Patterns of Change

On average, kindergarten children experienced low to moderate amounts of peer victimization and internalizing problems. Coinciding with previous findings in early and middle childhood, as children matured they experienced declines in their peer victimization and internalizing problems (Rudolph et al., 2011; Sterba et al., 2007). However, this study found that

while change in children's peer victimization was best represented by linear decreases, change in children's internalizing problems was best represented by linear decreases that tended to slow down over time.

As children progress through elementary school they may experience fewer acts of aggression from their peers because children come to learn more socially acceptable ways to interact with their peers that do not involve inflicting harm on one another (Monks et al., 2005). As children get older, schools may also be less tolerant of acts of aggression. Children learn that to avoid problems with teachers or school personnel they must adhere to school rules for social conduct. Children may also experience fewer internalizing problems after their transition into elementary school because they have adjusted to the new school setting and are no longer sad and anxious about being away from home and interacting with a new peer group. As children progress through elementary school, they likely start to develop relationships with peers and teachers which may also lessen any feeling of sadness and anxiety (Baker, 2006). Decreases in internalizing may slow down over time though because the school environment now places new demands and expectations on children (e.g., achieving academic excellence, maintaining peer friendships) that may contribute to their feelings of sadness and anxiety throughout elementary school (Sterba et al., 2007). Significant variability around these rates of change in victimization and internalizing indicated that some children still experienced stable or increasing amounts of peer victimization and internalizing problems as they got older. Thus, future studies may consider investigating whether there may be sub-groups of children who differ in their patterns of change for victimization and internalizing from early to middle childhood.

Directionality in Associations between Peer Victimization and Internalizing Problems

The primary focus of the current study was to examine directionality in associations between peer victimization and internalizing problems from early to middle childhood. After testing four alternative models, the internalizing problems-driven model best described the direction of associations between peer victimization and internalizing problems (Vaillancourt et al., 2011). Contrary to expectations, when the average kindergarten child experienced higher levels of internalizing problems this predicted fewer increases in peer victimization through middle childhood. This finding is counterintuitive because previous studies that support internalizing problems-driven models found that when children had higher levels of internalizing problems, this contributed to more experiences of peer victimization over time (Vaillancourt et al., 2011). However, previous research has typically focused on children in middle to late childhood and used cross-lagged path models to assess these associations, which examine the rank order stability of constructs and do not examine patterns of change.

Children are thought to be less preferable playmates when they are more sad and anxious, less willing to interact with their peers, and are not as fun to play with (Rubin et al., 2009). More sad and anxious children may also be specifically targeted for acts of aggression because they are less able to defend themselves and seen as easier targets (Leadbeater & Hoglund, 2009; Rubin et al., 2009). While theory and previous research argue that internalizing problems are a risk factor for subsequent peer victimization, there are some potential explanations for why the current findings do not reflect this.

It could be that there are other correlates of peer victimization and internalizing problems (e.g., social withdrawal, friendship quality) that act as mediators or moderators in associations between peer victimization and internalizing problems. Children's social withdrawal tends to

coincide with more feelings of sadness and anxiety, as children may choose to withdraw from peers when they feel insecure and unhappy in school (Mills & Rubin, 1993). Social withdrawal may also contribute to more experiences of peer victimization because it leaves children more susceptible to acts of aggression (Rubin, Steward, & Coplan, 1995). Children who are more sad and anxious in school and among peers may withdraw from peer interactions and this is hypothesized to leave them more vulnerable to more experiences of peer victimization (Kingery, Erdley, Marshall, Whitaker, & Reuter, 2010). Children may choose to withdraw because this makes them feel safer among their peers. However, by withdrawing in early childhood, children may miss out on opportunities to become an accepted member of the peer group (Rubin, Hymel, & Mills, 1989). Thus, social withdrawal is generally seen as a disadvantage since it can prevent children from reaping the benefits of peer interaction (e.g., developing social skills; Kingery et al., 2010; Rubin, et al., 1995).

However, drawing on the present findings, it could be that when children with internalizing problems withdraw from their peers early on they end up being victimized less because they are ignored by all peers and flying under the radar. For example, average kindergarten children in our sample with more internalizing problems may experience fewer instances of victimization because they chose to withdraw from peers and this behavior was not yet considered atypical to their peers. Younger, Gentile, and Burgess (1993) found that when children were younger than 10-years-old they did not see social withdrawal as a maladjusted behavior and did not dislike withdrawn peers more than non-withdrawn peers. It was only as children got older that they began to perceive withdrawn behavior negatively. As the current study assessed associations between peer victimization and internalizing problems in a sample of 4.5- to 10.5-year-old children and it could be that these children were still ambivalent to more

internalizing, withdrawn behavior in their peers. Thus, these children were not more susceptible to peer victimization. Perhaps, if these children were followed through to the end of late childhood, associations between children's early internalizing problems and change in peer victimization would be in the expected direction after including children's social withdrawal as a possible mediator of this association.

Friendship quality may also affect associations between children's internalizing problems and peer victimization. High quality friendships, seen as protective, may end up giving children with higher levels of internalizing more support in school and also provide them with peers who will defend and protect them from acts of aggression (Malcolm, Jensen-Campbell, Rex-Lear, & Waldrip, 2006; Schmidt & Bagwell, 2007). Children with high quality friendships can end up feeling more secure in school because they know their friends will help in times of conflict (Schmidt & Bagwell., 2007). This type of peer support is extremely valuable and it likely affects how much peer victimization children experience over time. Research has found that children who form good quality friendships are less likely to be victimized over time, above and beyond the sheer number of friends children have and whether they are accepted by the peer group (Malcolm et al., 2006). Whether children who experience more sadness and anxiety are able to form high quality friendships may also affect these children's experiences of peer victimization.

Emotional problems (e.g., internalizing problems) tend to be strong predictors of victimization and children who have low-quality friendships may be at greater risk for victimization, compared to children with emotional problems who have friends who will protect them and help them during acts of aggression (Crawford & Manassis, 2011). Thus, friendship quality may moderate associations between peer victimization and internalizing problems. In this study, average kindergarten children with higher levels of internalizing may experience fewer

increases in peer victimization through middle childhood because these children were still able to form high quality friendships with some of their peers. More sad and anxious children may have difficulty defending themselves and they need friends to come to their aid to prevent acts of victimization from continuing as they get older (Malcolm et al., 2006; Perren & Alsaker, 2006).

Gender Differences

The current study also examined gender differences in growth parameters and in the associations between children's peer victimization and internalizing problems. In this sample and in line with past research, there were significant gender differences in children's reports of internalizing problems (Sterba et al., 2007; Zahn-Waxler et al., 2000). The average kindergarten girl experienced higher levels of internalizing problems compared to the average kindergarten boy. When children transition into elementary school, girls may find this experience more distressing than boys because of how girls are socialized. Before entering a formal school setting, girls may have been socialized to be more dependent on their caregivers in the home environment (Zahn-Waxler et al., 2000). Parents may also encourage boys to explore new physical environments more than girls (Zahn-Waxler et al., 2000). This could leave girls feeling more wary when they enter school and they may be more distressed at being separated from parents. There were no gender differences children's peer victimization growth factors, which is also in line with past research (Bonnet et al., 2011; Rudolph et al., 2011). Studies that found gender differences in children's mean levels of peer victimization tend to find differences in subtypes of victimization (e.g., physical, relational) as opposed to children's overall experiences of peer victimization. Since this study used a composite score of peer victimization, this may be one reason why no gender differences were found.

Gender was also tested as a moderator of associations between peer victimization and internalizing problems in the internalizing problems-driven model. The only association that significantly varied by gender was the covariance between peer victimization and internalizing problem intercept factors. For the average kindergarten girl, reports of peer victimization and internalizing problems co-varied more strongly, compared to boys. However, the significant positive covariation between peer victimization and internalizing problems intercepts for boys and girls, while significant, was minimal. Thus, the average kindergarten child who experienced more peer victimization was also more likely to experience higher levels of internalizing problems and this positive covariation was slightly stronger for girls, relative to boys. Perhaps this association was stronger for girls because they were more likely to also experience more internalizing problems than boys and this resulted in slightly more initial experiences of peer victimization after entry into school.

The Significance of Teacher-Child Relationship Quality

Research has found that children who experience more peer victimization tend to have interpersonal relationships that are not as supportive and close, compared to children who experience fewer instances of peer victimization over time (Hanish et al., 2004). In this study, it was only conflicted teacher-child relations that predicted the average kindergarten child's experiences of victimization and internalizing. The average kindergarten child experienced more peer victimization and internalizing problems when teachers reported more conflictual relationships with these children. This is not surprising given previous findings that show children who have more conflicted relationships with teachers also experience higher levels of internalizing problems (Murray & Murray, 2004) and more conflict in these relationships is also related to children experiencing more victimization (Troop-Gordon & Kuntz, 2013).

Teacher-child conflict, unlike closeness and dependency, may be a more salient predictor of children's early peer victimization and internalizing problems because this type of relationship may directly affect children's feelings of sadness, anxiety, and their peer interactions the most. Close and dependent relationships may still allow children to be supported by their teacher and it is other aspects of the school setting that affect how much peer victimization and internalizing problems children experience. For children with close relationships, they may end up interacting with their peers more and it is the quality of these peer relationships that may predict whether children experience more victimization or internalizing (Crawford et al., 2011; Serdiouk, Rodkin, Madill, Logis, & Gest, 2015). For children with dependent relationships, they may experience more sadness and anxiety because they are more insecure and afraid to interact with their peers (Sroufe, Fox, & Pancake, 1983). As a result, they may cling to their teacher and experience more sadness because they are not able to connect with their peers and form mutual friendships, which may make them easier targets for acts of peer aggression (Hodges & Perry, 1999; Troop-Gordon & Kopp, 2011). Meanwhile, children with conflictual teacher-child relationships visibly clash with their teachers. As a result, children may experience more peer victimization early on because other children see that this child lacks the teacher's support and teachers may be less likely to intervene to stop acts of aggression against this child (Davis & Lease, 2007; Farmer et al., 2011; White & Jones, 2000).

Not having a close and comforting relationship with teachers may be especially significant for younger children's internalizing problems because they are also relying on their teachers to not only teach them, but to nurture them as well (Sroufe, Fox, & Pancake, 1983). For younger children, teachers usually provide comfort to children that their parent may have given to them had they been present. Being in conflict with teachers, children may feel more sad and

anxious after the transition to elementary school because they do not have a supportive adult in the school environment to turn to for comfort and help when they have negative experiences, like peer victimization (Lucas-Molina, Williamson, Pulido, & Perez-Albeniz, 2015; Troop-Gordon, 2015).

Dimensions of teacher-child relationship quality were also assessed as moderators of the associations between peer victimization and internalizing problems. Only teacher-child conflict significantly interacted with children's initial levels of internalizing to predict change in peer victimization experiences. When children had more conflicted teacher-child relations, higher initial levels of internalizing problems contributed to fewer increases in peer victimization across 2 school years, relative to children with less conflictual relationships. This finding is contradictory because previous research has found more conflictual, less supportive relationships are associated with children having more adjustment problems and more experiences of peer victimization (Averdijk et al., 2014; Davidson et al., 2007; Reavis et al., 2010; Troop-Gordon & Kuntz, 2013).

This unexpected result may be a function of omitted variable bias, such as children's externalizing problems. These behaviors are consistently associated with children's internalizing problems (Gilliom & Shaw, 2004; Oland & Shaw, 2005). To explain this counterintuitive finding, a post-hoc analysis examined whether children's externalizing problems explained the moderating effects of teacher-child conflict on the association between internalizing problems and peer victimization. Even after controlling for children's externalizing problems, the result for the teacher-child conflict and internalizing problems interaction was the same.

Perhaps children with higher levels of initial internalizing problems, while in more conflictual relationships, do not exhibit the same conflictual behavior patterns as children with

other adjustment problems (e.g., externalizing problems). Generally, children with more internalizing problems are not seen as disruptive, but teachers may report more conflict with these children because they are less willing to participate in classroom activities and choose to withdraw more from their peers (Rubin & Mills, 1991). This could create a more tense relationship between teacher and child as the teacher may have to expend more energy trying to coax these children to participate and be engaged in activities with peers. This may frustrate teachers and children are then perceived as more difficult. Subsequently, children who are more sad and anxious and who are experiencing more conflict with their teacher may end up withdrawing from their peers and teachers due to feelings of insecurity in the classroom and due to a lack of adult comfort and support. Children with more internalizing problems can also be overlooked more because they are not as disruptive and do not tend to draw attention to themselves (Rubin & Mills, 1991). Over time, this behavior may make children go unnoticed by peers and children end up experiencing less victimization than their better adjusted peers because they are ignored more than targeted.

These results may also be specific the developmental period examined here and therefore may not generalize to older children. Children in early to middle childhood may still be ambivalent to the behaviors exhibited by children with higher levels of internalizing problems (e.g., bouts of crying, social withdrawal; Ladd & Burgess, 1999). However, as children get older, they may come to view this type of behavior more negatively and this is when children with higher levels of internalizing problems may be at risk of experiencing more peer victimization over time (Younger et al., 1993). Based on past research, the majority of children in our sample are still at the age where the behaviors of children with internalizing problems may not be perceived negatively (Ladd & Burgess, 1999; Younger et al., 1993). If children in this sample

had been older, in middle to late childhood, not only could children with more internalizing problems have been at risk of experiencing more peer victimization, but more conflicted teacher-child relationships may have exacerbated this risk.

Limitations and Future Research

This study addresses a significant gap in the literature on directionality in associations between children's peer victimization and internalizing problems in early to middle childhood. That being said, there are also some limitations to address. An accelerated longitudinal design has notable advantages (e.g., saving time, lessening participant burden). However, this design assumes that all the cohorts can inform a single growth trajectory (Collins et al., 2010). It could be that some cohorts have different experiences than other cohorts which can bias the estimation of a single growth trajectory. Comparisons between multiple cohort trajectories and single cohort trajectories show that a single trajectory based on multiple cohorts can represent the data as accurately as a single cohort trajectory (Duncan, Duncan, & Strycker, 2006). Therefore, the study's design may have still allowed the adequate representation of change in levels of children's peer victimization and internalizing problems from early to middle childhood (see Figure 2 & 4).

Another limit is that only children reported on their experiences of peer victimization and internalizing problems. There may have been differences in the initial levels and rates of change of peer victimization and internalizing problems if parents or teachers also reported on children's victimization (Demaray, Malecki, Secord, & Lyell, 2013). Also, by only using children's accounts of their experiences there is no way to determine whether reported experiences actually occurred or whether children's perceptions of their peer victimization and internalizing problems differ. Future studies might include more objective measures of peer victimization (e.g.,

observations) along with information from multiple reporters (e.g., children , parents, teachers) which may yield more accurate measures of children's early peer victimization and internalizing problems.

Finally, measures used to assess children's peer victimization and internalizing problems only achieved partial scalar invariance across cohorts (i.e., grade) and across time. This level of invariance is still acceptable in order to examine mean differences and change over time (Little et al., 2007), however, caution should be placed on the generalizability of these findings. It is ideal to have full scalar invariance in order to interpret differences in mean levels of criterion constructs and whether patterns of change are accurately represented and not an artifact of the measures used. Thus, next steps will be to replicate these findings and find alternate measures of peer victimization and internalizing problems that are more invariant across time in order to confidently generalize how children's experiences of peer victimization and internalizing problems change from early to middle childhood and how change in these constructs co-occurs. It could also be that as children continue to develop cognitively and emotionally, they interpret peer behaviors and manage their own emotions differently. Efforts to investigate how children's perceptions of adverse peer behaviors and the way they manage feelings of sadness and anxiety changes from early to middle childhood could further inform the measurement of victimization and internalizing.

Another important next step will be to examine how children's peer victimization co-occur and relate to one another across early to late childhood and even into adolescence. It could be that for older children (e.g., transitioning from late childhood into preadolescence) the direction of associations between victimization and internalizing problems will differ. Unlike this study's findings, when children are older and have higher levels of internalizing problems, this

may contribute to more experiences of peer victimization. When older, the behavior of children with more internalizing problems may leave children vulnerable for acts of aggression (Leadbeater & Hoglund, 2009). It will likely be more informative to assess these constructs across childhood and adolescence, as opposed to shorter segments of development, to better understand change in children's peer victimization and internalizing problems and associations between victimization and internalizing. Accelerated designs can make this more feasible and less time-intensive for participants and researchers.

Every child who attends school has the right to feel safe and not worry when they will be aggressed upon next (Olweus, 1995). By studying child and school characteristics that are related to children's experiences of peer victimization, this study adds to the peer victimization literature and demonstrates how children's emotional problems are tied to their experiences of peer victimization in early to middle childhood. In order to continue exploring strategies to prevent peer victimization, studying what constructs are linked to children's experiences of peer victimization is vital. Without this knowledge, preventative strategies and interventions may miss child or school characteristics that can be targeted to reduce peer victimization. Efforts to further investigate additional correlates that can explain why children's internalizing problems may reduce children's experiences of peer victimization is also needed. Peer victimization and internalizing problems are undoubtedly linked, but we now need to understand what mechanisms are helping to create this link and what other individual and contextual factors may explain how victimization and internalizing problems are associated.

Table 1

Range of Ages Represented in the Accelerated Design and Amount of Overlap for Each Cohort

	4.25; 6.42	4.42; 6.67	4.58; 6.83	4.92; 7.58	5.25; 7.83	5.50; 8.00	6.67; 8.83	6.92; 9.00	7.17; 9.17	6.83; 9.58	7.17; 9.92	7.42; 10.17	8.85; 10.08	9.82; 10.42	9.08; 10.58
Cohorts															
Kindergarten	W1 (5.49)	W2 (5.69)	W3 (5.84)	W4 (6.25)	W5 (6.53)	W6 (6.78)									
Grade 1				W1 (6.48)	W2 (6.69)	W3 (6.83)	W4 (7.24)	W5 (7.53)	W6 (7.78)						
Grade 2							W1 (7.55)	W2 (7.76)	W3 (7.90)	W4 (8.31)	W5 (8.60)	W6 (8.85)			
Grade 3										W1 (8.56)	W2 (8.74)	W3 (8.90)	W4 (9.30)	W5 (9.58)	W6 (9.82)

Note. Table structure based on a table presented in Little (2013). Numbers in brackets represent the mean age of a cohort at each wave.

Top row of the table represents the range of ages for each cohort at each wave. Baseline data (W1) were collected for all children in January 2010. W_n = Wave.

Table 2

Measurement Invariance by Gender at Wave 1

Models	χ^2 (df)	CFI	RMSEA (90% CI)	SRMR	BIC	Factor Loadings	Model Comparisons: $\Delta\chi^2$ (Δdf)
<i>Peer Victimization</i>							
Configural Invariance	127.71(2), $p < .01$	0.68	.561 (.48-.65)	.56	1955.77	0.85 - 0.91	
Metric Invariance	129.03(4), $p < .01$	0.68	.395 (.34-.46)	.56	1945.11	0.85 - 0.89	vs. Configural: $\Delta\chi^2$ (2) = 1.32, <i>ns</i>
Scalar Invariance	132.33(7), $p < .01$	0.68	.299 (.26-.35)	.57	1930.45	0.85 - 0.89	vs. Metric: $\Delta\chi^2$ (3) = 3.30, <i>ns</i>
<i>Internalizing Problems</i>							
Configural Invariance	-	-	-	-	673.03	0.72 - 1.00	
Metric Invariance	0.02 (1), <i>ns</i>	1.00	.000 (.00-.00)	.00	667.10	0.72 - 1.00	
Scalar Invariance	3.96 (3), <i>ns</i>	0.99	.041 (.00-.14)	.05	659.20	0.72 - 1.00	vs. Metric: $\Delta\chi^2$ (2) = 3.94, <i>ns</i>

Note. N: Boys = 192-199; Girls = 185-201. Best fitting model in boldface. Configural model for peer internalizing problems was just identified and no fit indices can be estimated, except for the BIC. Standardized factor loadings reported.

Table 3

Measurement Invariance by Grade at Wave 1

Models	χ^2 (<i>df</i>)	CFI	RMSEA (90% CI)	SRMR	BIC	Factor Loadings	Model Comparisons: $\Delta\chi^2$ (Δdf)
<i>Peer Victimization</i>							
Configural Invariance	124.88 (4), $p < .01$	.697	.550 (.47-.64)	.55	2016.81	0.78 - 0.93	
Metric Invariance	135.43 (10), $p < .01$	.685	.354 (.30-.41)	.58	1991.41	0.83 - 0.92	vs. Configural: $\Delta\chi^2$ (6) = 10.55, <i>ns</i>
Scalar Invariance	158.69 (19), $p < .01$	.650	.271 (.23-.31)	.59	1960.75	0.83 - 0.91	vs. Metric: $\Delta\chi^2$ (9) = 23.26, $p < .01$
Partial Scalar Invariance	146.40 (16), $p < .01$	.673	.385 (.24-.33)	.58	1966.44	0.83 - 0.92	vs. Metric: $\Delta\chi^2$ (6) = 10.97, <i>ns</i>
<i>Internalizing Problems</i>							
Configural Invariance	-	-	-	-	627.25	0.62- 1.00	
Metric Invariance	10.21 (3), $p < .05$	.976	.160 (.06-.27)	.09	698.30	0.70 – 1.00	
Scalar Invariance	28.83 (9), $p < .01$	.934	.153 (.09-.22)	.09	681.34	0.69 – 1.00	vs. Metric: $\Delta\chi^2$ (6) = 18.62, $p < .01$
Partial Scalar Invariance	17.78 (8), $p < .05$	.967	.114 (.04-.19)	.10	676.21	0.71 – 1.00	vs. Metric: $\Delta\chi^2$ (5) = 7.57, <i>ns</i>

Note. *N*: Peer Victimization = 400; Internalizing Problems = 377. Best fitting model in boldface. Partial scalar model for peer victimization allows the verbal victimization intercept to be unconstrained across grades. Partial scalar model for internalizing problems allows the anxiety intercept to be unconstrained for kindergarten children only. Configural model for peer internalizing problems was just identified and no fit indices can be estimated, except for the BIC. Standardized factor loadings reported.

Table 4

Measurement Invariance across Waves

Models	χ^2 (<i>df</i>)	CFI	RMSEA (90% CI)	SRMR	BIC	Factor Loadings	Model Comparisons: $\Delta\chi^2$ (Δdf)
<i>Peer Victimization</i>							
Configural Invariance	209.27(105), $p < .01$	.968	.044 (.04-.05)	.04	8164.15	0.64 - 0.90	
Metric Invariance	222.48(115), $p < .01$	.967	.043 (.04-.05)	.04	8115.15	0.65 - 0.89	vs. Configural: $\Delta\chi^2$ (10) = 13.21, <i>ns</i>
Scalar Invariance	298.05(130), $p < .01$	.948	.051 (.04-.06)	.06	8097.42	0.64 - 0.89	vs. Metric: $\Delta\chi^2$ (15) = 75.57, $p < .01$
Partial Scalar Invariance	236.45(124), $p < .01$	.965	.043 (.03-.05)	.04	8073.54	0.63 - 0.89	vs. Metric: $\Delta\chi^2$ (9) = 13.97, <i>ns</i>
<i>Internalizing Problems</i>							
Configural Invariance	126.11 (35), $p < .01$	.973	.072 (.06-.09)	.03	2618.90	0.72 - 1.00	
Metric Invariance	127.42 (40), $p < .01$	.974	.066 (.05-.08)	.03	2589.12	0.73 - 1.00	vs. Configural: $\Delta\chi^2$ (5) = 1.31, <i>ns</i>
Scalar Invariance	238.97 (50), $p < .01$	.943	.087 (.08-.10)	.09	2638.49	0.75 - 1.00	vs. Metric: $\Delta\chi^2$ (10) = 111.55, $p < .01$
Partial Scalar Invariance	142.67 (48), $p < .01$	.972	.063 (.05-.08)	.04	2554.62	0.73 - 1.00	vs. Metric: $\Delta\chi^2$ (8) = 15.24, <i>ns</i>

Note. *N*: Peer Victimization = 503; Internalizing Problems = 502. Partial scalar model for peer victimization has all wave 1 intercepts free to vary, wave 2-4 intercepts are constrained to be equal, and wave 5 and 6 intercepts are constrained to be equal. Partial scalar model for internalizing problems has wave 1 anxiety and depression intercepts free to vary. Standardized factor loadings reported.

Table 5

Descriptive Statistics of Peer Victimization, Internalizing Problems and Year 1 Dimensions of Teacher-Child Relationship Quality (Overall and by Gender)

Variables	Overall					Girls			Boys			F
	N (% Missing)	Mean	SD	Range	α	n	Mean	SD	n	Mean	SD	
Peer Victimization (CR)												
Wave 1	400 (21%)	0.54	.48	0.00 - 2.00	.69 - .74	201	0.58	.49	199	0.50	.46	2.82
Wave 2	428 (15%)	0.42	.43	0.00 - 2.00	.69 - .74	215	0.46	.45	213	0.38	.40	3.89*
Wave 3	436 (14%)	0.39	.44	0.00 - 2.00	.75 - .80	220	0.44	.47	216	0.35	.40	4.73*
Wave 4	376 (26%)	0.39	.42	0.00 - 2.00	.73 - .74	192	0.40	.43	184	0.38	.41	0.21
Wave 5	370 (27%)	0.36	.42	0.00 - 2.00	.75 - .81	188	0.39	.43	182	0.32	.30	3.22
Wave 6	374 (26%)	0.33	.41	0.00 - 2.00	.66 - .76	190	0.35	.38	184	0.32	.33	1.06
Internalizing Problems (CR)												
Wave 1	377 (25%)	0.70	.41	0.00 - 2.00	.82 - .83	185	0.74	.42	192	0.67	.41	2.52
Wave 2	403 (20%)	0.52	.42	0.00 - 2.00	.85 - .88	198	0.56	.43	205	0.49	.42	2.48
Wave 3	427 (16%)	0.49	.42	0.00 - 2.00	.86 - .89	216	0.53	.43	211	0.45	.40	4.68*
Wave 4	364 (28%)	0.50	.43	0.00 - 2.00	.88 - .90	184	0.52	.44	180	0.47	.47	1.45
Wave 5	348 (31%)	0.47	.43	0.00-1.88	.88 - .91	176	0.51	.45	172	0.43	.43	3.00
Wave 6	360 (29%)	0.49	.43	0.00-1.83	.88 - .92	183	0.51	.45	177	0.46	.46	1.33
Relationship Quality (TR)												
Y1 Closeness	348 (31%)	3.22	.60	1.33 - 4.00	.79 - .82	173	3.26	.63	175	3.18	.57	1.38
Y1 Conflict	348 (31%)	0.62	.86	0.00 - 3.86	.85 - .91	173	0.58	.83	175	0.65	.88	0.59
Y1 Dependency	348 (31%)	0.75	.75	0.00 - 3.20	.68 - .73	173	0.79	.66	175	0.70	.72	1.52

Table 5 continued.

Note. % Missing reflects the amount of missing data at each wave for each construct out of the total sample size ($N = 504$). Significant F -test indicate means differ significantly between girls and boys. Reliabilities across subscales reported for peer victimization and internalizing problems. Scale reliability across wave 1 to 3 reported for teacher-child relationship quality dimensions. CR = Child reported. TR = Teacher reported. Boys were coded as '0' and girls were coded as '1'. Y1 = Year 1. * $p < .05$. ** $p < .001$.

Table 6

Grade Differences in Mean Levels of Children's Peer Victimization, Internalizing Problems and Relationship Quality

Variables	Kindergarten			Grade1			Grade 2			Grade 3			F
	n	Mean	SD	n	Mean	SD	n	Mean	SD	n	Mean	SD	
Peer Victimization (CR)													
Wave 1	107	0.59	0.52	120	0.56	0.49	88	0.47	0.42	85	0.52	0.48	1.02
Wave 2	112	0.45	0.47	127	0.40	0.39	96	0.41	0.44	93	0.43	0.41	0.35
Wave 3	116	0.45	0.52	128	0.33	0.37	96	0.42	0.44	96	0.39	0.44	1.63
Wave 4	96	0.45	0.52	112	0.38	0.41	82	0.34	0.36	86	0.39	0.42	1.07
Wave 5	93	0.34	0.47	108	0.37	0.42	84	0.31	0.32	85	0.41	0.43	0.90
Wave 6	95	0.32	0.39	110	0.38	0.34	84	0.28	0.33	85	0.36	0.36	1.47
Internalizing Problems (CR)													
Wave 1	100	0.74	0.47	113	0.73	0.41	84	0.66	0.36	80	0.67	0.39	0.93
Wave 2	102	0.53	0.42	117	0.53	0.43	94	0.48	0.37	90	0.56	0.47	0.52
Wave 3	114	0.53	0.50	121	0.49	0.36	96	0.47	0.39	96	0.48	0.41	0.40
Wave 4	93	0.42	0.43	109	0.55	0.47	79	0.47	0.37	83	0.54	0.42	2.16
Wave 5	88	0.42	0.39	102	0.50	0.44	77	0.43	0.39	81	0.54	0.47	1.37
Wave 6	92	0.46	0.42	104	0.49	0.45	80	0.43	0.39	84	0.57	0.47	1.48
Relationship Quality (TR)													
Closenesss	109	3.34 ^a	0.64	101	3.31 ^a	0.47	71	3.19 ^a	0.65	67	2.92 ^b	0.58	8.12**
Conflict	109	0.73	0.99	101	0.61	0.87	71	0.53	0.74	67	0.53	0.70	1.11
Dependency	109	0.79	0.79	101	0.77	0.65	71	0.67	0.65	67	0.72	0.64	0.52

Note. Significant *F*-test indicate means differ significantly between grades. CR = Child Report. TR = Teacher Report. Y1 = Year 1. **p*

< .05. ***p* < .001

Table 7

Bivariate Correlations among Peer Victimization, Internalizing Problems, and Teacher-Child Relationship Quality

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Peer Victimization (CR)														
1. Wave 1														
2. Wave 2	.46**													
3. Wave 3	.29**	.52**												
4. Wave 4	.31**	.37**	.47**											
5. Wave 5	.28**	.42**	.45**	.54**										
6. Wave 6	.22**	.29**	.32**	.44**	.48**									
Internalizing Problems (CR)														
7. Wave 1	.46**	.37**	.35**	.25**	.28**	.16**								
8. Wave 2	.31**	.45**	.30**	.21**	.19**	.15**	.46**							
9. Wave 3	.25**	.36**	.44**	.24**	.30**	.23**	.44**	.57**						
10. Wave 4	.18**	.15**	.24**	.45**	.32**	.28**	.31**	.38**	.49*					
11. Wave 5	.26**	.29**	.30**	.30**	.43**	.31**	.40**	.39**	.50**	.59**				
12. Wave 6	.16**	.20**	.23**	.28**	.32**	.40**	.34**	.33**	.49**	.57**	.68**			
Relationship Quality (TR)														
13. Y1 Closeness	-.03	-.04	.00	-.12*	.02	-.01	-.05	.00	-.07	-.07	-.08	-.02		
14. Y1 Conflict	.17**	.13*	.18**	.13*	.09	.21**	.13*	.14*	.21**	.09	.11	.07	-.25**	
15. Y1 Dependency	.16**	.07	.11*	.06	.08	.07	.13*	.11	.08	.04	.04	.04	.04	.63**

Note. Stability correlations are bolded. CR = Child reported. TR = Teacher reported. Y1 = Year 1. * $p < .05$, ** $p < .01$.

Table 8

Latent Growth Curve Model Comparisons for Peer Victimization and Internalizing Problems

Models	BIC	Log Likelihood	Deviance Statistic	Model Comparison: ΔD (<i>df</i>)
<i>Peer Victimization</i>				
1. Fixed Intercept	2759.65	-1373.60	2747.20	
2. Random Intercept	2310.88	-1146.11	2292.22	vs. Model 1 ΔD (1) = 454.98, $p < .01$
3. Random Intercept, Fixed Linear Slope	2286.56	-1130.84	2261.68	vs. Model 2 ΔD (1) = 30.54, $p < .01$
4. Random Intercept, Random Linear Slope	2286.60	-1124.64	2249.28	vs. Model 3 ΔD (2) = 12.40, $p < .05$
5. Random Intercept, Random Linear Slope, Fixed Quadratic Slope	2289.36	-1122.91	2245.82	vs. Model 4 ΔD (1) = 3.46, $p < .10$
<i>Internalizing Problems</i>				
1. Fixed Intercept	2638.02	-1312.79	2625.58	
2. Random Intercept	2028.38	-1004.86	2009.72	vs. Model 1 ΔD (1) = 615.86, $p < .01$
3. Random Intercept, Fixed Linear Slope	2005.81	-990.47	1980.94	vs. Model 2 ΔD (1) = 28.78, $p < .01$
4. Random Intercept and Linear Slope	2002.45	-982.58	1965.16	vs. Model 3 ΔD (2) = 15.78, $p < .01$
5. Random Intercept and Linear Slope, Fixed Quadratic Slope	1996.05	-976.26	1952.52	vs. Model 4 ΔD (1) = 12.64, $p < .01$
6. Random Intercept, Linear Slope and Quadratic Slope	1988.96	-963.34	1926.68	vs. Model 5 ΔD (3) = 25.84, $p < .01$
7. Random Intercept, Linear Slope and Quadratic Slope, Fixed Cubic Slope	2055.16	-993.38	1986.76	vs. Model 6 ΔD (1) = -60.08, $p = ns$

Note. *N*: Peer Victimization = 503; Internalizing Problems = 502. Deviance Statistic is calculated using the following formula, Deviance statistic = -2[Log Likelihood]. Best fitting model is shown in boldface.

Table 9

Random Intercept, Random Slope Latent Growth Curve Models for Peer Victimization and Internalizing Problems

Models	Intercept Estimate (SE)	Linear Slope Estimate (SE)	Quadratic Slope Estimate (SE)
<i>Peer Victimization</i>			
Mean	.53**(.01)	-.05**(.01)	-
Variances	.12**(.02)	.01**(.00)	-
<i>Internalizing Problems</i>			
Mean	.69**(.03)	-.13**(.03)	.02**(.01)
Variances	.09**(.02)	.06* (.02)	.00 ^t (.00)

Note. N: Peer Victimization = 503; Internalizing Problems = 502. Unstandardized estimates reported. ^t $p < .10$, * $p < .05$, ** $p < .01$.

Table 10

Parallel Process Latent Growth Curve Model Comparisons

Model	<i>df</i>	BIC	Log Likelihood	Deviance Statistic	Model Comparison: ΔD (Δdf)
1. Baseline	17	4108.79	-1995.30	3990.60	
2. Peer Victimization-Driven	19	4104.10	-1986.74	3973.48	vs. Model 1 ΔD (2) = 17.12, $p < .01$
3. Internalizing Problems-Driven	18	4103.14	-1989.36	3978.72	vs. Model 1 ΔD (1) = 6.08, $p < .01$
4. Transactional	20	4072.34	-1967.75	3935.50	vs. Model 1 ΔD (3) = 55.10, $p < .01$ vs. Model 2 ΔD (1) = 43.22, $p < .01$ vs. Model 3 ΔD (2) = 43.06, $p < .01$

Note. $N = 503$. Best fitting model is shown in boldface. *df* = degrees of freedom (based on the number of parameters the model estimates). D = the Deviance Statistic that is calculated using the following formula, $\Delta D = -2[\text{Log Likelihood}]$.

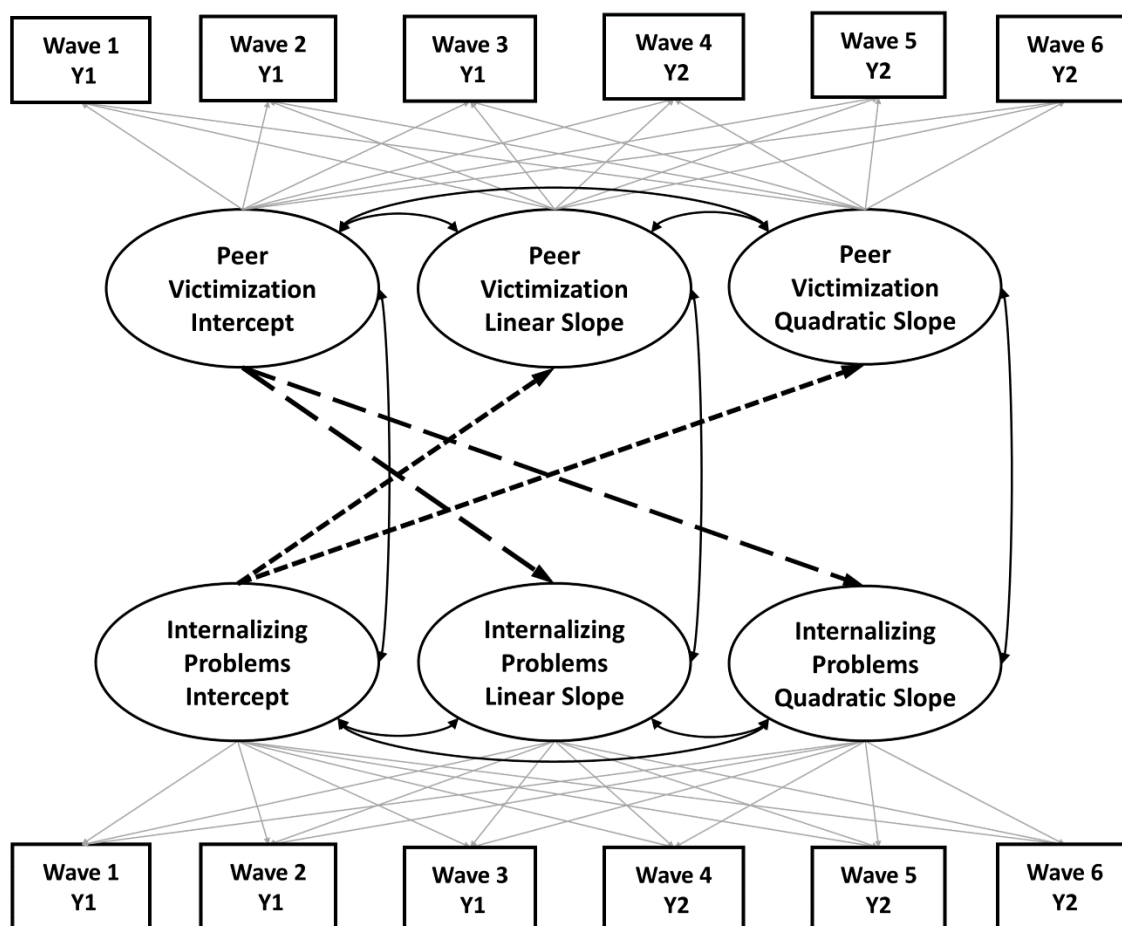


Figure 1. Hypothesized associations between peer victimization and internalizing problems. The solid black lines represent the covariation between peer victimization and internalizing problems latent growth factors. The long-dashed lines represent the directional regression paths added in the peer victimization-driven model. The short-dashed lines represent the directional regression paths added in the internalizing problems-driven model. The transactional model includes all paths shown. Y1 = Year 1 of the study. Y2 = Year 2 of the study.

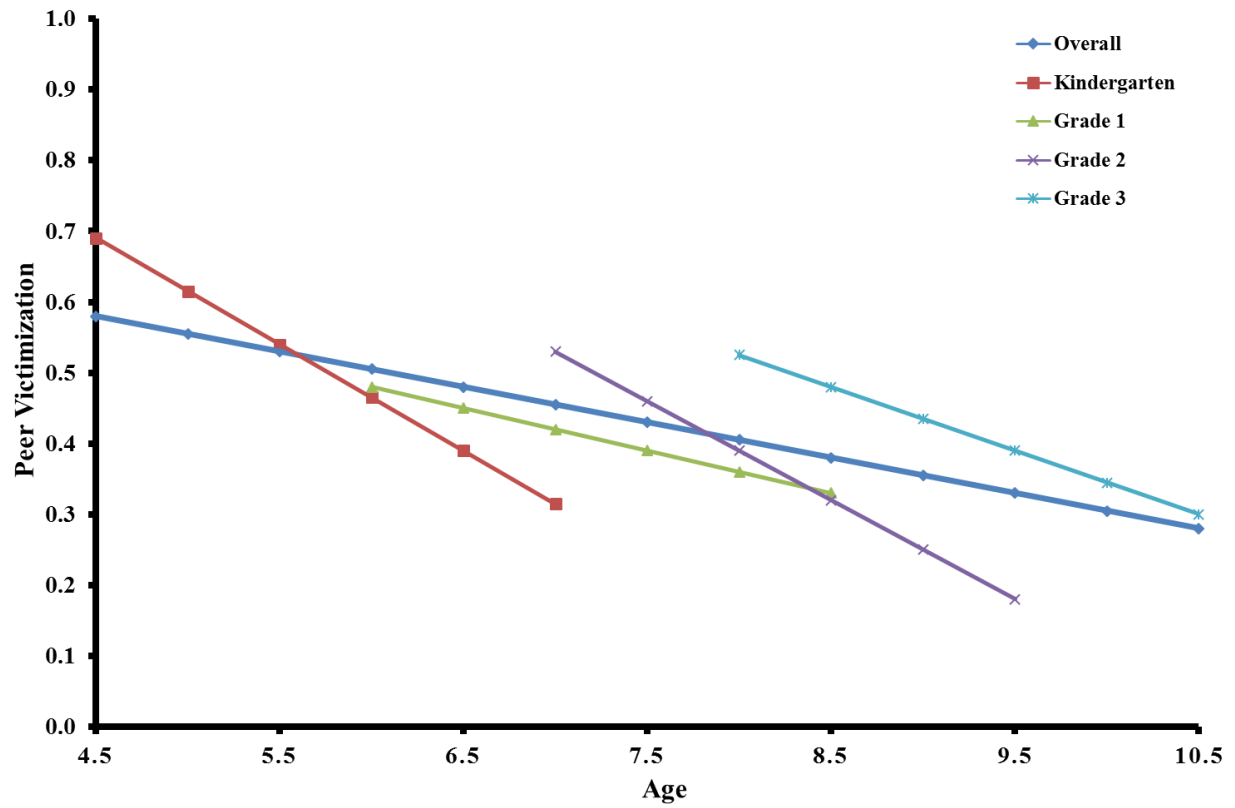


Figure 2. Trajectory (overall and by cohort) of peer victimization from 4.5 to 10.5 years of age.

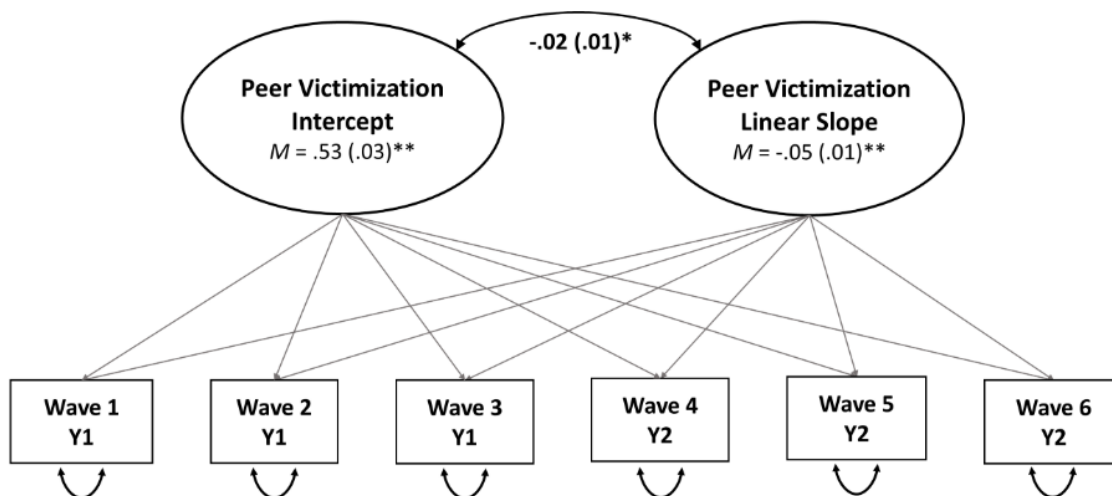


Figure 3. Best fitting model of change for children's peer victimization. $N = 503$.

Unstandardized estimates (and standard errors) reported. Peer victimization variances: Intercept = .12 (.02)**, Linear Slope = .01 (.00)**. Y1 = Year 1 of study. Y2 = Year 2 of study. * $p < .05$, ** $p < .01$.

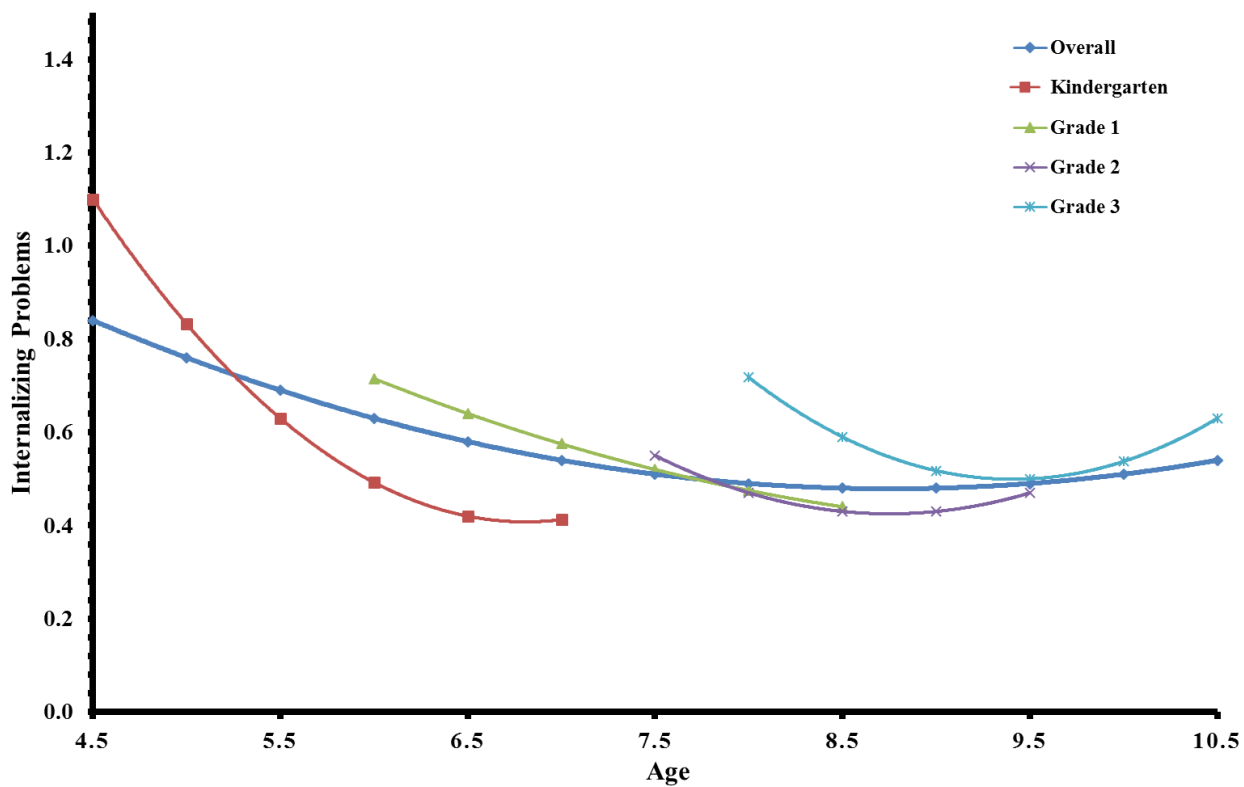


Figure 4. Trajectory (overall and by cohort) of children's internalizing problems from 4.5 to 10.5 years of age.

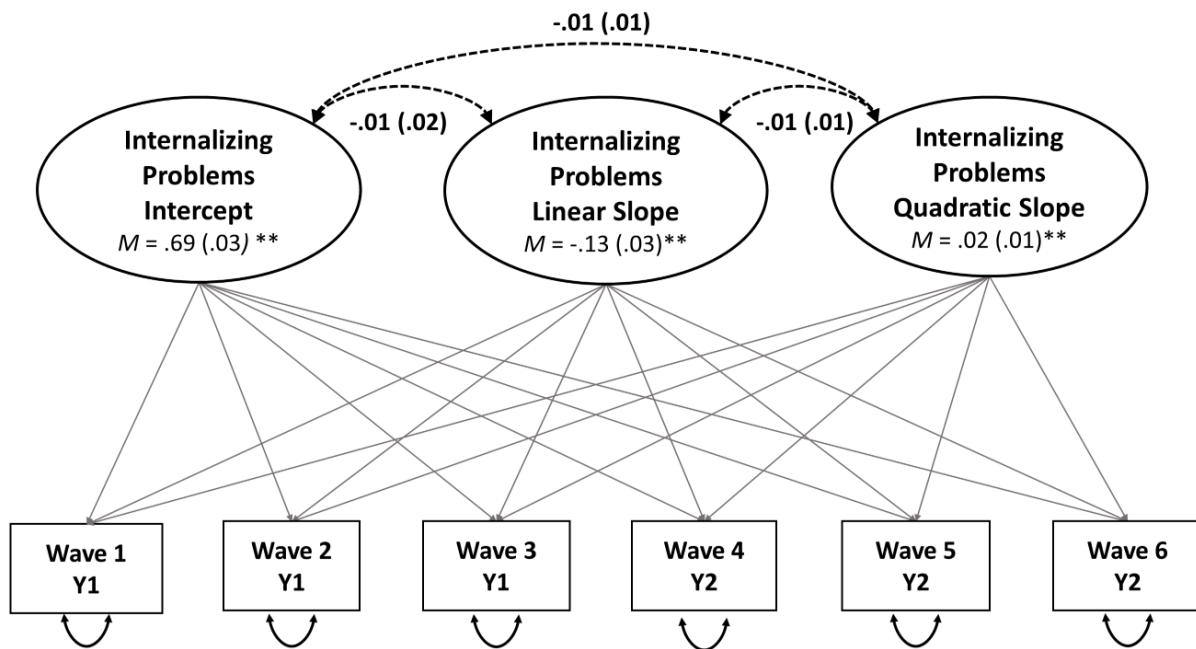


Figure 5. Best fitting model of change for children's internalizing problems. $N = 502$.

Unstandardized estimates (and standard errors) reported. Dashed lines indicate non-significant paths. Internalizing problems variances: Intercept = $.09 (.02)**$, Linear Slope = $.06 (.02)*$, Quadratic Slope = $.00 (.00)$. Y1 = Year 1 of study. Y2 = Year 2 of study. $*p < .05$, $**p < .01$.

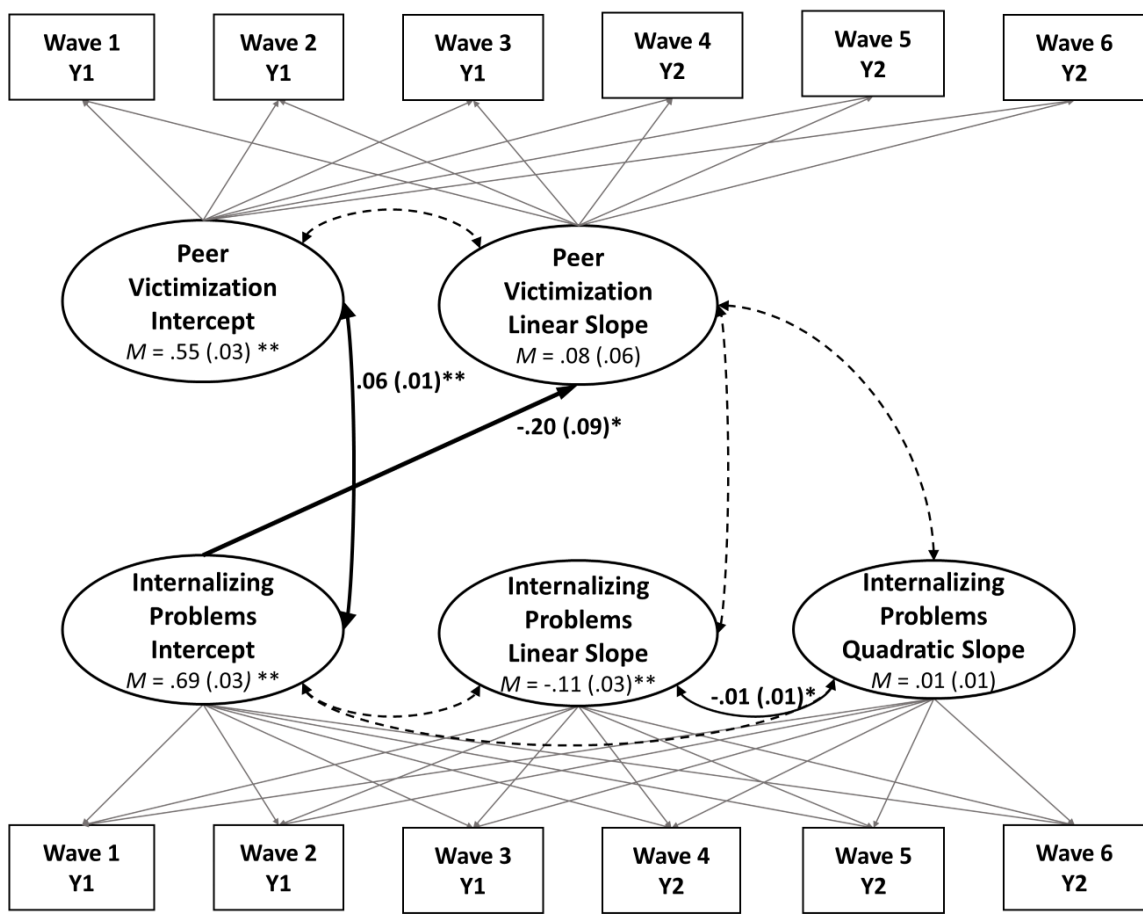


Figure 6. Internalizing problems-driven model for associations between peer victimization and internalizing problems. Unstandardized (standard error) estimates presented. Dashed lines indicate non-significant paths. Peer victimization variances: Intercept = .11 (.02)**, Linear Slope = .00 (.00). Internalizing problems variances: Intercept = .07 (.01)**, Linear Slope = .06 (.02)**, Quadratic Slope = .00 (.00)*. Y1 = Year 1 of study. Y2 = Year 2 of study. * $p < .05$, ** $p < .01$.

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