

UNIVERSITY OF CALIFORNIA

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Longitudinal Relations between Peer Victimization and Youth Depressive Symptoms: Temporal
Directionality and Reciprocal Associations

A dissertation submitted in partial satisfaction of the
requirements for the degree of Doctor of Philosophy

in Education

by

Shilpa Baweja

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ABSTRACT OF THE DISSERTATION

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Professor Sandra Graham, Chair

A three year longitudinal study was conducted to deconstruct the temporal directionality between peer victimization and depressive symptoms in middle school youth. Analyses tested whether peer victimization predicted depressive symptoms; depressive symptoms predicted peer victimization; or the two constructs transacted reciprocally across time. To extend previous research, these relationships were simultaneously tested in one model that used a structural equation framework to specifically delineate the directional relations. The moderating effects of gender and ethnic differences on these relationships were also investigated. The sample was comprised of 2307 ethnically diverse students (54% female) followed from 6th through 8th grade and drawn from 11 middle schools. The ethnic breakdown was 44% Latino, 26% African-American, 10% Asian and 10% White. Students completed self-report surveys at six time points, corresponding to the six semesters constituting 6th through 8th grade. The Children's Depression Inventory – Short Form (CDI-10) was used to assess self-reported depressive

symptoms and the Peer Victimization Scale (PVS) to assess self-reported victimization. The results showed that depressive symptoms were a stronger and more continuous predictor of victimization than was victimization a predictor of depressive symptoms for both genders, all ethnic groups, and across most of middle school. Gender effects indicated that boys reported fewer depressive symptoms than did girls, but the predictive impact of depressive symptoms on victimization was notably higher for boys, even as much as one year later. Ethnic group differences indicated that depressive symptoms consistently predicted changes in victimization throughout most of middle school for African-American and Latino students, but not as consistently for Asian and White students. Analyses further revealed that in girls and Latino students, victimization mediated the association between depressive symptoms from 6th to 7th grade and 7th to 8th grade, revealing a feedback mechanism between the two constructs. The opposing reciprocal association was also found to be true for Latino students. This study clearly elucidates that contrary to ongoing beliefs that victimization leads to mental health issues, depressive symptoms may precede and increase risk for victimization, and, in some groups, may lead to a feedback mechanism. The implications of these findings are that among other efforts to reduce victimization, interventions must be implemented to reduce depressive symptoms in youth that may make them more vulnerable to victimization by others. Recommendations for intervention strategies and future directions for research are discussed.

The dissertation of Shilpa Baweja is approved.

Jaana Juvonen

Connie Kasari

Jeffrey Wood

Sandra Graham, Committee Chair

University of California, Los Angeles

2015

Dedicated To

I dedicate this to my loving Mom, whose personal and professional sacrifices showed me the incredible strength of women and allowed me to discover my own strength to forge through challenging moments and never give up. This is for you, Mom.

TABLE OF CONTENTS

Abstract.....	ii
Committee Approval.....	iv
Dedication.....	v
List of Tables and Figures.....	vii
Acknowledgements.....	ix
Vita	xi
Introduction.....	1
Study.....	12
Method.....	20
Results.....	24
Discussion.....	54
Tables and Figures.....	64
References.....	81

LIST OF TABLES AND FIGURES

Table 1.1: Correlations between Study Variables.....	64
Table 1.2: Means and Standard Deviations for Peer Victimization and Depressive Symptoms by Gender.....	65
Table 1.3: Means and Standard Deviations for Peer Victimization and Depressive Symptoms by Ethnicity.....	66
Table 2.1: Fit Indices Testing Directional Relations between Peer Victimization and Depressive Symptoms.....	69
Table 3.1: Construct Stability of Victimization and Depressive Symptoms by Gender.....	71
Table 3.2: Bi-directional Cross-lag Paths: Depressive Symptoms by Gender.....	72
Table 3.3: Bi-directional Cross-lag Paths: Victimization by Gender.....	73
Table 3.4: Reciprocal Paths: Indirect Effects of Peer Victimization and Depressive Symptoms by Gender.....	74
Table 3.5: Construct Stability of Victimization and Depressive Symptoms by Ethnicity.....	75
Table 3.6: Bi-directional Cross-lag Paths: Depressive Symptoms by Ethnicity.....	76

Table 3.7: Bi-directional Cross-lag Paths: Victimization by Ethnicity.....	77
Table 3.8: Reciprocal Paths: Indirect Effects of Victimization by Ethnicity.....	78
Table 3.9: Reciprocal Paths: Indirect Effects of Depressive Symptoms by Ethnicity....	79
Table 4.1: Table of Attrition by Ethnicity.....	80
Figure 1.1: Mean Total Scores for Depressive Symptoms by Gender and Ethnicity across Middle School.....	67
Figure 1.2: Mean Total Scores for Peer Victimization by Gender and Ethnicity across Middle School.....	68
Figure 2.1: Cross-Lagged Model of the Longitudinal Association between Peer Victimization and Depressive Symptoms.....	70

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VITA

Education

M.S., Social Work, 2001, Columbia University

B.S., Psychology, 1998, University of California, San Diego

Publications

Baweja, S., Santiago, C.D., Vona, P., Pears, G., Langley, A.K., & Kataoka, S. (under review).

Improving implementation of a school-based program for traumatized students:
Identifying factors that promote teacher support and collaboration.

Kataoka, S., Langley, A. K., Wong, M., **Baweja, S.**, & Stein, B. D. (2012). Responding to students with posttraumatic stress disorder in schools. *Child and adolescent psychiatric clinics of North America*, 21(1), 119-133.

McGough, J. J., McCracken, J. T., Loo, S. K., Manganiello, M., Leung, M. C., Tietjens, J. R., Trinh, T., **Baweja, S.**, Suddath, R.S., S. L., Smalley, Hellemann, G., & Sugar, C. A. (2009). A candidate gene analysis of methylphenidate response in attention-deficit/hyperactivity disorder. *Journal of the American Academy of Child & Adolescent Psychiatry*, 48(12), 1155-1164.

Santiago, C. D., Gudiño, O. G., **Baweja, S.**, & Nadeem, E. (2014). Academic achievement among immigrant and US-born Latino adolescents: Associations with cultural, family, and acculturation factors. *Journal of Community Psychology*, 42(6), 735-747.

Santiago, C. D., Pears, G., **Baweja, S.**, Vona, P., Tang, J., & Kataoka, S. H. (2013). Engaging parents in evidence-based treatments in schools: Community perspectives from implementing CBITS. *School Mental Health*, 5(4), 209-220.

Selected Conference Presentations

Baweja, S., Nadeem, E., Santiago, C. D., & Gudiño, O. G. (2013, April). The Impact of Posttraumatic Stress Symptoms on the Academic Functioning of Latino Students: The Moderating Role of Acculturation. Poster presented at the biennial meeting of Society for Research on Child Development, Seattle, WA.

Baweja, S., Pears, G., Santiago, C.D., Vona, P., Tang, J., & Kataoka, S. (2013, April). Engaging parents in evidence-based treatments in schools: Community perspectives from implementing CBITS. Poster presented at the biennial meeting of Society for Research on Child Development, Seattle, WA.

Baweja, S., Nadeem, E., Langley, A. K., & Kataoka, S. (2012, November). Evaluating the training program for a cognitive behavioral intervention for trauma in schools: Trainee attitudes that facilitate uptake, adoption, and implementation of evidence-based practices in schools. Poster presented at the annual meeting of International Society for Traumatic Stress Studies, Los Angeles, CA.

Research Experience

Graduate Student Researcher, UCLA Research Center for Health Services and Society, UCLA Bounce Back Project.

Graduate Research Assistant, UCLA Middle School Diversity Project, UCLA Peer Project.

Overview-Problem Statement:

Awareness of school bullying has grown over the last decade, after a large body of research unequivocally reported that victims of school bullying have significantly worse social-emotional and academic outcomes compared to non-victimized youth (Hawker & Boulton, 2000; Juvonen & Graham, 2014; Nansel et al., 2001). An estimated 10 to 25% of students are victimized or bullied by a peer at school (Card & Hodges, 2007; Stassen Berger, 2006) and approximately 10% face ongoing and severe peer victimization (Nansel et al., 2001). Although peer victimization has been associated with psychosocial problems in many cross-sectional studies, the temporal directionality of this relationship or how these factors transact during a critical developmental period, such as middle school have been unclear in previous research. For example, does the experience of being bullied result in more depressive symptoms, or are depressed youth at risk for subsequent victimization, perhaps because they are perceived as “easy marks”? As school bullying continues to be a significant problem, deconstructing the temporal sequence of depressive symptoms and victimization, gaining a better understanding of the causes and consequences of peer victimization, and identifying how depressive symptoms and victimization transact over time warrants further examination. A better understanding of these factors would help to identify a subgroup of exceptionally vulnerable children who are more susceptible to maladjustment and identify specific risk factors or characteristics that could be targets for intervention. Therefore, the purpose of this dissertation was to address the directional relations between peer victimization and depressive symptoms using prospective data from a large ethnically diverse, school-based sample of adolescents.

Review of the Literature

Defining Victimization:

Peer victimization includes physical, verbal, and psychological abuse that occurs in and around school. The defining characteristics that differentiate peer victimization by school bullying from other types of peer conflict is a power differential between bully and victim and the intention of the bully to cause harm to the victim (Juvonen & Graham, 2014). Peer victimization tends to peak in middle school, as middle school represents a transitional period in development; students are exposed to large numbers of peers as their school structure changes, requiring them to form new peer groups and social hierarchies (Crick, Casas & Ku, 1999). During this process, some students may assert dominance over their peers by bullying in order to gain social status. Typically, the aggressor is from a higher status peer group and the victim from a lower status peer group. Harassment is a method bullies use to assert dominance and power over their victims, thus establishing social status among the larger peer group (Olweus, 1993). In early adolescence, peer victimization can be carried out directly or indirectly in numerous forms, including hitting, damaging or stealing personal property, name calling, taunting, spreading rumors, social exclusion, and interpersonal manipulation (Boulton & Underwood, 1992; Crick, Casas & Nelson, 2002; Olweus, 1993). Now, with burgeoning technology and social media, peer victimization is no longer confined to school grounds or the school day, and multiple forms of harassment have become common. The co-occurrence of multiple types of victimization produces a cumulative effect and increases the risk for maladaptive outcomes (Juvonen & Graham, 2001, Wang, Ianonetti, Luk & Nansel, 2010).

Stability of Victimization:

Previous research has helped to inform an understanding of the stability in peer victimization and typical transitional periods when such victimization may be more common among adolescents. The majority of existing studies span only one to two years, with stability estimates ranging from one third (Juvonen, Nishina & Graham, 2000) to one half (Fox & Boulton, 2006). Few studies have evaluated stability patterns over a complete course of development, such as three years of middle school. One such study that employed trajectory analysis over the course of middle school found that in the beginning of 6th grade 57% of students were in a victimized class (high victim class or sometimes victim class), but by the end of 8th grade only 5% remained in the victimized class (Nylund, Bellmore, Nishina & Graham, 2007). These findings show a significant decline in victimization over the course of middle school and demonstrate instability in victimization status, suggesting that as students recover from the initial stress associated with the middle school transition and acclimate to their environment, fewer students are victimized. The instability of victimization does not indicate that the related negative psychosocial outcomes are similarly unstable, as numerous studies have shown that maladaptive outcomes such as depressive symptoms tend to be much more stable over time (Reijntjes et al., 2010).

Correlates & Developmental Consequences of Victimization:

It is well documented that victimized youth experience a wide range of psychosocial distress, including low sense of global self-worth, depressive symptoms, withdrawal, and generalized anxiety (Egan & Perry, 1998; Graham & Juvonen, 1998; Hanish & Guerra, 2002; Hawker & Boulton, 2000) and in severe cases, suicidal ideation (Heilbron & Prinstein, 2010; Rigby & Slee, 1999). In a large meta-analytic review of 23 cross-sectional studies, Hawker and

Boulton (2000) examined the association between peer victimization and psychological maladjustment and found clear evidence that victimized youth experience high levels of distress and internalizing problems - particularly depressive symptoms. Victimized youth also report higher rates of physical complaints such as headaches, stomachaches, and somatic symptoms compared to their non-victimized counterparts, and these complaints are often found to be a result of emotional distress (Gini & Pozzoli, 2012; Nadeem & Graham, 2005; Nishina, Juvonen & Witkow, 2005).

Peer victimized youth are also at increased risk for ongoing impaired social functioning, with difficulty in forming friendships and having appropriate social interactions, which often leaves them feeling lonely, socially isolated, rejected by peers, and without a support system (Fox & Boulton, 2005; Hodges, Malone & Perry, 1997; Salmivalli et al., 2006). Consequently, victimized students often describe feeling unsafe while at school—a factor strongly associated with school disliking (Juvonen, Wang & Espinoza, 2010; Schwartz, Gorman, Dodge, Petit & Bates, 2008) and linked with poor academic engagement, low GPA, and absenteeism. Collectively, these factors put victimized students at risk for negative developmental outcomes, with consequences well into adulthood (Copeland, Wolke, Angold, & Costello, 2013; Pelligrini & Bartini, 2000).

Gender Differences in Victimization and Internalizing Problems:

Of the additional factors that can affect the experience of victimization, gender is one of the strongest correlates. Boys are consistently found to be at greater risk of overt, direct forms of bullying, whereas girls tend to be equally or more likely to experience indirect forms of bullying, such as social exclusion and rumor spreading (Juvonen & Graham, 2001). Evidence also

suggests gender differences emerge in the relationship between victimization and psychosocial adjustment based on the type of victimization experienced (Card, Stucky, Sawalani & Little, 2008). Similarly, gender differences in depressive symptoms increase over early to mid-adolescence, leading to significantly higher rates among girls (Gotlib & Hammen, 1992). As a result, depressive symptoms in adolescent boys may mark them as both different and as potential targets for aggressive peers. Public tearfulness and sadness, which are symptoms of depressive symptoms more consistent with typical female gender norms, may produce more victimization of boys than girls due to their violation of male gender norms. Thus depressive behavior may be a risk factor for victimization to the extent that it is viewed as gender atypical for boys (Kochel, Ladd & Rudolph, 2012; Sweeting, Young, West & Der, 2006; Young & Sweeting, 2004). In fact, one study found that boys who displayed more overt depressive symptoms were more likely to be physically bullied than similarly depressed girls, although these differences were insignificant at low levels of depressive symptoms (Tran, Cole & Weiss, 2012). The overall rate of victimization may not vary by gender, but clearly the experience of victimization can vary considerably by gender. Therefore, the type of bullying and the victim's gender may play a significant role in the relationship between victimization and depressive symptoms. However, many studies have divergent findings regarding gender differences in the relationship of peer victimization and depressive symptoms over time, which may be due to the limited number of longitudinal studies specifically looking at these two constructs over a continuous period of development.

Ethnic Differences in Victimization:

In addition, there are no clear racial differences in the prevalence of victimization, but a complex dynamic relationship between peer victimization and ethnicity. A small but important

area of research has shown that the role of school ethnic context is a more relevant factor to consider in order to fully understanding the association between victimization and negative psychosocial outcomes, rather than simply considering the victim's race. Specifically, what matters is the size of your ethnic group, or in other words, the representation of your ethnic group in the school context (Graham, Bellmore, Nishina & Juvonen, 2009). One study reported that victimized students who were part of the majority ethnic group in their classrooms were more likely to be lonely and anxious as compared to victimized members of a minority ethnic group (Bellmore, Witkow, Graham & Juvonen, 2004). Seemingly, victims who are members of the majority ethnic group are perceived to deviate from the dominant majority and social exclusion is experienced as more aggressive and painful. In this context, majority ethnic group victims are more likely to engage in self-blaming causal attributions, which are associated with and more predictive of internalizing problems such as depressive symptoms and social anxiety (Graham et al., 2009). A number of studies have shown that the concurrent (Graham, 2006) and long-term (Perren, Ettekel and Ladd, 2013) association between victimization and internalizing distress is mediated by self-blaming attributions (characterological) in samples of middle school students. These studies may suggest that more school ethnic diversity would theoretically even the playing field and potentially buffer some of the negative psychosocial consequences of victimization.

Longitudinal Research

While the correlates of peer victimization have been well established, the cross-sectional nature of the above studies precludes interpretation of the temporal sequence between peer

victimization and psychological maladjustment. A more recent developing body of longitudinal research has focused on the predictive associations between these variables over time.

From victimization to maladjustment

The majority of these longitudinal studies, conducted by peer relations researchers, operate under the premise that peer relational difficulties lead to psychosocial maladjustment, such as depressive symptoms. It is believed that poor peer relations or victimization status may cause youth to feel socially isolated and without a support system, resulting in significant stress and engendering depressive symptoms. Drawing on attribution theory to explain this casual process, if a student for instance experiences victimization as aversive and attributes peer harassment to his or her own undesirable traits (characterological self-blame) it may reinforce negative self-evaluations and elicit fear or avoidance of social interactions, eventually producing depressive symptoms (Graham et al., 2009; Reijntjes et al., 2010).

The results of several longitudinal studies provide support for this unidirectional perspective, showing that peer rejection and/or victimization predict increases in depressive symptoms over time. For instance, in middle school students, victimization was found to predict later depressive symptoms at six months and one year post-baseline (Sweeting et al., 2006; Vernberg, 1990). A study of elementary school students that used self and teacher report produced similar results and found frequent victimization by peers was associated with internalizing issues and had a mediating influence on poor grade point average and standardized test scores (Schwartz et al., 2005). However, other peer relations researchers have failed to replicate such linkages and observed that peer victimization was not a significant predictor of

increases in internalizing problems over a one to two-year time period (Prinstein et al., 2005; Reijntjes et al., 2010).

From maladjustment to victimization

Notably, an understudied area in the literature is the longitudinal associations between adolescent depressive symptoms and subsequent peer victimization (Reijntjes et al., 2010). This equally viable, but less studied “symptom driven” theory (Kochel et al., 2012) is that adolescents who have internalizing problems may be more vulnerable to subsequent victimization than their peers who do not exhibit depressive symptomatology (Kochel et al., 2012; Tran et al., 2012; Hodges & Perry, 1999; Reijntjes et al., 2010; Schwartz, McFayden-Ketchum, Dodge, Petit & Bates, 1999; Sweeting, et al., 2006). This theory speculates that depressed youth show social deficits that may cause their peers to react to them with dislike or aggression, exacerbating peer difficulties (Rudolph, Flynn & Abaied, 2008). Behaviors typically associated with depressive symptoms (such as withdrawal, passivity, or fearfulness), may further invite victimization by signaling vulnerability (Schwartz, Dodge & Coie, 1993; Veenstra et al., 2007). In addition, depressed youth tend to engage in maladaptive relationships, which increase their risk for peer victimization and interpersonal conflict (Rudolph, 2009).

Although this area of research is in its early stage, some preliminary findings in younger populations showed promise. In a recent study of 4th graders, baseline depressive symptoms predicted 5th grade victimization followed by low peer acceptance one year later in 6th grade (Kochel et al., 2012). Lending further support to this premise, in a study of 3rd through 6th graders, boys who showed signs of depressive symptoms were at higher risk for victimization compared to girls, possibly as discussed previously, because depressive symptoms-linked

behavioral styles such as withdrawal, passivity, and tearfulness contrast with gender norms for boys and may make them a target for victimization (Tran et al., 2012).

Reciprocal relations over time

A relatively small area of research has attempted to examine the possibility of a reciprocal or transactional relationship between peer victimization and depressive symptoms. Examining reciprocal associations over time is useful to understand how specific behavioral characteristics may contribute to the development or maintenance of peer victimization and depressive symptoms during early adolescence, a critical developmental period associated with an increase of both peer victimization and depressive symptoms. The cumulative and interactional continuity of victimization and maladjustment may be more psychologically taxing on the individual and contribute to the temporal stability of each construct than experiencing each issue independently. For example, a young boy who appears sad and withdrawn might increasingly become a target for peer victimization in part due to his inability to respond effectively or control his emotional reaction to being picked on by his peers. His victimization experience contributes to further anxiety and withdrawal, which continues to elicit a negative reaction from peers and perpetuates victimization (status), in a process some scholars have termed a “developmental feedback loop” (Boivin, Hymel & Hodges, 2001; Snyder, Brooker, Patrick, Snyder, Schrepferman et al., 2003). This theory posits that rather than just being linked to peer victimization, internalizing problems are a risk factor for changes in peer victimization over time, and vice versa. Thus, the interaction between the two can set up a negative cycle of increased bullying and social vulnerability, which impedes psychosocial recovery. The existence of a reciprocal association or transaction could perpetuate a vicious cycle contributing to the

long-term temporal stability of peer victimization and depressive symptoms (Reijntjes et al., 2010).

Five known studies to date have empirically tested for the presence of a reciprocal association between poor peer relations and depressive symptoms in younger adolescents (Tran et al., 2012; Chen & Li, 2000; Kochel et al., 2012; Nolan, Flynn, & Garber, 2003; Schwartz et al., 2005; Sweeting et al., 2006). Only one found limited support for a reciprocal association between peer victimization and depressive symptoms, and the others replicated previous findings that found support for a single causal direction (peer victimization -> depressive symptoms or depressive symptoms -> peer victimization).

Sweeting and colleagues (2006), who did find limited support for a reciprocal model, used a series of competing autoregressive models to assess temporal relationships between victimization and depressive symptoms in a large sample of Scottish children over the primary to secondary school transition. Findings of the study revealed that victimization at age 11 yielded a significant path to depressive symptoms at age 13, but victimization at age 13 was not related to depressive symptoms at age 15. Depressive symptoms yielded a significant path to victimization from both age 11 to 13 and 13 to 15. The findings essentially provide evidence for what would be considered a bidirectional association between victimization and depressive symptoms, but they did not test any interactions or indirect associations across time to determine if these constructs reciprocally transact and sustain one another over time. Also, the study did not include gender differences in the cross-lagged paths, which have been shown to have considerable influence in previous studies and may have obscured findings. Nonetheless, this study does provide important evidence that victimization and depressive symptoms can be

precursors or antecedents to one another across time and preliminary evidence for the possibility of a reciprocal process, even if not continuously across time.

A recent meta-analysis of longitudinal studies examined the prospective linkages between peer victimization and psychological maladjustment to examine if internalizing problems are antecedents, consequences of victimization, or both (Reijntjes et al., 2010). The review included eighteen studies that evaluated a single unidirectional hypothesis, tested competing simultaneous hypotheses in both directions, or examined reciprocal hypotheses. Findings of the analysis showed small effect sizes for nearly all observed directions and thus most studies were unable to demonstrate a cause-and-effect relationship. However, the studies included all have notable methodological limitations including an inadequate sample size, sample homogeneity, measurement limitations due to a short-term longitudinal design, neglect in accounting for nested data, and failure to use analytic methods required to discern reciprocal relations. Thus, the interpretation of these individual studies warrants caution as findings may have been obscured by methodological limitations.

Summary and Limitations of Previous Research:

Although much has been written on the psychosocial correlates of victimization, there has been little agreement in the literature on the temporal directionality between peer victimization and depressive symptoms and no definitive findings on a reciprocal-transactional association. Overall, there were three limitations of previous research.

The first limitation was that among existing studies that attempted to examine the temporal directionality between victimization and depressive symptoms, the majority primarily looked at victimization as a precursor to maladjustment and findings were inconsistent (Reijntjes

et al., 2010). Few studies examined depressive symptoms as an antecedent to victimization as the large majority of research in this area of study has been conducted by peer relations researchers who emphasize victimization as a precursor to depressive symptoms. Even fewer studies examined these temporal pathways simultaneously in one model to accurately assess, the stronger temporal sequence.

A second major limitation is there has been a paucity of longitudinal research that has examined victimization and depressive symptoms over a period beyond one to two years. In the absence of longitudinal data over a complete developmental period, such as middle school, one cannot test for differences based on timing which can have a significant influence on the temporal ordering of constructs. Even less is known about the potential of a reciprocal relationship in which victimization and depressive symptoms transact and sustain one another over time. For instance, victimization status may not be stable, but combined with depressive symptoms could worsen over time, since depressive symptoms impair peer relations, creating a vicious cycle in which vulnerable youth become increasingly isolated and depressed. Elucidating this process would help identify a group of exceptionally vulnerable youth and inform intervention efforts.

Last, an important limitation of previous research is there is limited findings on important moderating factors such gender and ethnicity. Previous research has shown inconsistent findings on gender and no known studies have directly examined the role of ethnicity as an influence on the temporal sequence or transactional association between victimization and depressive symptoms. The following study begins to address some of these issues.

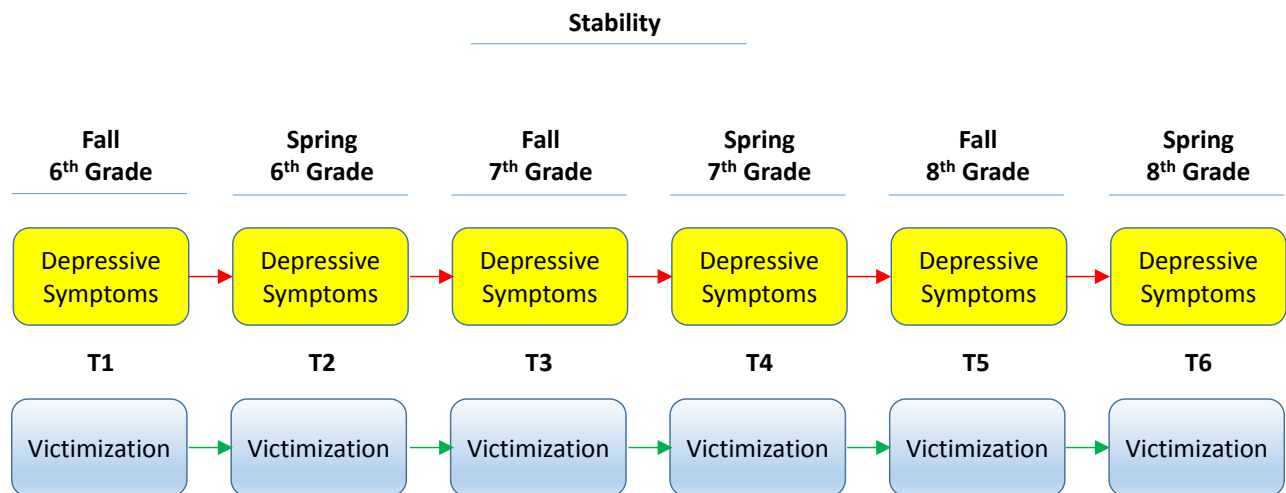
The Current Study

Research Questions and Hypotheses

The purpose of this study was to address some of the limitations of previous research by providing greater specificity about the temporal directionality, while also exploring the potential of a reciprocal transactional association between peer victimization and depressive symptoms. To build on previous research the study employed a three-year longitudinal design, simultaneously tested competing bidirectional associations between peer victimization and depressive symptoms using sophisticated analytic methods to precisely assess the directionality and reciprocal associations, and used a large ethnically diverse sample to examine important moderating factors such as ethnicity. The study tested the following three questions and hypotheses:

- 1) *What are the stability patterns of depressive symptoms and peer victimization over the span of middle school (6th through 8th grade)?*

Stability Hypothesis-Figure 1:

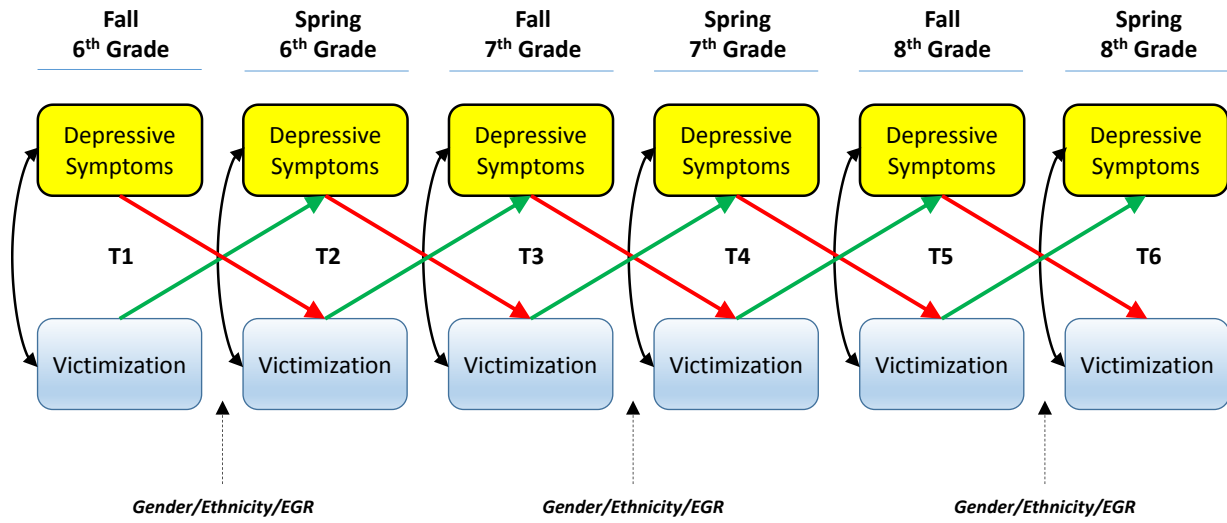


Hypothesis: It was expected that depressive symptoms would demonstrate stability over the course of middle school; however, peer victimization would be less stable over time based on prior research.

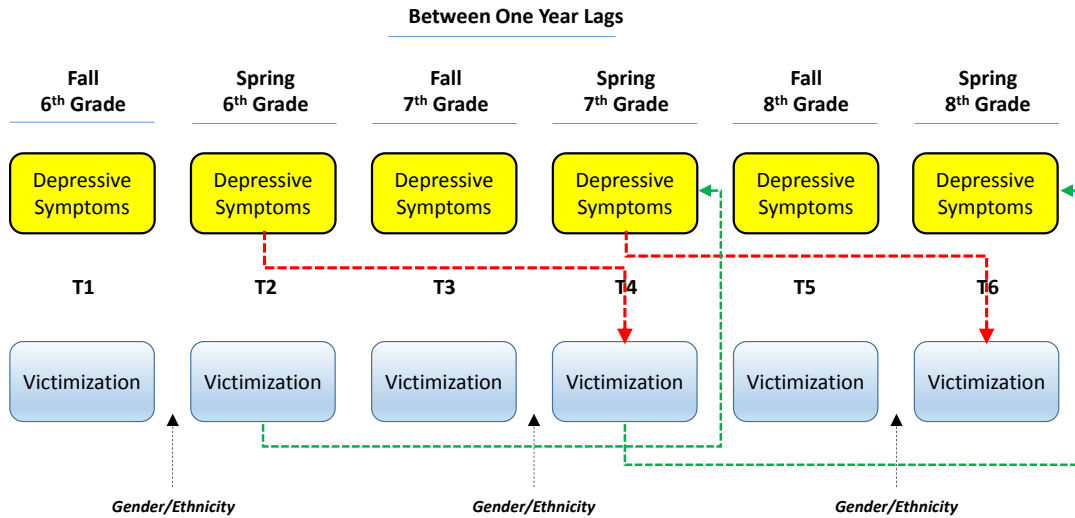
2) *What is the temporal directionality between peer victimization and depressive symptoms in middle school students: Is self-perceived victimization a precursor to depressive symptoms or are depressive symptoms an antecedent to victimization? Does the temporal sequence or relationship between depressive symptoms and peer victimization change based on a person's gender, ethnic group membership, or ethnic group representation (EGR)? To explore each potential temporal sequence, I examined if peer victimization predicted subsequent increases in depressive symptoms or if depressive symptoms predicted increases in victimization or if both co-existed. Temporal pathways were examined over two time lags: between each semester (see Figure 2a) and between grade levels (one-year lags) measured in spring of each year (see Figure 2b).*

Bidirectional Hypothesis-Figure 2a:

Between Semesters



Bidirectional Hypothesis-Figure 2b:

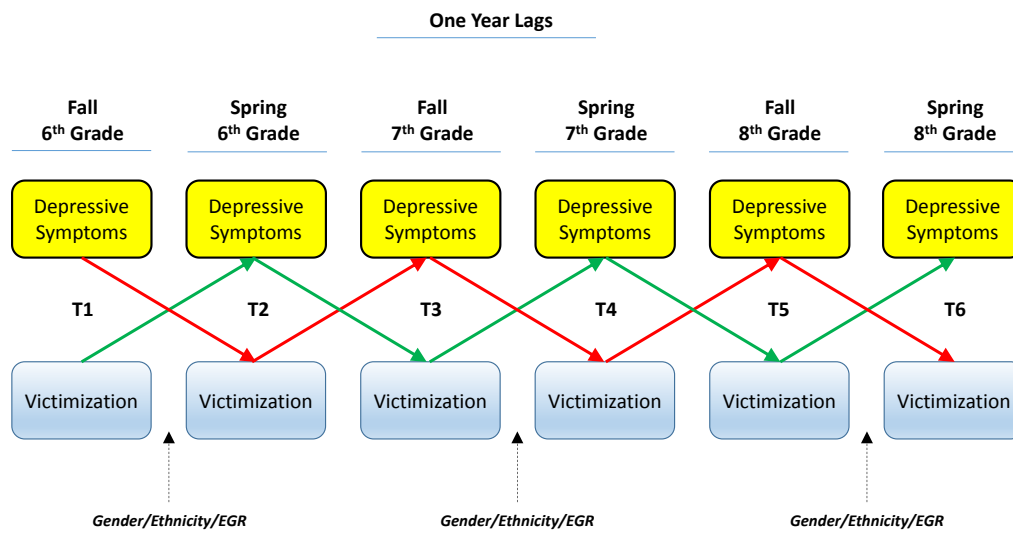


Hypothesis: Based on prior research, it was expected that both temporal sequences would be supported. However, I expected to see changes in the temporal sequence and differences in the magnitude of the predicted association based on student gender, ethnicity, and ethnic group representation. For instance, it was expected that boys would have a stronger depressive symptoms-to-victimization path and girls would have a stronger victimization-to-depressive symptoms path.

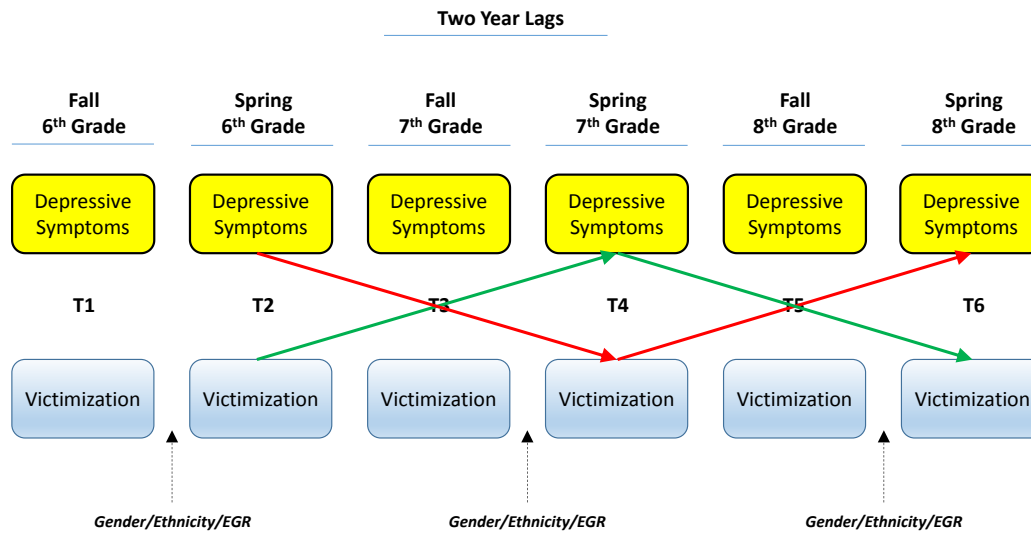
- 3) *In the third research question, I examined if peer victimization and depressive symptoms reciprocally transacted across time. To explore this research question, reciprocal pathways were examined across one-year time lags (i.e., do depressive symptoms in the fall of 6th grade predict increases in depressive symptoms in the fall of 7th grade via intermediate victimization in the spring of 6th grade) (See Figure 3a). The same analysis was conducted for the opposing direction, examining the victimization -> depressive symptoms-> depressive symptoms pathway. Similarly, reciprocal associations were tested across two-year time lags (i.e., does victimization in 6th grade predict increases in*

depressive symptoms in 7th grade and does that subsequently further predict victimization in 8th grade) (See Figure 3b) and three-year time lags (continuously across all time-points) (see Figure 3c).

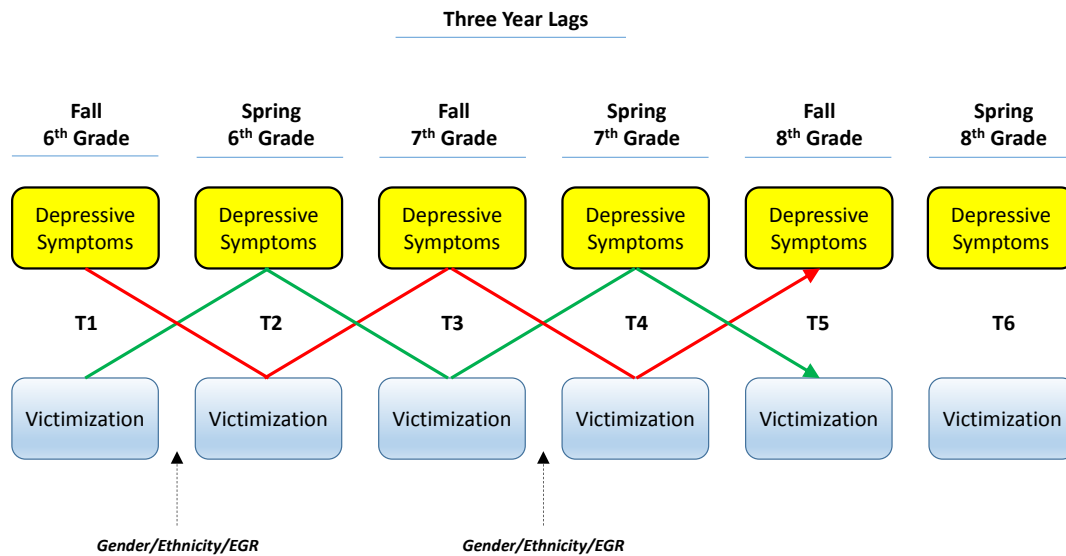
Reciprocal Hypothesis 3a:



Reciprocal Hypothesis 3b:



Reciprocal Hypothesis 3c:



Hypothesis: Although the state of research on this premise was quite limited, it was expected that depressive symptoms and peer victimization would transact over time, revealing a reciprocal process and the potential for a feedback mechanism.

These research questions were examined using longitudinal data from a large study of peer relations in middle school. The overall sample consisted of two cohorts with a total of more than 2,000 students. Data on these early adolescents' victimization experiences and mental health outcomes were analyzed using data collected during the fall and spring of 6th grade through 8th grade, for a total of six time points.

For these longitudinal analyses, a series of cross-lagged models in a structural equation modeling (SEM) framework were used to model directionality and reciprocal associations to shed light on the temporal sequence between peer victimization and mental health (depressive symptoms). This analytic method permits a more complex analysis, simultaneously examining

the relative strength of both causal sequences between peer victimization and depressive symptoms in one analysis to better evaluate these competing theories.

Method

Participants:

The data used in this dissertation was from the UCLA Peer Relations Project, a large-scale longitudinal study of peer relations, mental health, and social and academic adjustment in 6th through 12th grade students. Data were collected twice yearly from 6th to 10th grade and then once yearly in 11th and 12th grade, for a total of twelve waves of data. For the purposes of this study, only middle school data was used, including the fall and spring of 6th through 8th grade, for a total of six time points (waves 1–6).

Participants in this study were drawn from two cohorts, for a total of 2,007 (46% male, 54% female) students from 11 middle schools throughout the greater Los Angeles area. Students across the 11 schools were predominately of low socioeconomic status, as 47 to 87% of students qualified for free or reduced-price lunch programs and all schools qualified for Title I compensatory education funds. The schools selected for the study varied in ethnic composition. Five schools served a large Latino student population (more than 50%), three schools served a predominantly African American population, and three schools were ethnically diverse, with no single ethnic group constituting more than a 50% majority (Graham et al., 2009). Based on self-report, the ethnic composition of the overall sample at 6th grade was 26% African-American, 10% Asian, 10% White, 44% Latino, and 10% Multiethnic. For the purposes of this study, Multiethnic students were not included in the analytic sample as it would be difficult to examine the role of ethnicity for a group that constitutes multiple ethnic groups. Approximately 80% of Latino and 70% of Asian participants were second-generation immigrants (i.e., participant was born in the United States, but either the mother or father were not).

In the spring of eighth grade, 75% of the initial sample ($n=1,704$) remained in the study. Since the average student mobility rate for the 11 participating schools was quite high (41%) (Nylund, 2007), a 75% retention rate is considered satisfactory for urban youth samples. The retention rate was also comparable to other longitudinal studies with similar samples (Boivan et al., 2010; Reijntjes et al., 2010).

Procedures:

Participants in two cohorts were recruited at the onset of 6th grade during the fall of 2000 and 2001. Principals of the participating schools selected 6th grade teachers to participate in the study. Participants were initially recruited from 99 homerooms, taking home consent forms and letters describing the study. A total of 75% of the 3,511 distributed parent consent forms were returned. Among those who returned the consent letters, 89% of the students received permission to participate in the study.

At each of the six time points from the UCLA Peer Relations Project to be considered in this study, participants completed a self-report survey during one class period while seated an appropriate distance away from their peers to insure privacy. A research staff member read the survey instructions aloud while students followed along and recorded their answers. Concurrently, a second research staff member circulated around the classroom to address student questions. Students were given a \$5 honorarium at each survey time point for their participation.

Measures:

Self-perceived victimization: Prior research has demonstrated that victimization in early adolescence is more strongly associated with poor psychosocial adjustment when children *perceive* victimization, regardless of peer reports (Graham & Juvonen, 1998). For this reason,

early adolescents' self-reported victimization was used to measure the relationship between victimization and mental health outcomes. For this measure students completed six items from the Peer Victimization Scale (PVS; Neary & Joseph, 1994). Students were presented with two choices and were asked to decide which choice was more like them (e.g., "Some kids are often picked on by other kids but other kids are not picked on by other kids"). After making their selection, students were then asked to decide if their choice was "really true for me" or "sort of true for me," creating a 4-point scale for each item. Based on the high internal consistency of the six items in this sample (Cronbach's α at each wave ranged from .82 - .84) a total of the items was computed and used as a single score of self-perceived victimization (Mean scores and Standard Deviation's ranged from $M = 2.16 - 1.18$, $SD = .70 - 1.23$).

Depressive symptoms: Numerous studies have unequivocally shown that internalizing symptoms are highly correlated with peer victimization, particularly depressive symptoms (Reijntjes et al., 2010). For this reason, this dissertation specifically focused on depressive symptoms as the marker of internalizing distress. Students completed the Children's Depressive symptoms Inventory – Short Form (CDI-10), a short self-report scale used to assess depressive symptomatology in children and adolescents. This 10-item version was adapted from the full 27-item CDI. This shorter scale has performed well compared to the longer version (Kovacs, 1992). Students answered questions about feeling depressed over the last two weeks. The measure consists of 10 items on a 0-2 scale with a higher score indicating more depressive symptoms. Participants were given a set of three statements such as "I am sad once in a while," "I am sad many times," and "I am sad all the time" and instructed to check the one statement most true of them. A composite score of depressive symptoms was calculated using the total of 10 items (Mean scores and Standard Deviation's ranged from $M = .50 - .43$, $SD = .57 - .53$). Generally, the

scale is found to have good internal consistency and adequate test-re-test reliability. Reliability, validity, and factor structure were similar across a wide variety of demographic characteristics in the general population of samples tested. Cronbach's α at each wave ranged from .80 - .85.

Ethnic Group Representation (Percentage Same Ethnicity): In the absence of studies evaluating ethnic differences in the directional relations between victimization and depressive symptoms and some studies suggesting that ethnic context can influence psychosocial adjustment outcomes, the moderating role of ethnic group representation was included. An index was computed for each student based on the percentage of participants in his or her class that reported the same ethnicity as that student. For each individual, we identified the number of other participating classmates who shared his or her ethnicity and divided that number by the total number of students (less 1) in the class.

Results

Results

In the results section, I first present descriptives to characterize each construct (victimization and depressive symptoms) based on differences between important groups (gender and ethnicity) explored in the study. In the subsequent sections, the results of the main analyses are presented in order of each cross-lagged model tested - one for each of the three moderators (gender, ethnicity, and ethnic group representation) for a total of three cross-lagged models.

Descriptives

Descriptive statistics including means, standard deviations, and correlations were computed to examine bivariate associations between study variables over time (see Table 1.1-1.3). The exact sample size for the descriptive analyses from 6th to 8th grade varied across each wave of data collection mostly due to students moving out of the designated area (see methods section for additional detail). Based on this attrition, the average percent of missing data for all six waves of the depressive symptoms measure (25%) and the peer victimization measure (27%) is believed to be missing at random.

Correlation results suggested that higher levels of adolescents' self-perceived victimization were significantly associated with higher levels of adolescents' depressive symptoms. Correlations over time revealed moderate to high stability for each of the primary variables (see Table 1.1).

At each time point, a one-way analysis of variance was conducted to examine whether there were differences in mean scores for each outcome variable (depressive symptoms and victimization) by gender and then by ethnicity (see Tables 1.2 & 1.3). Within-time comparisons

revealed a strong pattern with girls reporting more depressive symptoms compared to boys at all 6 time points (see Figure 1.1). Girls also reported less victimization at each time point, except for the fall of 6th grade (see Figure 1.2).

Differences by ethnicity (Table 1.3) were also detected for mean depressive symptoms and victimization scores in 6th, 7th, and 8th grades. A one-way ANOVA with four levels was conducted for depressive symptoms and victimization for each of the 6 time points. The ANOVA revealed that ethnicity significantly predicted depressive symptoms in the spring of 6th grade $F(3,1725) = 5.12, p < .01$, in the fall of 7th grade $F(3, 1590) = 5.32, p < .01$, in the spring of 7th grade $F(3, 1487) = 5.17, p < .01$, and in the fall of 8th grade $F(3, 1404) = 2.72, p < .05$. Post-hoc Tukey's Honestly Significance Difference (HSD) test showed that at all four time points, African-Americans had significantly lower depressive symptoms scores than Latino students ($p < .05$). No other groups differed on their mean depressive symptoms score.

Similarly, ethnicities differed on mean victimization scores in the 6th and 7th grades. Ethnicity significantly predicted victimization in the fall of 6th grade $F(3, 1675) = 3.48, p < .01$, in the spring of 6th grade $F(3, 1643) = 10.63, p < .01$, in the fall of 7th grade $F(3, 1529) = 4.22, p < .01$, and in the spring of 7th grade $F(3, 1439) = 4.41, p < .01$. White students had lower mean victimization scores compared to Latino students ($p < .05$) in the spring of 6th, fall of 7th and spring of 7th grades. In the spring of 6th and 7th grade, White students also differed from African-American students ($p < .05$). Asian students had significantly lower victimization scores compared to African-American students ($p < .05$) in the fall of 6th grade and Latino students ($p < .05$) in the spring of 6th grade. There were no significant ethnic differences observed in victimization in 8th grade (T5 ad T6) (see Figure 1.2).

Data Analytic Strategy for Main Analyses

The purpose of this study was to examine the temporal sequence and reciprocal relationship between depressive symptoms and peer victimization over time and whether this relationship changed based on gender, ethnicity, and ethnic group representation. To test these relationships, three separate cross-lagged models were tested. In each model, the stability, bidirectional, and reciprocal hypotheses were simultaneously tested while also examining the interaction with one of three individual level moderators (gender, ethnicity, and ethnic group representation). Analyses were conducted using path analysis – a structural equation modeling (SEM) framework without latent variables (Muthen & Muthen, 1998). In this modeling framework, there is only a structural model and no measurement model. The advantage of path analysis over other statistical methods is that it permits modeling many complex relationships among multiple outcomes simultaneously. Among these relationships were direct and indirect causal effects, which are harder to assess in separate models. Structural equation models were estimated in STATA v 9. See Figure 2.1 for the full cross-lagged model.

Before estimating models, variables were screened for normality (see Muthen & Muthen, 1998-2006). In these analyses, non-normal variables were not present. Data were examined for missingness and missing data were addressed using full information maximum likelihood (FIML) estimation. FIML estimation is readily handled by SEM models and uses all available raw data for estimating the model. Therefore, the full sample with at least one valid score was included in the analyses.

Estimation of Cross-Lagged Models

Fit Indices

Four criteria were used to determine model fit in this study. The first, chi-square, should not be significant if there is good model fit; however, it is sensitive to the size of the sample (the larger the sample size, the more likely the rejection of the model) and violations of assumption of normality in the observed variables. It is more useful for comparisons between models in assessing whether additional complexity gives significantly better fit. Second, is the comparative fit index (CFI), which also adjusts for model complexity, comparing the existing model fit with a null model which assumes the variables in the model are uncorrelated. CFI varies from 0 to 1, with higher values indicating better fit. According to Hu and Bentler (1999), the CFI value should typically equal or exceed .95 to ensure satisfactory model fit. The root mean square error of approximation (RMSEA) is another indicator of good model fit. The RMSEA estimate should also be equal to or less than .05. Last, the Tucker-Lewis index (TLI), another incremental fit index, should also equal or exceed .95.

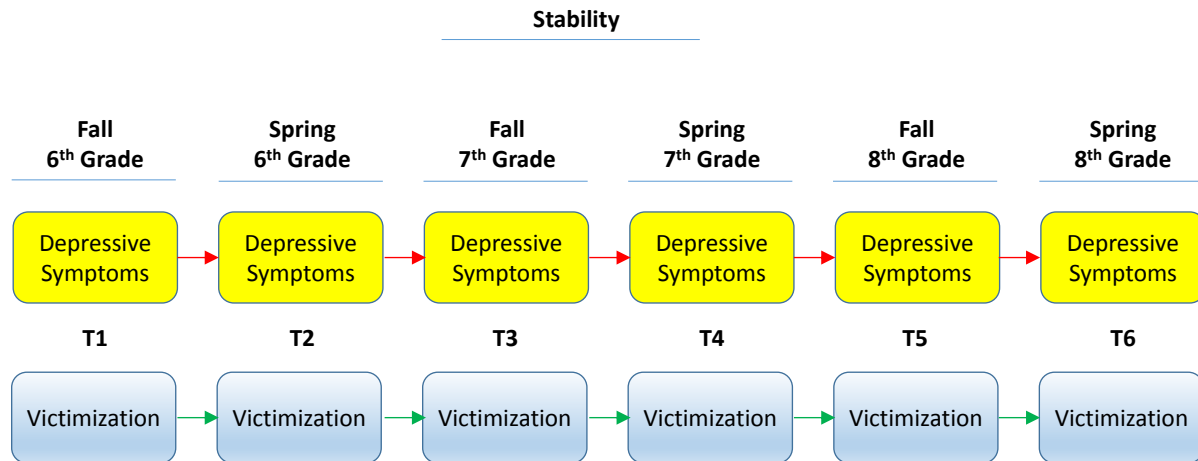
Model 1: Moderating Gender

In the first cross-lagged model, the moderating effects of gender were tested. FIML was applied to correct for missing data. The fit indices for the multi-group model (gender used as the grouping factor), were $X^2(1, N= 2090) = 377.993$. $p < .001$, CFI = .967, TLI = .958, RMSEA = .050, 90% CI = .045 - .056, p -value $< .001$. Fit indices indicated that this model was an acceptable fit for the data.

Stability

The first set of paths tested the stability patterns of each individual construct from 6th to 8th grade. For example, does earlier depression predict subsequent depression and does earlier victimization predict later victimization? It was expected that depressive symptoms would be

relatively more stable than victimization over the course of middle school. Adding one-year stability paths significantly improved the fit of the model and are reported as well. All stability paths were significant at $p < .01$.



Victimization Stability

The findings supported the hypothesis and showed that victimization was generally stable, but to a lesser degree than depressive symptoms. Stability estimates were similar for both genders within each time lag. There was some fluctuation in 6th grade, at which time stability was comparatively at its lowest due to relatively high victimization in the fall followed by a significant decrease in the spring ($\beta = .24, p < .01$). Subsequently, stability increased but remained within the same range through the end of 8th grade ($\beta = .34 - .37, p < .01$). A similar pattern was observed in the one-year lag stability paths. See table 3.1 for complete results.

Depressive Symptoms Stability

All stability paths for depressive symptoms were significant and comparatively higher in magnitude than victimization for both boys and girls. Stability estimates were again similar for both genders within each time lag. The highest estimate of stability was in the fall to spring of

6th grade ($\beta = .62, p < .01$). Subsequently, stability remained within a similar range through the end of 8th grade ($\beta = .46 - .54, p < .01$). One year stability paths for depressive symptoms followed a similar pattern. See table 3.1 for complete results.

Table 3.1: *Construct Stability by Gender*

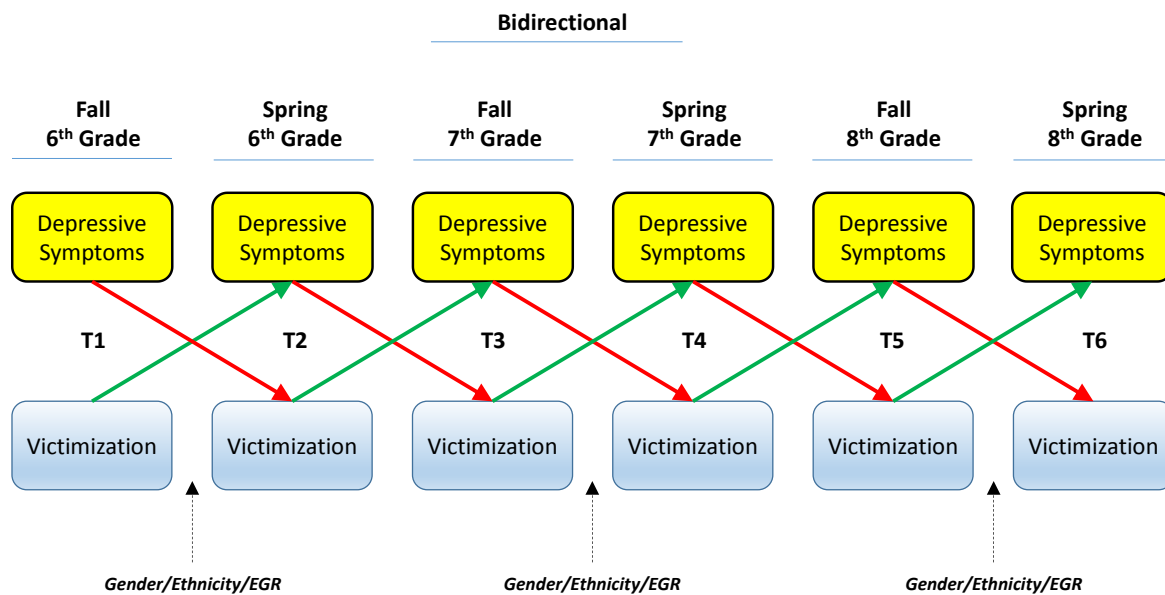
Stability	Victimization		Depressive Symptoms	
	Boys	Girls	Boys	Girls
	β	β	β	β
Semester Stability Paths				
6th fall to 6th spring	.24**	.25**	.62**	.62**
6th spring to 7th fall	.47**	.47**	.47**	.46**
7th fall to 7th spring	.35**	.34**	.54**	.54**
7th spring to 8th fall	.45**	.45**	.53**	.52**
8th fall to 8th spring	.46**	.47**	.54**	.54**
One -Year Stability Paths				
6th fall to 7th fall	.08**	.08**	.23**	.23**
7th fall to 8th fall	.27**	.27**	.23**	.23**
6th spring to 7th spring	.29**	.29**	.11**	.11**
7th spring to 8th spring	.26**	.26**	.25**	.25**

$R < .05^*$, $p < .01^{**}$

Bidirectional Paths

The second set of paths added to the cross-lagged model tested competing bidirectional hypotheses. For this longitudinal analysis, I tested each competing unidirectional hypothesis simultaneously to examine if peer victimization predicted future increases in depressive symptoms and if depressive symptoms predicted future increases in peer victimization for all one- lag paths. For example, each pathway tested whether depressive symptoms assessed at each time point (T1, T2, T3, T4, T5) predicts subsequent victimization (T2, T3,T4 T5,T6)

respectively, controlling for the effects of victimization at the prior assessment. The same analysis was conducted to examine if peer victimization predicted depressive symptoms in the same manner. These bidirectional paths were tested across two time lags: between each semester (i.e., fall 6th to spring 6th grade) and between grade levels (i.e., spring 6th grade to spring 7th grade and spring of 7th grade to spring of 8th grade). Variables measured during the same time point were allowed to correlate, such that depression and peer victimization within each wave were correlated. These hypotheses examined which temporal sequence was stronger – was peer victimization a stronger predictor of depressive symptoms or were depressive symptoms a stronger predictor of victimization? It was expected that the magnitude of the temporal sequence would differ between genders in that boys would have a stronger depressive symptoms to victimization path and girls would have a stronger victimization to depressive symptoms path.



Victimization → Depressive Symptoms Paths

In testing the bidirectional cross-lagged paths distinct differences emerged between boys and girls. Peer victimization was not predictive of depressive symptoms in boys across any time lags measured throughout middle school. For girls, nearly all paths were significant with the exception of fall to spring of 7th grade, but the effect of victimization on depressive symptoms was quite small. For every 1 unit increase in girls' victimization in fall of 6th, spring of 6th, spring of 7th and fall of 8th grade, there were corresponding increases in depressive symptoms of .08, .07, .05, and .06 in spring of 6th, fall of 7th, fall of 8th and spring of 8th grade, respectively. However, none of the one-year cross lag paths from victimization to depressive symptoms were significant for girls. See Table 3.2 for complete results.

Table 3.2: Bi-directional Cross-lag Paths: Depressive Symptoms by Gender

Path: Victimization -> Depressive Symptoms						
	Boys			Girls		
	B	SE	β	B	SE	β
Semester Cross-Lag Paths						
6th fall → 6th spring	.03	.03	.02	.08	.02	.06*
6th spring → 7th fall	-.00	.02	-.01	.07	.02	.10**
7th fall → 7th spring	.02	.04	.04	.05	.03	.06
7th spring → 8th fall	-.00	.02	-.01	.05	.02	.07*
8th fall → 8th spring	.01	.04	.01	.07	.03	.09*
One-Year Cross-Lag Paths						
6th spring → 7th spring	.02	.04	.03	.04	.03	.06
7th spring → 8th spring	-.04	.04	-.05	-.03	.03	-.03

p < .05*, p < .01**

Depressive symptoms → Victimization Paths

Turning to the opposing directional path, depressive symptoms were found to predict subsequent victimization for both boys and girls. For boys, depressive symptoms significantly predicted victimization across multiple paths. For every 1 unit increase in boys' depressive symptoms in fall of 6th, spring of 6th, and spring of 7th grade, there were corresponding increases in depressive symptoms of .53, .26, and .19 in spring of 6th, fall of 7th, and fall of 8th, respectively. In boys, depressive symptoms were not predictive of victimization from the fall to spring of 7th and 8th grade. However, the one-year paths between the spring of 6th to the spring of 7th grade ($\beta = .11, B = .15, SE = .06, p < .05$) and spring of 7th grade to the spring of 8th grade ($\beta = .09, B = .12, SE = .05, p < .05$) were significant, but semester paths within this time frame were not found to be significant.

For girls, depressive symptoms significantly predicted victimization in four of the five cross-lag paths. For every 1 unit increase in girls' depressive symptoms in Fall of 6th, Spring of 6th, Fall of 7th, and Spring of 7th grade, there were corresponding increases in victimization scores of .32, .09, .14, and .11 in Spring of 6th, Fall of 7th, Spring of 7th, and Fall of 8th grade, respectively. However, in 8th grade, fall depressive symptoms did not predict spring victimization. Likewise, one-year cross lag paths were non-significant paths for girls. See Table 3.3 for complete results.

Table 3.3: Bi-directional Cross-lag Paths: Victimization by Gender

Path: Depressive symptoms → Victimization						
	Boys			Girls		
	B	SE	β	B	SE	β
Semester Cross-Lag Paths						
6th fall → 6th spring	.53	.03	.36**	.32	.03	.23**
6th spring → 7th fall	.26	.03	.19**	.09	.03	.07*
7th fall → 7th spring	.05	.03	.03	.14	.03	.11**
7th spring → 8th fall	.19	.03	.15**	.11	.02	.09**
8th fall → 8th spring	.02	.03	.02	.02	.02	.02
One-Year Cross-Lag Paths						
6th spring → 7th spring	.15	.06	.11*	-.02	.05	-.02
7th spring → 8th spring	.12	.05	.09*	.00	.04	.00

p < .05*, p < .01**

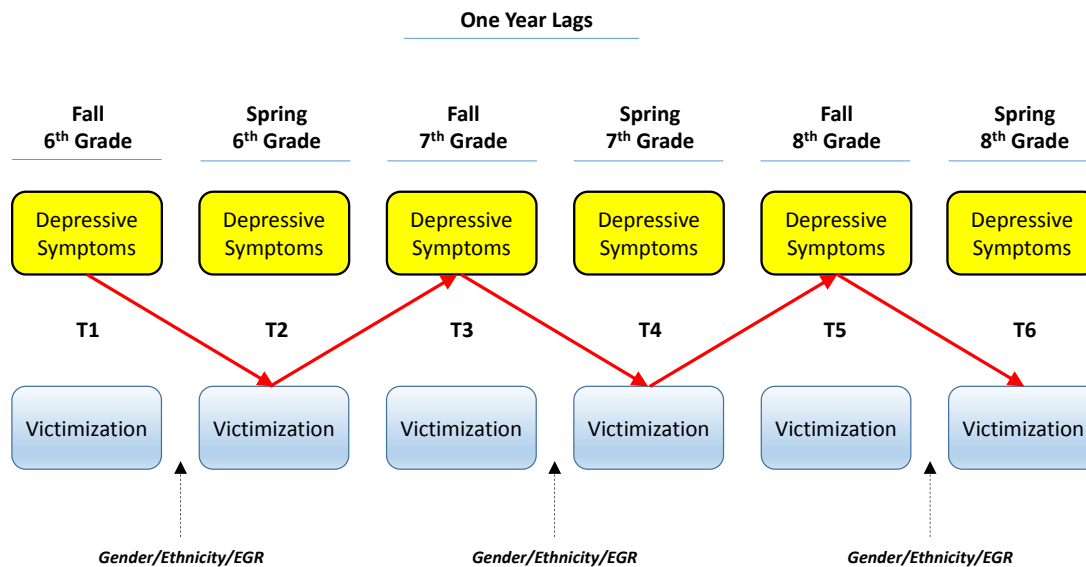
Reciprocal Transaction (Indirect Effects)

In the third set of pathways added to the model, the reciprocal transactional hypothesis was tested to examine if peer victimization and depressive symptoms were reciprocally associated across time and if they transact and potentially build over the course of middle school. Reciprocal pathways were examined across one-, two- and three- year time lags. For instance, the one- year lagged reciprocal pathway examined the indirect effects of depression at Time 1 (fall 6th) on depression at Time 3 (fall 7th) mediated by peer victimization at Time 2 (spring 6th). Likewise, the same analysis was conducted to examine the indirect effects of peer victimization at Time 1 (fall 6th) on peer victimization at Time 3 (fall 7th) mediated by

depression at Time 2 (spring 6th). Reciprocal associations across two-year time lags were tested from the spring of each year to the following spring (i.e., does victimization in 6th spring predict increases in depression in 7th spring and does that subsequently predict further increases in victimization in 8th spring?). The same analysis was conducted for the opposing direction, examining depression -> victimization -> depression pathway. All paths were moderated by gender. Three- year lag reciprocal pathways examined all six time points continuously in each direction. Although, these were exploratory hypotheses, it was expected that depression and peer victimization would transact over time, revealing a reciprocal process and potential feedback mechanism.

Depressive symptoms → Victimization → Depressive symptoms

One-Year Lag Reciprocal Transaction (Indirect Effects)

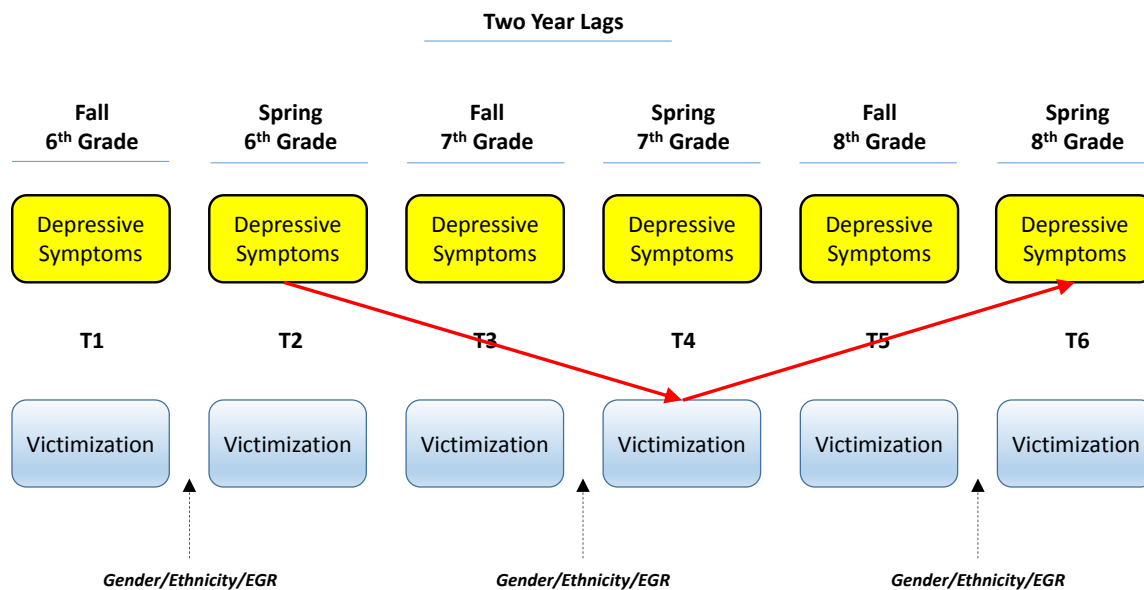


In girls, there was evidence of a small indirect effect across one-year lags between depressive symptoms in the fall of 6th grade to depressive symptoms in the fall of 7th grade

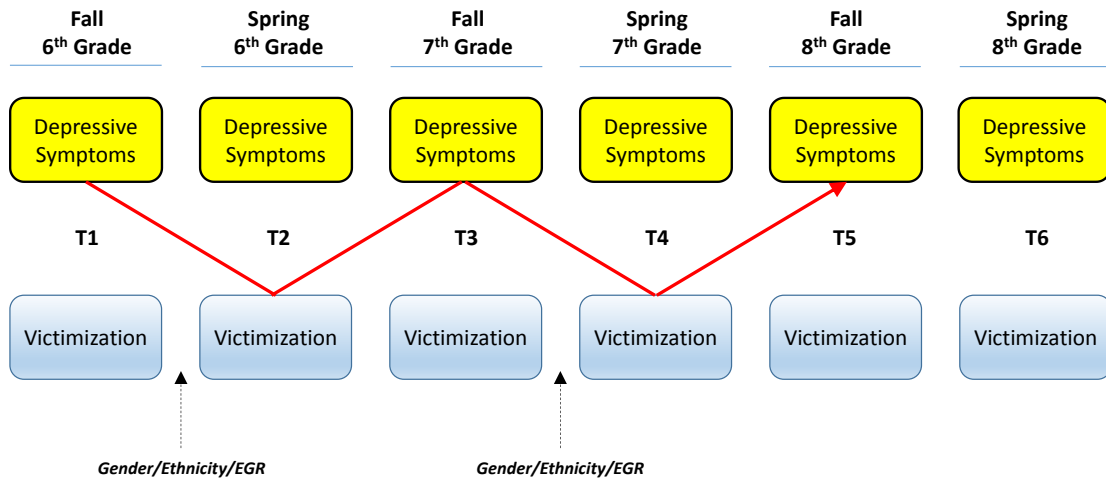
mediated by victimization in the spring of 6th grade ($B = .02, SE = .01, p < .01$): for every 1 unit increase in fall of 6th grade depressive symptoms there was a .02 increase in fall of 7th grade depressive symptoms via a .07 increase in spring of 6th grade victimization. In the next path there also was a small effect of depressive symptoms in the fall of 7th grade on depressive symptoms in the fall of 8th grade via 7th grade victimization. ($B = .01, SE = .00, p = .05$): for every 1 unit increase in fall of 7th grade depressive symptoms there was a .01 increase in the fall of 8th grade depressive symptoms via a .05 increase in spring of 7th grade victimization. Reciprocal pathways were not significant for boys.

Two- and Three- Year Lag Reciprocal Transaction (Indirect Effects)

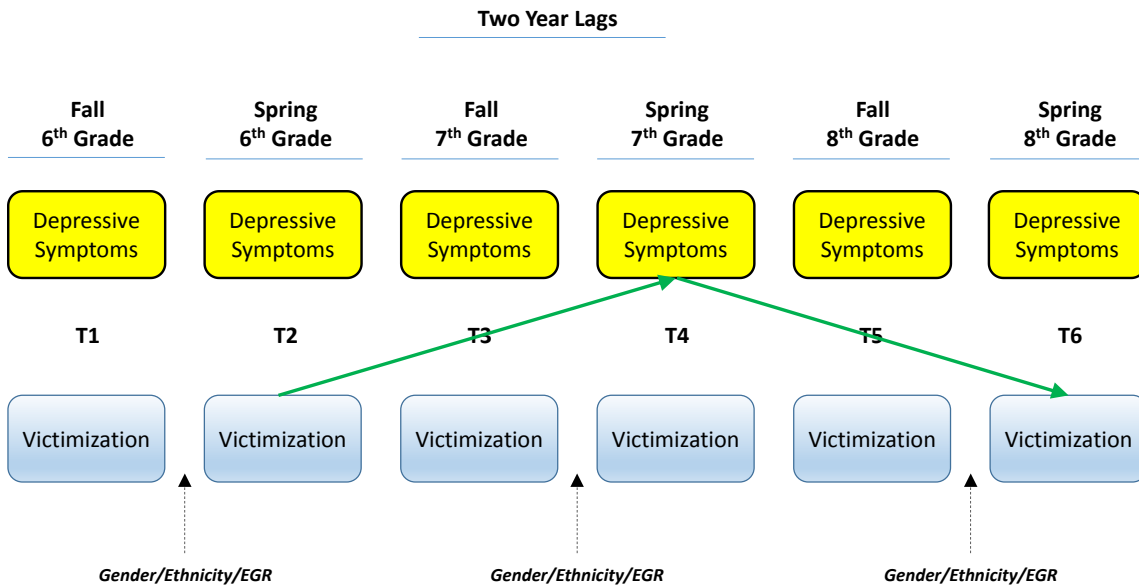
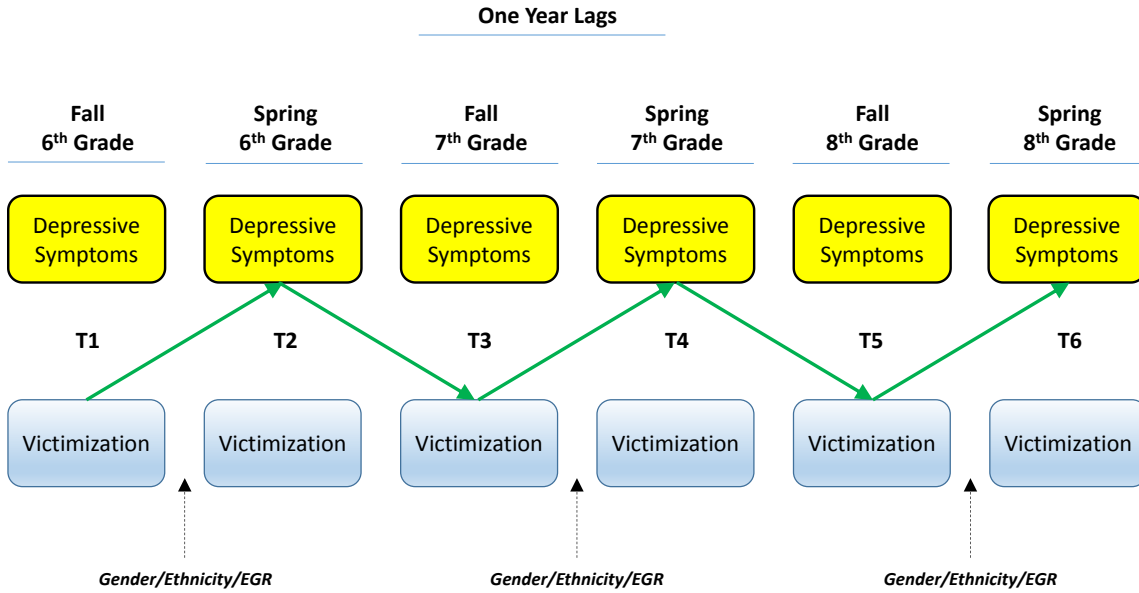
Next, reciprocal pathways were examined across two and three year lags. Intermediate victimization was not found to mediate depressive symptoms for either boys or girls. See Table 3.4 for complete results.

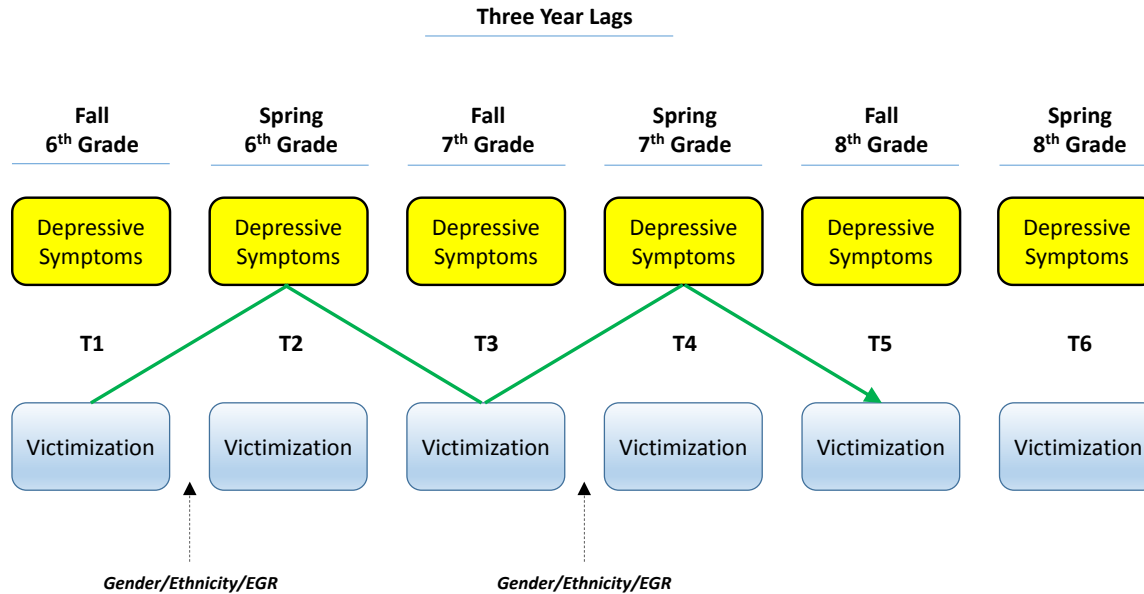


Three Year Lags



Victimization → Depressive symptoms → Victimization





There were no indirect effects of depressive symptoms on victimization at one- year, two- year or three- year lags for either boys or girls. See Table 3.4 for complete results.

Table 3.4: Reciprocal Paths: Indirect Effects by Gender

Reciprocal Transaction Paths	Victimization -> Depression ->				Depression -> Victimization ->			
	Victimization				Depression			
	Boys		Girls		Boys		Girls	
	B	SE	B	SE	B	SE	B	SE
One-Year Cross Lags (Indirect Effects)								
6th fall → 6th spring → 7th fall	.01	.01	.01	.00	-.00	.01	.02**	.01
7th fall → 7th spring → 8th fall	.01	.01	.01	.00	-.00	.00	.01*	.00
Two-Year Cross Lags (Indirect Effects)								
6th spring → 7th spring → 8th spring	-.00	.00	-.00	.00	-.01	.00	.00	.00
Three-Year Cross Lags (Indirect Effects)								
6th fall → 6th spring → 7th fall → 7th spring → 8th fall	.00	.00	.00	.00	3.58	2.42	.00	.00

p < .05*, p < .01**

Model 1: Summary of Gender Findings

In summary, the findings support the hypothesis that depressive symptoms were relatively more stable than victimization. However, both constructs were found to be fairly stable with the exception of 6th grade when we see lower stability in victimization due to a significant decrease in victimization from the fall to spring. In examining the bidirectional paths and the interaction with gender, boys had a stronger depressive symptoms-to-victimization path. Also, depressive symptoms predicted victimization in boys across one-year time lags through 7th and 8th grade, but did not between semesters during this same time period. In contrast to the expected hypothesis, girls did not have a stronger victimization to depressive symptoms path; as with boys, the path from depressive symptoms to victimization was stronger. This relationship did not hold true across one-year lags for girls. In addition, the reciprocal transaction between depressive symptoms and victimization only held true in girls. The results demonstrated that depressive symptoms predicted depressive symptoms one year later via intermediate victimization between 6th to 7th grade and 7th to 8th grade. This relationship did not hold true when measured across two- and three- year time lags.

Model 2: Ethnic Group Moderation

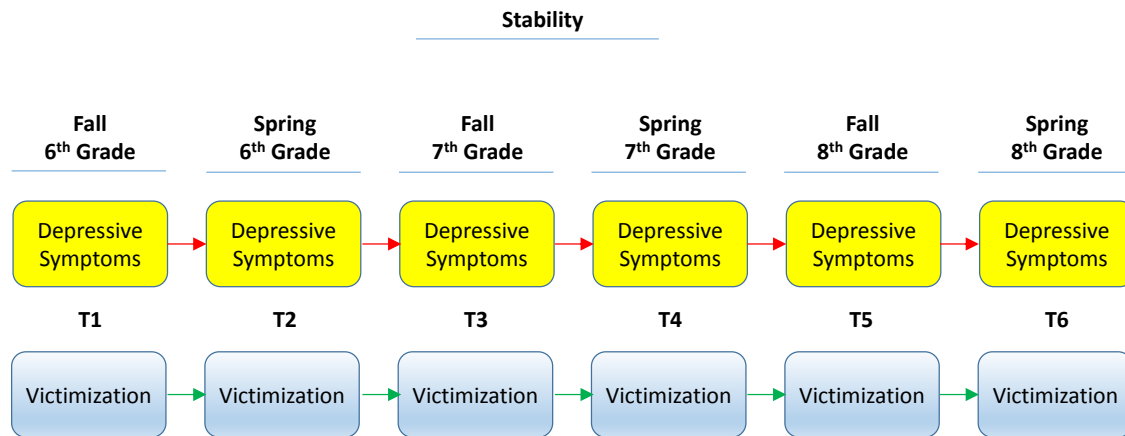
In this second model, the moderating role of ethnic group was examined on the bidirectional and reciprocal association between depressive symptoms and victimization. In this model, only between- semester time periods were tested, since one-year bidirectional and reciprocal paths worsened model fit and were removed from the model. All other paths were moderated. Although, this was an exploratory hypothesis it was expected that ethnic differences might emerge in directional relations based on differences observed in the means scores for depressive symptoms and victimization.

Fit Indices

After applying FIML to correct for missing data, the fit indices for the bi-directional model using 4 groups (ethnicity as the grouping factor) was $X^2(1, N= 2016) = 724.271, p < .01$, CFI = .943, TLI = .945, RMSEA = .059, 90% CI = .054 -.064. Fit indices indicated that this model was considered ‘borderline’ good fit for the data as evidenced by a CFI less than .95 (Byrne, 2008) and a RMSEA slightly greater than .05. Although the X^2 was significant, in studies with large sample sizes, such as this one, it was expected to be significant and is not a good indicator of fit or reason to reject the model.

Construct Stability

The first set of paths tested the stability patterns of each individual construct from 6th to 8th grade. For example, does earlier depression predict subsequent depression and does earlier victimization predict later victimization? All stability paths were significant at $p < .01$.



Depressive Symptoms Stability

Stability estimates were significant and similar for all ethnic groups within each time lag. Looking between semesters, stability estimates for depressive symptoms were highest from the

fall to spring of 6th grade ($\beta = .62, p < .01$). Thereafter, estimates were within a similar range ($\beta = .48 - .58, p < .01$). Subsequently, estimates slightly decreased, with the exception of the spring of 6th to the fall of 7th grade. One-year lag stability paths followed a similar pattern. See Table 3.5 for complete results.

Victimization Stability

All stability path estimates for victimization were significant and similar across ethnic groups within each time lag. The lowest stability estimate between semesters was from the fall to spring of 6th grade ($\beta = .24 - .25, p < .01$). Subsequently, stability increased and leveled out ($\beta = .36 - .50, p < .01$). One-year lag paths were significant for all ethnic groups with the lowest stability from the fall of 6th to the fall of 7th grade ($\beta = .08, p < .01$), followed by a notable increase in all other one-year paths. See Table 3.5 for complete results.

Table 3.5: Construct Stability by Ethnicity

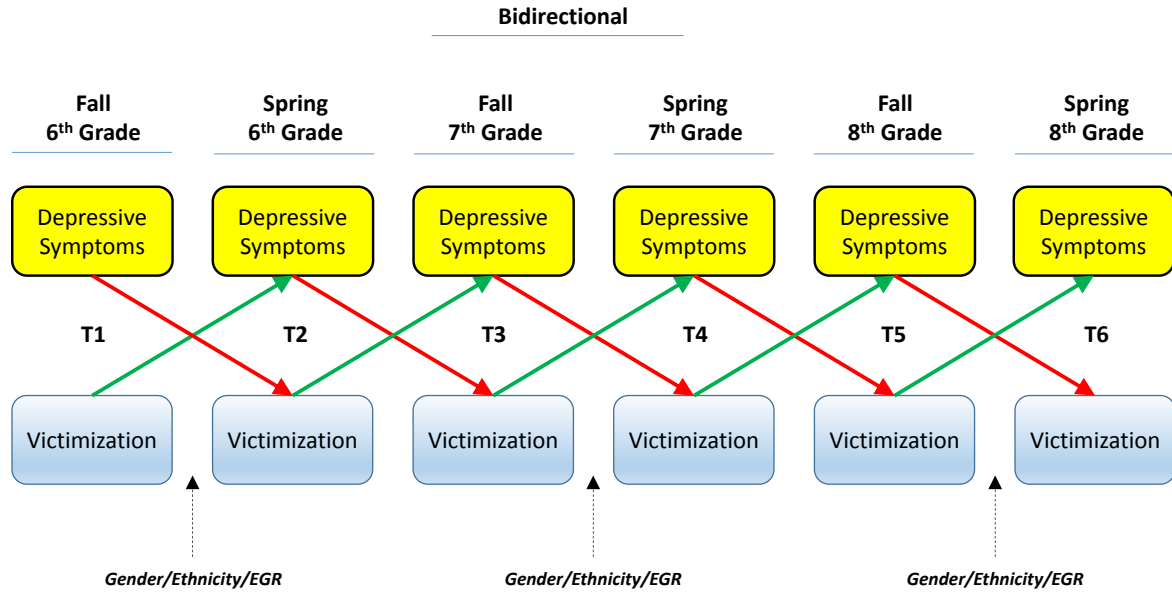
Stability	Victimization				Depressive Symptoms			
	African-American	Asian	White	Latino	African-American	Asian	White	Latino
	β	β	β	β	β	β	β	β
Semester Stability Paths								
6th fall → 6th spring	.24**	.25**	.25**	.25**	.62**	.62**	.62**	.62**
6th spring → 7th fall	.50**	.47**	.49**	.48**	.48**	.48**	.48**	.48**
7th fall → 7th spring	.35**	.36**	.36**	.36**	.56**	.56**	.58**	.56**
7th spring to 8th fall	.45**	.46**	.45**	.45**	.52**	.53**	.51**	.53**
8th fall → 8th spring	.46**	.47**	.46**	.47**	.56**	.56**	.58**	.56**
One-Year Stability Paths								
6th fall → 7th fall	.08**	.08**	.08**	.08**	.26**	.23**	.22**	.22**
7th fall → 8th fall	.27**	.28**	.28**	.28**	.23**	.24**	.24**	.24**
6th spring → 7th spring	.29**	.28**	.29**	.29**	.11**	.11**	.11**	.10**
7th spring → 8th spring	.28**	.29**	.28**	.28**	.23**	.23**	.23**	.23**

p < .05*, p < .01**

Bidirectional Cross-Lag Paths

The second path of the ethnicity model tested the bidirectional hypotheses which examined the temporal sequence between peer victimization and depression for all between semester/one- lag paths (i.e., fall 6th to spring of 6th). In this longitudinal analysis the bidirectional cross-lagged paths were also tested for the moderating influence of ethnicity. Paths were only tested between semesters and not across one- year lags as these paths worsened the fit of the model. In the between semester analyses, each pathway will test whether depressive symptoms assessed at each time point (T1, T2, T3, T4, T5) predicts subsequent victimization (T2, T3, T4 T5, T6) respectively, controlling for the effects of victimization at the prior

assessment. The same analysis will be conducted to examine if peer victimization predicts depressive symptoms in the same manner.



Victimization → Depressive Symptoms Paths

Peer victimization significantly predicted depressive symptoms for Latino students, but not for any other ethnic group. In Latino students, victimization had a significant, but small effect on depressive symptoms in 6th and 7th grade. For every 1 unit increase in victimization in the fall of 6th, spring of 6th, and fall of 7th grade there were corresponding increases in depressive symptoms for Latino students of .07, .04, and .07 in the spring of 6th, fall of 7th, and spring of 7th, respectively. However, from the spring of 7th grade through 8th grade, victimization did not significantly predict depressive symptoms for Latino students. See Table 3.6 for complete results.

Table 3.6: Bi-directional Cross-lag Paths: Depressive symptoms by Ethnicity

Path: Victimization → Depressive Symptoms

	African-American			Asian			White			Latino		
	B	SE	β	B	SE	β	B	SE	β	B	SE	β
Semester Cross-Lag Paths												
6 th fall → 6 th spring	.03	.02	.03	.02	.03	.01	.06	.03	.04	.07	.02	.05*
6 th spring → 7 th fall	.01	.03	.01	.01	.04	.02	.02	.05	.04	.04	.02	.06*
7 th fall → 7 th spring	.03	.03	.04	.05	.04	.07	-.03	.05	-.04	.07	.02	.08**
7 th spring → 8 th fall	.02	.03	.03	.00	.05	.00	.06	.05	.07	.01	.02	.01
8 th fall → 8 th spring	.02	.03	.03	.03	.04	.04	-.05	.05	-.07	.02	.02	.02
One-Year Stability Paths												
6 th spring → 7 th spring	x	x	x	x	x	x	x	x	x	x	x	x
7 th spring → 8 th spring	x	x	x	x	x	x	x	x	x	x	x	x

p < .05*, p < .01**

Depressive Symptoms → Victimization Paths

In the second directional path, depressive symptoms were a significant predictor of victimization for all ethnic groups but the magnitude and continuity of the association varied over the course of middle school. See table 3.7 for complete results.

For African-American students depressive symptoms were a significant predictor of victimization in four of the five time lags (between semesters) measured over the course of middle school. The highest magnitude was in 6th grade ($\beta = .32, B = .47, SE = .03, p < .00$): for every 1 unit increase in depressive symptoms there was a .47 increase in victimization scores, followed by a decrease in 7th and 8th grades. Looking at differences between ethnic groups, African-American students were only significantly different from Asian students in 6th grade.

In Asian students, depressive symptoms were a significant predictor of victimization in three of the five time lags, with the highest magnitude also in 6th grade ($\beta = .21, B = .29, SE = .05, p < .01$): for every 1 unit increase in depressive symptoms there was a .29 increase in victimization scores. Subsequently, there was a steady decrease through the end of 7th grade. Asian students did not have a significant path from depressive symptoms to victimization in the spring of 7th through the end of 8th grade. Asian students were significantly different from African-American students in 6th grade and Latino students in 7th grade.

For White students, depressive symptoms were a significant predictor of victimization in two of the five time lags, with the strongest association between variables in 6th grade ($\beta = .24, B = .34, SE = .06, p < .01$): for every 1 unit increase in depressive symptoms there was a .34 increase in victimization scores. White students did not have significant paths from depressive symptoms

to victimization in 7th or 8th grades. White students were not significantly different from other ethnic groups.

In Latino students, depressive symptoms were also a significant predictor of victimization in four of the five time lags, with the highest magnitude between variables in 6th grade ($\beta = .29$, $B = .41$, $SE = .03$, $p < .01$): for every 1 unit increase in depressive symptoms there was a .41 increase in victimization scores, followed by an overall decrease in victimization scores thereafter.

Latino students did not have a significant path from depressive symptoms to victimization in 8th grade. Latino students were found to be significantly different only from Asian students in 7th grade.

Table 3.7: Bi-directional Cross-lag Paths: Victimization by Ethnicity

Path: Depressive symptoms → Victimization

	African-American			Asian			White			Latino		
	B	SE	β	B	SE	β	B	SE	β	B	SE	β
Semester Cross-Lag Paths												
6th fall → 6th spring	.47	.03	.32**	.29	.05	.21**	.34	.06	.24**	.41	.03	.29**
6th spring → 7th fall	.08	.04	.06	.25	.05	.18**	.05	.06	.04	.17	.03	.12**
7th fall → 7th spring	.19	.04	.14**	.18	.05	.13*	.01	.05	.01	.10	.03	.08*
7th spring → 8th fall	.17	.04	.14**	.07	.05	.06	.15	.05	.12*	.13	.02	.11**
8th fall → 8th spring	.13	.04	.11*	.02	.05	.02	.05	.05	.04	.01	.03	.01
One-Year Stability Paths												
6th spring → 7th spring	x	x	x	x	x	x	x	x	x	x	x	x
7th spring → 8th spring	x	x	x	x	x	x	x	x	x	x	x	x

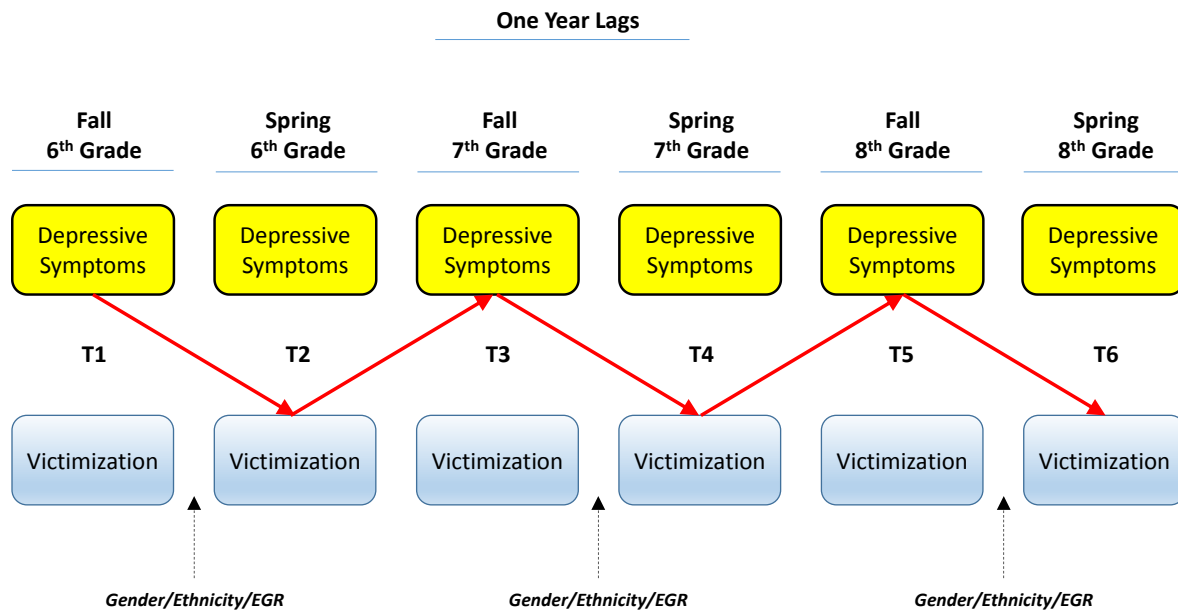
p < .05*, p < .01**

Reciprocal Associations (Indirect Effects):

In the third set of pathways added to the model, the reciprocal hypothesis was tested to examine if peer victimization and depressive symptoms were reciprocally associated across time. Did they transact and potentially build over the course of middle school and were they moderated by ethnicity? Reciprocal pathways were examined across one-, two-, and three-year time lags. For instance, the one-year lagged reciprocal pathway examined the indirect effects of depressive symptoms at Time 1 (fall 6th), on depressive symptoms at Time 3 (fall 7th) mediated by peer victimization at Time 2 (spring 6th). Likewise, the same analysis was conducted to examine the indirect effects of peer victimization at Time 1 (fall 6th) on peer victimization at Time 3 (fall 7th) mediated by depressive symptoms at Time 2 (spring 6th). Reciprocal associations across two-year time lags were tested from the spring of each year to the following spring (i.e., does victimization in 6th spring predict increases in depressive symptoms in 7th spring and does that subsequently predict further increases in victimization in 8th spring?). The same analysis was conducted for the opposing direction, examining depressive symptoms -> victimization -> depressive symptoms pathway. Three- year lag reciprocal pathways examined all six time points continuously in each direction. Although this was an exploratory hypothesis, it was expected that depression and peer victimization would transact over time, revealing a reciprocal process and feedback mechanism. Further it was anticipated that findings would vary by ethnicity.

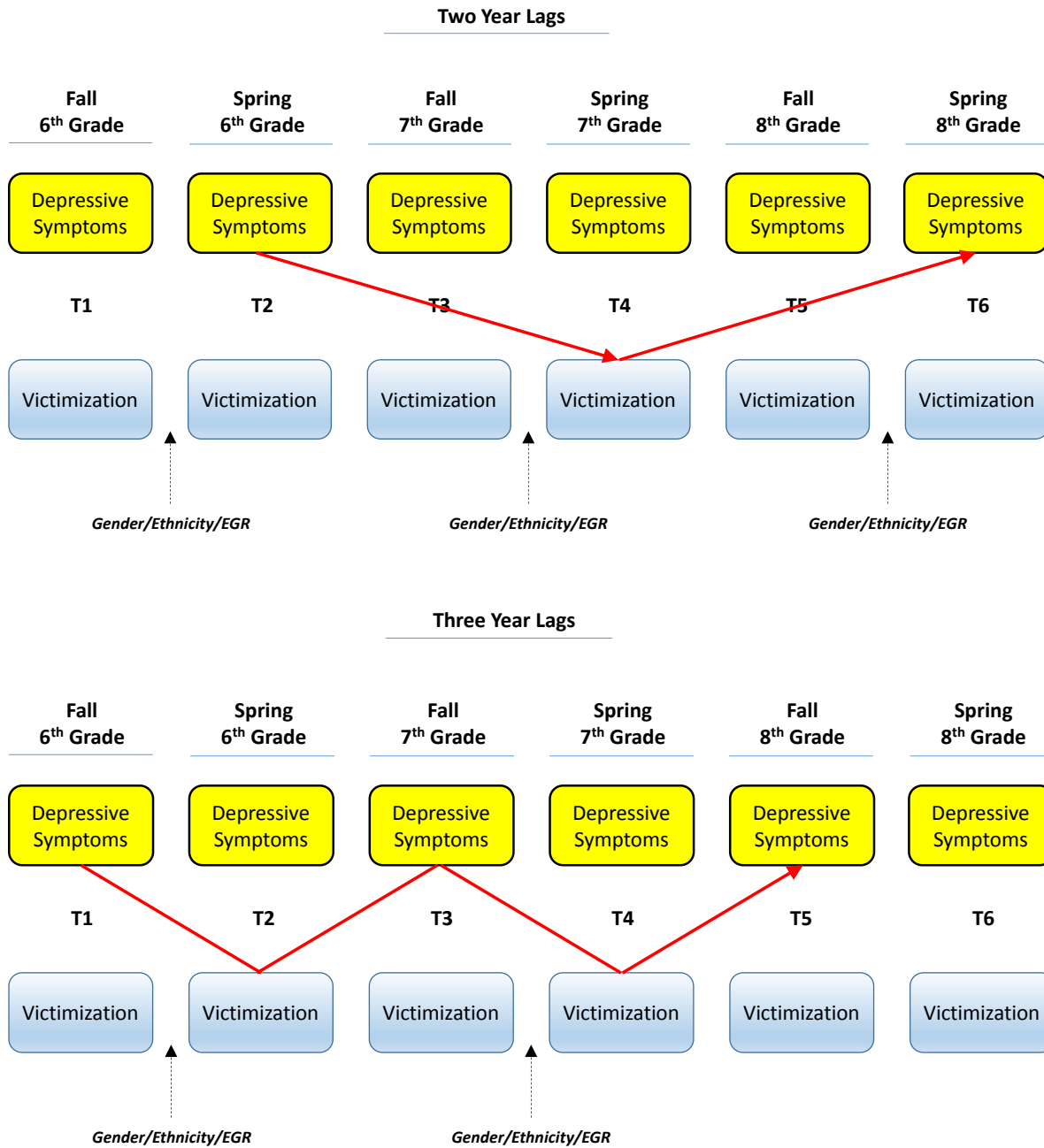
Depressive symptoms → Victimization → Depressive symptoms

One-Year Lag Paths



Reciprocal paths were only significant for Latino students for whom there was a small indirect effect of depressive symptoms in the fall of 6th grade on depressive symptoms in the fall of 7th grade mediated by victimization in the spring of 6th grade ($B = .02, SE = .01, p < .05$). See Table 3.8 for complete results.

Two- and Three- Year Lag (Indirect Effects)



Two- year paths were found to worsen the fit of the model in either direction and were removed from the analyses. In the three-year lag path there was no observed effect of a

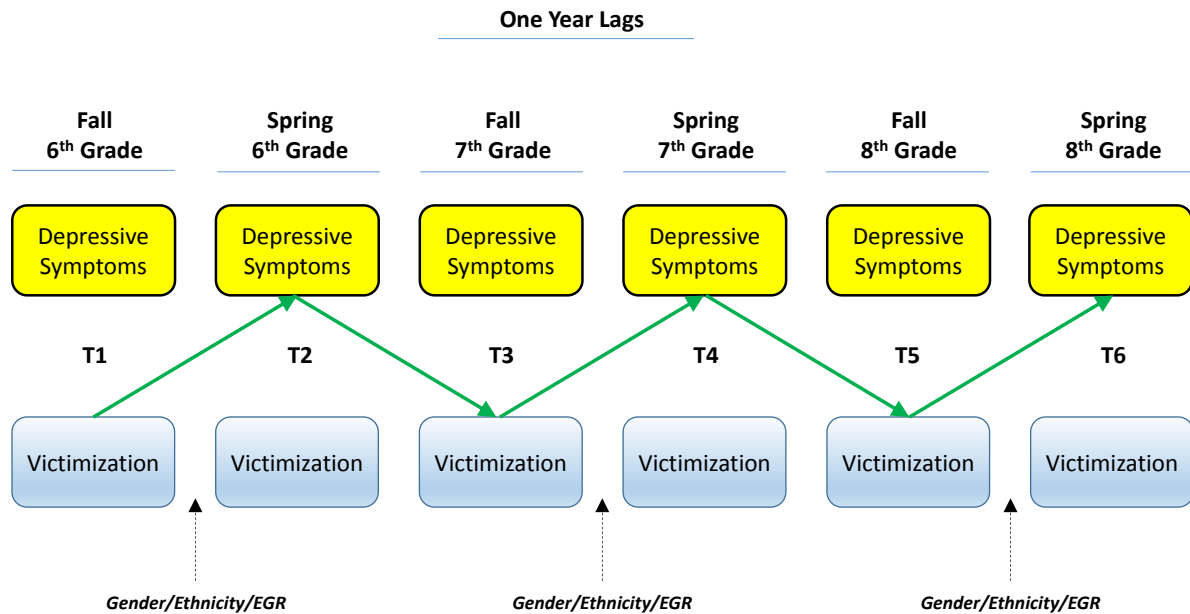
continuous reciprocal association beginning with the fall of 6th grade and ending with the fall of 8th grade for any ethnic groups for either temporal sequence.

Table 3.8: Reciprocal Paths: Indirect Effects of Victimization by Ethnicity

Path: Depressive Symptoms -> Victimization -> Depressive Symptoms									
	African-American		Asian		White		Latino		
	B	SE	B	SE	B	SE	B	SE	
One-Year Cross-Lags									
6 th fall → 6 th spring → 7 th fall	.00	.01	.00	.01	.01	.01	.02*	.01	
7 th fall → spring 7 th → fall 8 th	.00	.00	.00	.01	.00	.00	.00	.00	
Two-Year Cross-Lags									
6 th spring → 7 th spring → 8 th spring	x	x	x	x	x	x	x	x	
Three-Year Cross-Lags									
6 th fall → 6 th spring → 7 th fall → 7 th spring → 8 th fall	.00	.00	1.09	.00	3.77	.00	.00	.00	

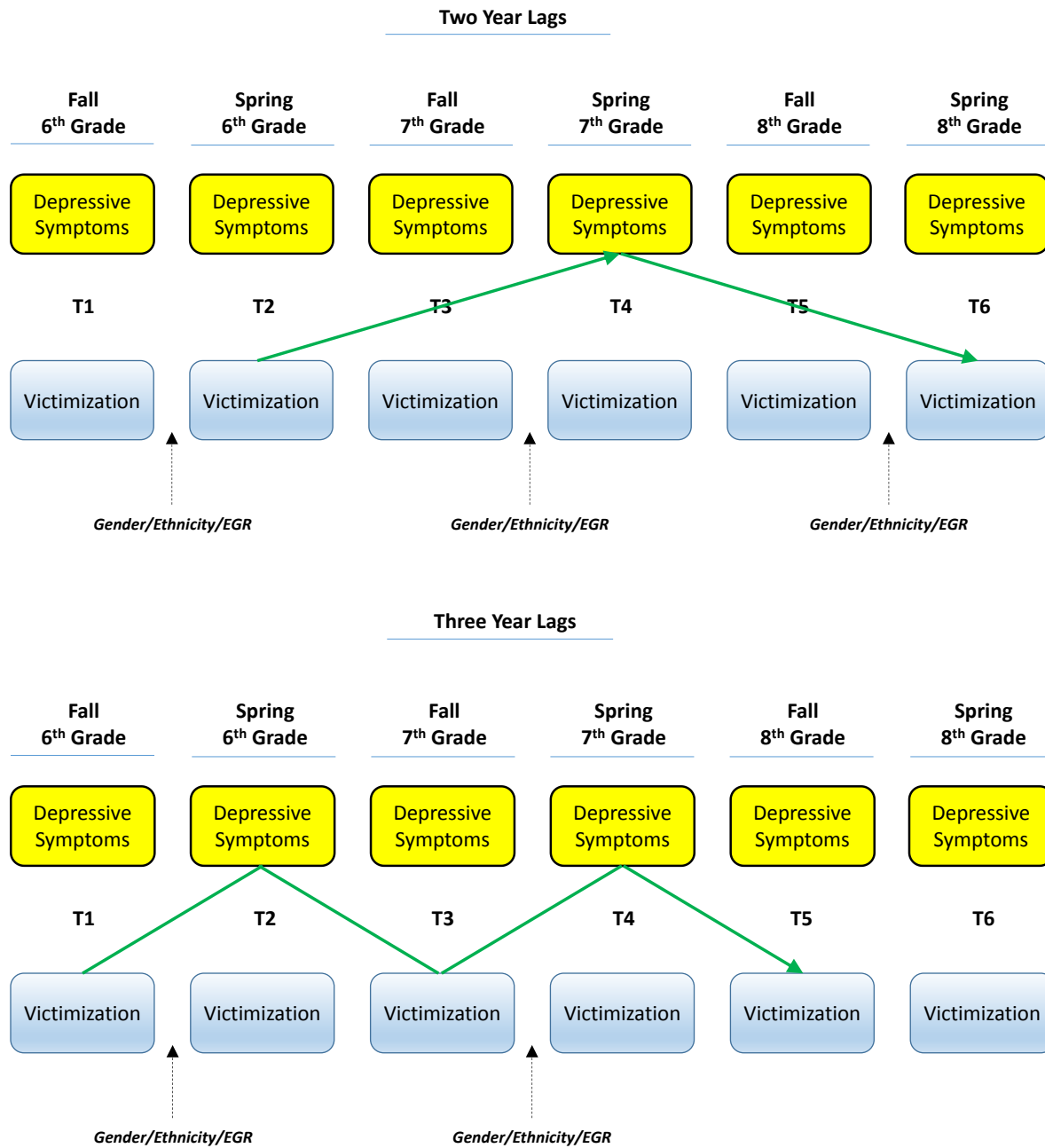
p < .05*, p < .01**

Victimization → Depressive symptoms → Victimization



There was a borderline indirect effect of victimization in the fall of 6th grade on victimization in the fall of 7th grade, mediated by depressive symptoms in the spring of 6th grade for Latino students. See Table 3.9 for complete results.

Two- and Three- Year Lag (Indirect Effects)



Two- year paths were found to worsen the fit of the model in either direction and were removed from the analyses. In the three-year lag path there was no observed effect of a continuous reciprocal association beginning with the fall of 6th grade and ending with the fall of 8th grade for any ethnic group for either temporal sequence. See Table 3.9 for complete results.

Table 3.9: Reciprocal Paths: Indirect Effects of Depressive Symptoms by Ethnicity

Path: Victimization -> Depressive symptoms -> Victimization								
	African-American		Asian		White		Latino	
	B	SE	B	SE	B	SE	B	SE
One Year Cross-Lags								
6 th fall → 6 th spring → 7 th fall	.00	.00	.00	.01	.00	.00	.01*	.01
7 th fall → spring 7 th → fall 8 th	.01	.00	.00	.00	-.00	.01	.01*	.00
Two-Year Cross-Lags								
6 th spring → 7 th spring → 8 th spring	x	x	x	x	x	x	x	x
Three-Year Cross-Lags								
6 th fall → 6 th spring → 7 th fall → 7 th spring → 8 th fall	.00	.00	.00	.00	-.00	.00	.00	.00

p <.05*, p <.01**

Model 2: Summary of Ethnicity Findings

In summary, stability estimates for depressive symptoms were comparatively higher than victimization and no differences were found by ethnicity. In 6th grade, stability estimates were highest for depressive symptoms and lowest for victimization. Testing the bidirectional paths, depressive symptoms predicted victimization in all ethnic groups, but most consistently for African-American and Latino students (4/5 time lags) and least consistently in White students (2/5 time lags). Depressive symptoms predicted victimization highest in 6th grade for all ethnic

groups. Conversely, in 8th grade, depressive symptoms predicted victimization only in African-American students. Within time comparisons showed few ethnic differences, but findings were not consistent across time. In the opposing directional path, victimization was a predictor of depressive symptoms only in Latino students between 6th and 7th grades. There was also evidence of a small reciprocal transaction in Latino students between 6th to 7th grade in both directions tested (depressive symptoms -> victimization -> depressive symptoms & victimization -> depressive symptoms – victimization).

Model 3: Ethnic Group Representation (EGR)

In the third model, the moderating role of ethnic group representation was tested to examine the hypothesis that students with a higher percent same ethnicity score would have a stronger victimization to depressive symptoms association than students who did not.

Fit Indices

After applying FIML to correct for missing data, the fit indices for the bi-directional model using 4 groups were $X^2(1, N= 2016) = 22031.212, p<.01, CFI = .278, TLI = .023, RMSEA = .296, 90\% CI = .000 - .000$. Fit indices indicated that the model was a poor fit for the data as evidenced by a CFI and TLI less than .95 (Byrne, 2008) and a RMSEA greater than .05. Based on the poor fit of the model further analyses were not conducted.

Discussion

Middle school represents a critical period of development associated with increased vulnerability to depressive symptoms and peer victimization. However, the temporal ordering and how these two interact has not been precisely understood. The goal of this study was to deconstruct the directional and transactional relations between peer victimization and depressive symptoms in a large population of ethnically diverse students over the duration of middle school, and measure the largely untested influence of gender and ethnic group membership on this relationship.

Four findings emerged from this study. First, both peer victimization scores and depressive symptoms were found to be relatively stable over the course of middle school, with depressive symptoms demonstrating greater stability than victimization. Consistent with many other studies, girls were more likely than boys to report depressive symptoms and, in general, boys were more likely to be victimized. Second, in testing the temporal sequence between victimization and depressive symptoms, in contrast to many studies, depressive symptoms were found to precede victimization, as opposed to victimization leading to depressive symptoms. Gender was also found to moderate this association. Depressive symptoms were a strong predictor of victimization for both boys and girls – but of a higher magnitude for boys. Conversely, victimization did not predict depressive symptoms in boys and had a small effect in girls.

Third, ethnicity was found to moderate the association between victimization and depressive symptoms. Depressive symptoms predicted victimization for all ethnic groups but did so most consistently in African-American and Latino students. These groups were also more

likely to report persistent depressive symptoms. In the opposing temporal sequence, victimization predicted depressive symptoms only for Latino students. Fourth, there was evidence of a transactional association or feedback mechanism between depressive symptoms and victimization. This feedback mechanism revealed that in girls, the stability in depressive symptoms, between 6th and 7th grade, was partially explained by the intermediary influence of victimization. For Latino students, the same transactional association was observed and also in the opposing direction (victimization->depression -> victimization) from 6th to 7th grade and 7th to 8th grade.

Stability of Victimization and Depressive Symptoms

A strong body of evidence suggests that the stability of peer victimization may play an important role in the development and magnitude of adjustment problems (Juvonen, Nishina, & Graham, 2000; Kochenderfer & Ladd, 1996; Kochenderfer-Ladd & Wardrop, 2001; Scholte, Engels, Overbeck, deKemp, & Haselager, 2007). Although most studies have generally shown instability in victimization over time, in this study, victimization was found to be moderately stable throughout middle school – including the time between school years, a less studied interval in stability research. For example, victimization stability was higher between Spring of 6th grade and Fall of 7th grade, than it was during the 7th grade school year. Even with the substantial gap between school years, the effects of victimization remain moderately strong and unremitting during what are mostly non-school months, and stability is higher than during the following school year. This finding is important because it suggests that students fail to experience relief from victimization over the summer months which may also play an important role in psychosocial recovery and subsequent adjustment. Similarly, depressive symptoms were

found to be moderately stable throughout middle school, which further validates findings of previous research.

Depressive symptoms and victimization both peaked in the fall of 6th grade. This finding suggests that the transition into middle school is a particularly critical period when students are especially vulnerable to the effects of victimization and depressive symptoms. These two phenomena increase youth's vulnerability to other negative effects such as school disengagement, poor academic performance, and worsening of other mental health issues. Providing additional support to students transitioning into middle school could help to alleviate stress, identify high- risk students in need of targeted intervention, and prevent negative outcomes.

Overall, results demonstrated the importance of the timing and duration of victimization in efforts to understand its risks and long-term effects. Only by pinpointing these specifics can we design the most effective interventions.

Temporal Directionality between Victimization and Depressive Symptoms

This study is unique in going beyond the large body of research that has simply examined victimization as an antecedent to depression. While a smaller cadre of studies has examined depression as a risk factor for victimization, this research aimed to tease out the possible subtle interplay between these phenomena.

By employing structural equation modeling, competing theories and moderators were simultaneously tested to precisely assess temporal directionality in various groups. Thus, I was able to arbitrate directional effects and show with greater specificity that boys, girls, and all

ethnic groups that reported depressive symptoms were at risk of subsequent victimization more so than victimization was predictive of depressive symptoms. This effect held true throughout most of middle school. By pinpointing the directionality, I was able to identify students experiencing depressive symptoms as a subgroup who may be particularly vulnerable to subsequent victimization. Although some small effects in the opposing direction from victimization to depressive symptoms were evident in girls and Latino students, testing both directions simultaneously allowed me to clarify the greater predictive impact of depressive symptoms. These findings contribute significantly to a body of literature that has been inconsistent and at times contradictory in terms of this temporal directionality. The majority of studies have begun with the premise that peer relational difficulties led to psychosocial maladjustment, such as depressive symptoms, rather than considering that behaviors associated with depressive symptoms might make some students vulnerable for peer abuse.

Thus, the results of testing competing bidirectional hypotheses show support for what some have called a “symptoms-driven theory” (Kochel-Ladd, 2012), that adolescents who have internalizing problems may be more vulnerable to victimization than their peers who do not exhibit behaviors associated with depression, such as social withdrawal or passivity.

Particularly for boys, the present findings suggest that psychological distress precedes rather than follows victimization and may be a risk factor for peer victimization. This temporal relationship is strong and consistent throughout middle school. Previous studies have noted that boys who express depressive symptoms may be perceived as passive, or stand out by not conforming to rigid gender stereotypes, behaviors that may render them easy marks (Kochel, Ladd & Rudolph, 2012; Sweeting, Young, West & Der, 2006; Young & Sweeting, 2004).

Many previous studies have focused on a broad band of internalizing problems rather than depressive symptoms. Others have established that narrow-band depressive symptoms have a particularly strong cross-sectional relationship with peer victimization (Hawker and Boulton, 2001; Rejnities, 2006). Since different processes have been shown to be associated with different narrow-band internalizing dimensions, research specifically focusing on depressive symptoms is important (Tran, 2012). By focusing specifically on depressive symptoms, I was able to clarify the risk depressive symptoms carry for victimization. This finding has important implications for intervention.

This study also extended previous research by testing the directionality of depressive symptoms and victimization longitudinally over three years in middle school. Prior longitudinal research has only examined durations of a year or two, rather than the important developmental period represented by the course of middle school. Only this type of extensive longitudinal data can allow us to clarify the temporal ordering of constructs and illuminate the reciprocal/transactional relationships. Prior to this study, there have been no definitive findings for a transactional association between depressive symptoms and victimization over time.

Thus, this study provides new insights on the temporal dynamics by showing that measuring these relationships at multiple time points can further elucidate how these two phenomena impact each other and transact over time. For instance, when measured from one semester to the next, depressive symptoms were a strong predictor of victimization for both boys and girls. But when examined from one year to the next, victimization became a mediating factor for girls and Latino students, but not for non-Latino students or boys. This feedback mechanism that emerges for girls (and Latino students) implies that, victimization serves as a

spring board rather than an end point. Without looking closely at the associations of timing, gender, and ethnicity over the entire course of middle school, these more nuanced and subtle interactions may not have been detected.

Thus this study demonstrates evidence of a reciprocal transaction across time that has not been shown in previous studies - that when victimization and depressive symptoms both persist over time, they have cumulative effects, potentially contributing to the temporal stability of each, particularly in girls and Latino students. This accumulation of risk can lead to a “snowball effect,” in which depressive symptoms and victimization sustain one another. Enduring both is more psychologically taxing than experiencing either one in isolation. A student caught in this sort of feedback mechanism, experiencing depressive symptoms internally and victimization externally is likely to feel overwhelmed, hopeless, and isolated. This situation can only increase the risk of serious secondary consequences such as academic failure, and even suicidality. Parsing out these transactional processes is vital if we are to create interventions that can effectively disrupt these self-perpetuating cycles.

The current study also illuminates the effects of ethnicity on the directional relations between these two constructs and shows that depressive symptoms predict victimization in all ethnic groups more strongly than the opposing direction. No known prior studies have examined the specific effects of ethnicity in parsing out these directional relations. Although the magnitude and temporal sequence between depressive symptoms and victimization did not vary between ethnic groups, there were distinct differences in the continuity of this relationship over the course of middle school, with depressive symptoms strongly predicting victimization in 6th grade for all ethnic groups with findings diverging thereafter. For African-American and Latino

students, this relationship held true throughout most of middle school, whereas for White and Asian students the association was intermittently significant in 6th and 7th grades. Thus, it is conceivable that African-American and Latino students constitute higher risk groups for ongoing victimization because they also have higher levels of depressive symptoms. This research is distinctive for not only elucidating how groups are different from one another, but also pinpointing when they are most different from one another.

Limitations and Directions for Future Research

In the future, the scope of this study could be expanded by delineating the types of victimization students experience and their relationship to depressive symptoms. Previous studies have shown significant differences in adjustment outcomes based on the type of victimization experienced, such as relational vs. physical.

This study also used a mono-method design in that all measures were self-report. This methodology may have inflated the inter-correlation between measures. Depressed students may be more sensitive to the normative social interplay of middle school student life, and so may perceive more victimization. Using both self- and peer report when measuring victimization could potentially highlight discrepancies between a student's perception of his/her own victimization and other students' perception. Studies have characterized some students who report high levels of victimization as "paranoids" and have shown that students who perceive themselves to be victims when their peers do not, tend to have worse psychosocial outcomes (Graham et al., 1998). Although, students' own perception of events tends to be the most predictive of their later adjustment, considering how the discrepancy between their perception

and their peers factors into and influences adjustment can have important implications for designing effective interventions

This study focused on depressive symptoms because they have been most highly correlated with victimization when compared to other forms of maladjustment. Future studies may identify the critical threshold of depressive symptoms, the particular types of symptoms, or the external behaviors related to symptoms, that raise the likelihood of victimization or that may be involved in a feedback effect. For example, does submissive behavior amplify victimization risk for boys more so than for girls? Once identified, we can target specific risk factors or characteristics for early intervention. Also, because this study intentionally focused only on the predictive impact of depressive symptoms it did not measure or identify other explanatory mechanisms that may contribute to victimization. School context factors, such as the culture and policies regarding bullying may conceivably influence victimization and provide further insight into these findings.

Future research should also examine specific secondary outcomes linked to depressive symptoms and victimization, such as academic achievement, school safety, and absenteeism. Each of these is a negative outcome that has been linked individually to both victimization and depressive symptoms. Their collective impact, as suggested in this study, may have even stronger negative effects.

Implications for Intervention and Policy Recommendations

This study clearly demonstrates that contrary to the popular view that victimization is a precursor for mental health issues, such as depressive symptoms, depressive symptoms may serve as a risk factor for victimization. In our study, depressive symptoms were a strong and

consistent predictor of victimization for both genders, all ethnic groups, and across most time points measured over the course of middle school. Shifting the paradigm so that teachers and school mental health professionals regard depressive symptoms as a risk factor for victimization, might lead to earlier and more effective school-based interventions. Students with externalizing mental health issues often receive more attention because their behaviors pose a problem in the classroom. Training teachers to recognize the signs and symptoms of depression, and to distinguish them from typical middle school anxieties would be important in implementing early interventions. The goal of such interventions would be not only to reduce depressive symptoms but to build the sort of resilience and social competence that might also help students cope with victimization. As we disseminate these findings, we also have to be cautious to not cast students' depression- related behavior as the sole factor responsible for their victimization. Thus, findings such as these that illuminate distinctive characteristics of victims should not be misconstrued and result in "victim blaming."

The most effective interventions should focus on those specific time periods when students are most vulnerable, such as the start of 6th grade. Furthermore, these findings could lead to intervention programs tailored to student gender and ethnicity. For instance, for Latino students, incorporating Spanish language materials or culturally relevant references would enhance efforts.

By screening students at the start of 6th grade, we could identify those whose depressive symptoms increase their risk of subsequent maladjustment. The conventional wisdom might be to attribute higher depressive symptom scores at this time to the stress of transition, and to downplay their significance. The results presented here show instead that there is a subgroup of

students for whom depressive symptoms are persistent and unremitting, and that even at sub-clinical levels, can have serious consequences. Thus, a clinically “insignificant” number of depressive symptoms can still result in impairment and interfere with the normal process of development. If unaddressed, they may worsen over time, reaching clinical levels and turning into a full-blown depressive disorder (Tram & Cole, 2006). Thus, the goal of intervention should be to reduce depressive symptoms during this vulnerable early middle school period before they become intractable, or are complicated by the added stress of victimization.

Table 1.1. *Correlations between Variables*

Measure	1	2	3	4	5	6	7	8	9	10	11	12
1. Depressive Symptoms (T1)	-											
2. Depressive Symptoms (T2)	.620**	-										
3. Depressive Symptoms (T3)	.543**	.629**	-									
4. Depressive Symptoms (T4)	.418**	.492**	.650**	-								
5. Depressive Symptoms (T5)	.414**	.506**	.579**	.702**	-							
6. Depressive Symptoms (T6)	.409**	.469**	.548**	.634**	.726**	-						
7. Victimization (T1)	.244**	.180**	.160**	.174**	.142**	.121**	-					
8. Victimization (T2)	.338**	.381**	.301**	.272**	.229**	.234**	.311**	-				
9. Victimization (T3)	.289**	.306**	.407**	.325**	.259**	.230**	.260**	.560**	-			
10. Victimization (T4)	.264**	.291**	.323**	.374**	.301**	.255**	.207**	.511**	.549**	-		
11. Victimization (T5)	.283**	.325**	.358**	.378**	.392**	.348**	.260**	.528**	.554**	.625**	-	
12. Victimization (T6)	.243**	.287**	.314**	.324**	.307**	.359**	.224**	.490**	.480**	.558**	.666**	-

*The correlation is significant at * p< .05, ** p< .01 level.

Table 1.2. Means & Standard Deviations for Peer Victimization & Depressive Symptoms by Gender

	Boys (N=1026)	Girls (N=990)	Overall (N=2016)	
Measure	M (SD)	M (SD)	M (SD)	t(1, 1331-1725)
Time 1				
Victimization	2.17 (.72)	2.15 (.68)	2.16 (.70)	.01
Depressive Symptoms	.47 (.52)	.53** (.56)	.50 (.55)	3.56
Time 2				
Victimization	1.69** (1.26)	1.48 (1.19)	1.58 (1.22)	12.03*
Depressive Symptoms	.41 (.51)	.49** (.57)	.46 (.55)	9.18*
Time 3				
Victimization	1.42** (1.15)	1.25 (1.07)	1.33 (1.11)	11.19*
Depressive Symptoms	.35 (.46)	.50** (.57)	.43 (.53)	26.40*
Time 4				
Victimization	1.34** (1.08)	1.17 (1.03)	1.25 (1.06)	9.87*
Depressive Symptoms	.37 (.50)	.50** (.60)	.44 (.56)	17.67*
Time 5				
Victimization	1.28* (1.09)	1.10 (1.00)	1.18 (1.04)	9.91*
Depressive Symptoms	.35 (.48)	.53** (.62)	.45 (.57)	31.35*
Time 6				
Victimization	1.22* (1.07)	1.05 (.99)	1.13 (1.03)	13.29*
Depressive Symptoms	.35 (.47)	.55** (.62)	.46 (.57)	40.94*

*The mean difference is significant at * p< .05, ** p< .01 level.

*Range for the degree's of freedom varies due to the 25% rate of attrition within the overall sample.

Table 1.3. Means & Standard Deviations for Peer Victimization & Depressive Symptoms by Ethnicity

	AA N=577	Asian N=228	White N=212	Latino N=1003	Overall
	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	F (3, 1331-1725)
Time 1					
Victimization	2.19 ^B (.74)	2.05 ^A (.62)	2.09 ^{AB} (.65)	2.19) ^{AB} (.71)	3.48*
Depressive symptoms	.46 (.58)	.51 (.52)	.45 (.58)	.54 (.55)	2.01
Time 2					
Victimization	1.67 ^{BC} (1.27)	1.40 ^{AC} (1.10)	1.21 ^A (1.14)	1.67 ^B (1.24)	10.63*
Depressive symptoms	.40 ^B (.41)	.41 ^{AB} (.46)	.36 ^{AB} (.52)	.49 ^A (.55)	5.12*
Time 3					
Victimization	1.29 ^{AB} (1.14)	1.28 ^{AB} (.98)	1.10 ^B (1.06)	1.40 ^A (1.15)	4.22*
Depressive symptoms	.35 ^B (.40)	.40 ^{AB} (.46)	.40 ^{AB} (.54)	.47 ^A (.54)	5.32*
Time 4					
Victimization	1.28 ^{BC} (1.16)	1.30 ^{ABC} (1.04)	1.01 ^A (.89)	1.30 ^B (1.07)	4.41*
Depressive symptoms	.35 ^B (.49)	.45 ^{AB} (.53)	.36 ^{AB} (.52)	.48 ^A (.60)	5.17*
Time 5					
Victimization	1.12 (1.08)	1.18 (.93)	1.02 (.89)	1.24 (1.08)	2.57
Depressive symptoms	.37 ^B (.54)	.44 ^{AB} (.52)	.41 ^{AB} (.53)	.47 ^A (.59)	2.72*
Time 6					
Victimization	1.15 (1.09)	1.14 (.89)	1.03 (.95)	1.15 (1.06)	.66
Depressive symptoms	.41 (.56)	.47 (.51)	.37 (.47)	.47 (.56)	1.95

*Means sharing the same superscript are not significantly different from each other (Tukey's HSD, $p < .05$).

*Range for the degree's of freedom varies due to the 25% rate of attrition within the overall sample.

Figure 1.1: Mean Total Scores for Depressive Symptoms by Gender & Ethnicity across Middle School

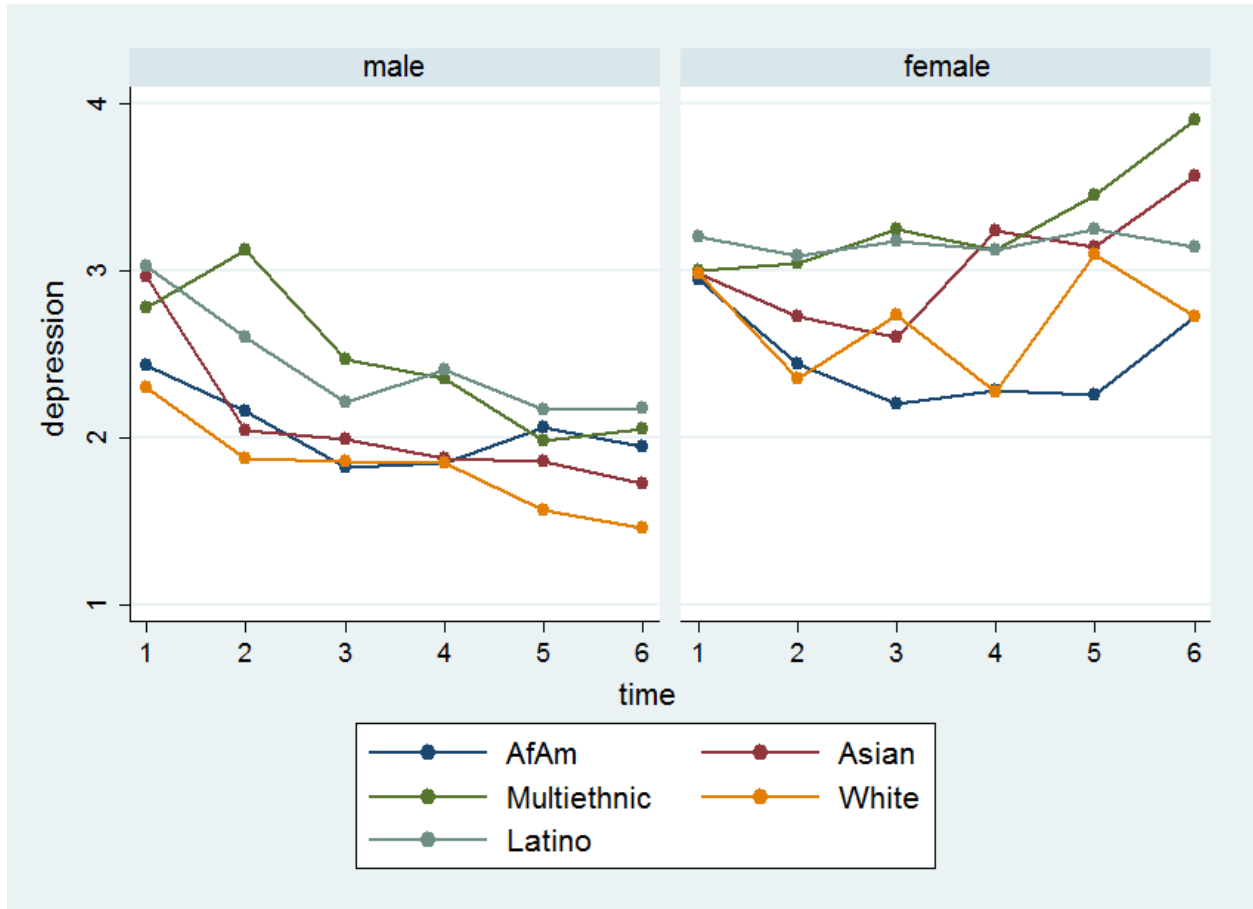


Figure 1.2: Mean Total Scores for Victimization by Gender & Ethnicity across Middle School

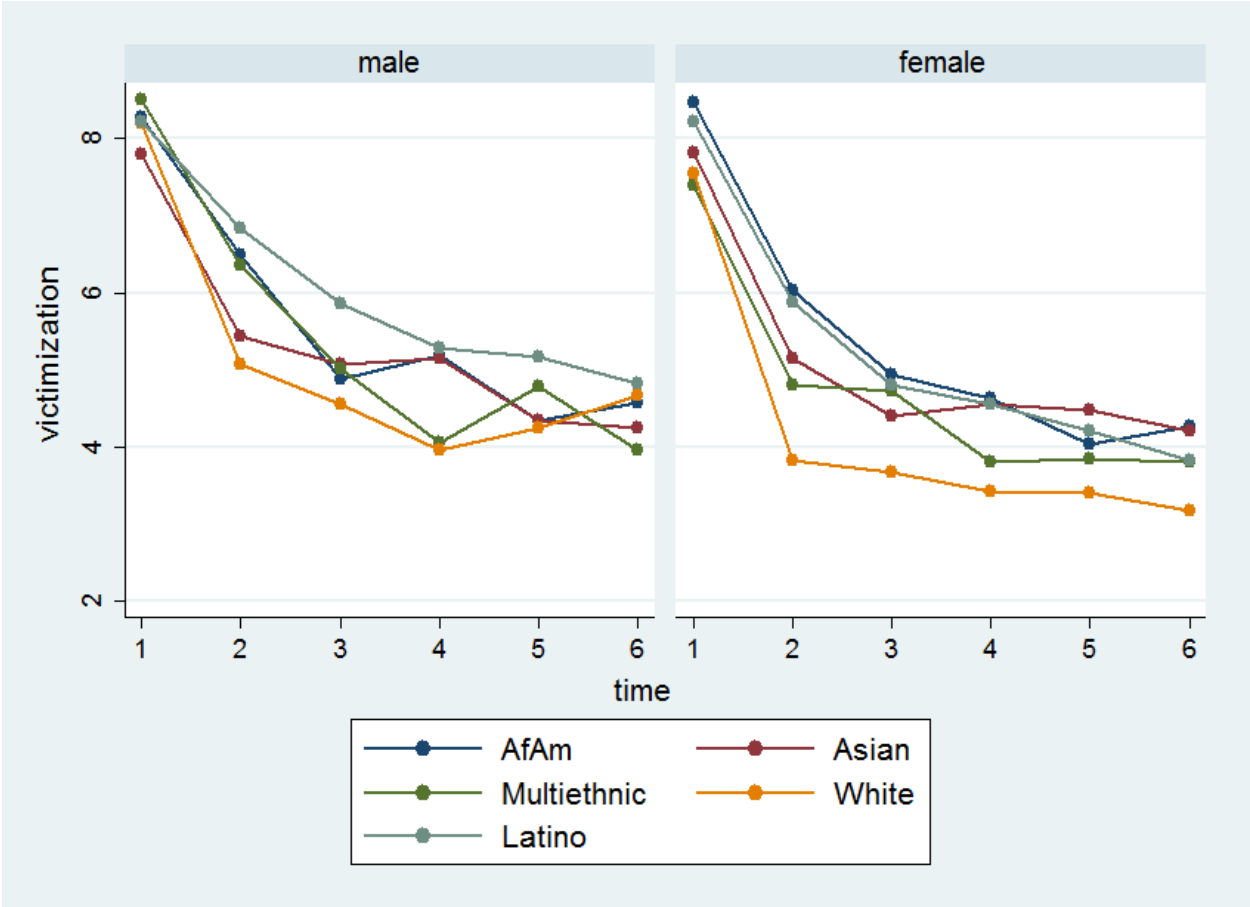


Table 2.1. *Fit Indices Testing Directional Relations between Peer Victimization and Depressive Symptoms*

	Fit Statistics			
	χ^2 , df	CFI	RMSEA	TLI
Model 1 (Gender)	377.993,2090	.967	.050	.958
Model 2 (Ethnicity)	724.271,2016	.943	.059	.945
Model 3 (Ethnic Group Representation)	22031.212, 2016	.278	.296	.023

Notes. CFI = Comparative Fit Index; RMSEA = Root Mean Square Error of Approximation; TLI = Tucker Lewis Index. All difference tests were significant at $p < .05$.

Figure 2.1. *Cross-Lagged Model of the Longitudinal Associations between Peer Victimization and Depressive Symptoms*

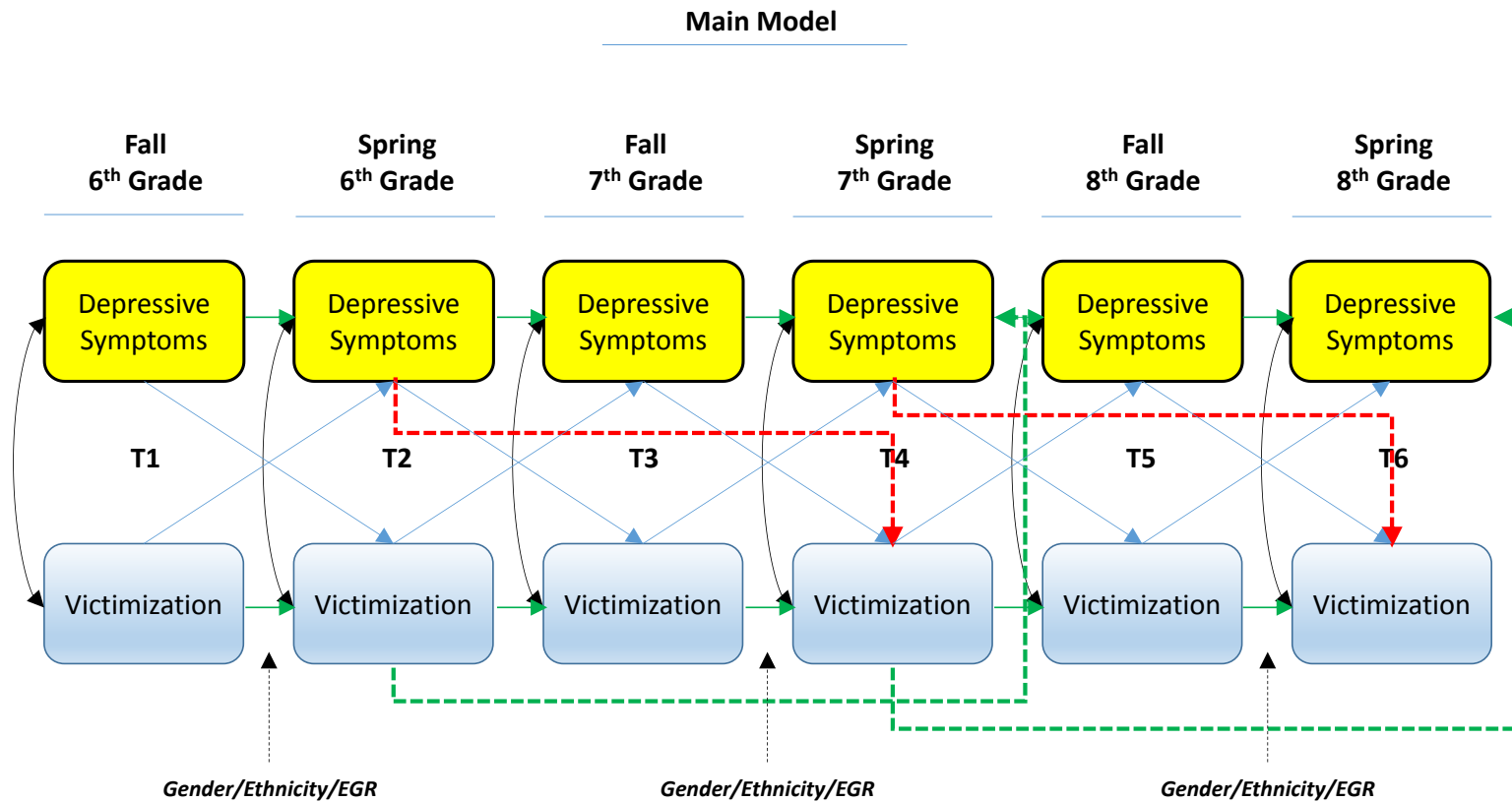


Table 3.1: *Construct Stability by Gender*

Stability	Victimization		Depressive Symptoms	
	Boys	Girls	Boys	Girls
	β	β	β	β
Semester Stability Paths				
6th fall to 6th spring	.24**	.25**	.62**	.62**
6th spring to 7th fall	.47**	.47**	.47**	.46**
7th fall to 7th spring	.35**	.34**	.54**	.54**
7th spring to 8th fall	.45**	.45**	.53**	.52**
8th fall to 8th spring	.46**	.47**	.54**	.54**
One -Year Stability Paths				
6th fall to 7th fall	.08**	.08**	.23**	.23**
7th fall to 8th fall	.27**	.27**	.23**	.23**
6th spring to 7th spring	.29**	.29**	.11**	.11**
7th spring to 8th spring	.26**	.26**	.25**	.25**

p < .05*, p < .01**

Table 3.2: *Bi-directional Cross-lag Paths: Depressive Symptoms by Gender*

Path: Victimization -> Depressive Symptoms						
	Boys			Girls		
	B	SE	β	B	SE	β
Semester Cross-Lag Paths						
6th fall → 6th spring	.03	.03	.02	.08	.02	.06*
6th spring → 7th fall	-.00	.02	-.01	.07	.02	.10**
7th fall → 7th spring	.02	.04	.04	.05	.03	.06
7th spring → 8th fall	-.00	.02	-.01	.05	.02	.07*
8th fall → 8th spring	.01	.04	.01	.07	.03	.09*
One-Year Cross-Lag Paths						
6th spring → 7th spring	.02	.04	.03	.04	.03	.06
7th spring → 8th spring	-.04	.04	-.05	-.03	.03	-.03

p <.05*, p < .01**

Table 3.3: Bi-directional Cross-lag Paths: Victimization by Gender

Path: Depressive symptoms → Victimization						
	Boys			Girls		
	B	SE	β	B	SE	β
Semester Cross-Lag Paths						
6th fall → 6th spring	.53	.03	.36**	.32	.03	.23**
6th spring → 7th fall	.26	.03	.19**	.09	.03	.07*
7th fall → 7th spring	.05	.03	.03	.14	.03	.11**
7th spring → 8th fall	.19	.03	.15**	.11	.02	.09**
8th fall → 8th spring	.02	.03	.02	.02	.02	.02
One-Year Cross-Lag Paths						
6th spring → 7th spring	.15	.06	.11*	-.02	.05	-.02
7th spring → 8th spring	.12	.05	.09*	.00	.04	.00

p < .05*, p < .01**

Table 3.4: *Reciprocal Paths: Indirect Effects by Gender*

Reciprocal Transaction Paths	Victimization -> Depression ->				Depression -> Victimization ->			
	Victimization				Depression			
	Boys		Girls		Boys		Girls	
	B	SE	B	SE	B	SE	B	SE
One-Year Cross Lags (Indirect Effects)								
6th fall → 6th spring → 7th fall	.01	.01	.01	.00	-.00	.01	.02**	.01
7th fall → 7th spring → 8th fall	.01	.01	.01	.00	-.00	.00	.01*	.00
Two-Year Cross Lags (Indirect Effects)								
6th spring → 7th spring → 8th spring	-.00	.00	-.00	.00	-.01	.00	.00	.00
Three-Year Cross Lags (Indirect Effects)								
6th fall → 6th spring → 7th fall → 7th spring → 8th fall	.00	.00	.00	.00	3.58	2.42	.00	.00

p <.05*, p < .01**

Table 3.5: *Construct Stability by Ethnicity*

Stability	Victimization				Depressive Symptoms			
Ethnic Group	African-American	Asian	White	Latino	African-American	Asian	White	Latino
	β	β	β	β	β	β	β	β
Semester Stability Paths								
6th fall → 6th spring	.24**	.25**	.25**	.25**	.62**	.62**	.62**	.62**
6th spring → 7th fall	.50**	.47**	.49**	.48**	.48**	.48**	.48**	.48**
7th fall → 7th spring	.35**	.36**	.36**	.36**	.56**	.56**	.58**	.56**
7th spring to 8th fall	.45**	.46**	.45**	.45**	.52**	.53**	.51**	.53**
8th fall → 8th spring	.46**	.47**	.46**	.47**	.56**	.56**	.58**	.56**
One-Year Stability Paths								
6th fall → 7th fall	.08**	.08**	.08**	.08**	.26**	.23**	.22**	.22**
7th fall → 8th fall	.27**	.28**	.28**	.28**	.23**	.24**	.24**	.24**
6th spring → 7th spring	.29**	.28**	.29**	.29**	.11**	.11**	.11**	.10**
7th spring → 8th spring	.28**	.29**	.28**	.28**	.23**	.23**	.23**	.23**

p < .05*, p < .01**

Table 3.6: Bi-directional Cross-lag Paths: Depressive symptoms by Ethnicity

Path: Victimization → Depressive Symptom												
	African-American			Asian			White			Latino		
	B	SE	β	B	SE	β	B	SE	β	B	SE	β
Semester Cross-Lag Paths												
6 th fall → 6 th spring	.03	.02	.03	.02	.03	.01	.06	.03	.04	.07	.02	.05*
6 th spring → 7 th fall	.01	.03	.01	.01	.04	.02	.02	.05	.04	.04	.02	.06*
7 th fall → 7 th spring	.03	.03	.04	.05	.04	.07	-.03	.05	-.04	.07	.02	.08**
7 th spring → 8 th fall	.02	.03	.03	.00	.05	.00	.06	.05	.07	.01	.02	.01
8 th fall → 8 th spring	.02	.03	.03	.03	.04	.04	-.05	.05	-.07	.02	.02	.02
One-Year Cross-Lag Paths												
6 th spring → 7 th spring	x	x	x	x	x	x	x	x	x	x	x	x
7 th spring → 8 th spring	x	x	x	x	x	x	x	x	x	x	x	x

p < .05*, p < .01**

Table 3.7: Bi-directional Cross-lag Paths: Victimization by Ethnicity

Path: Depressive symptoms -> Victimization												
	African-American			Asian			White			Latino		
	B	SE	β	B	SE	β	B	SE	β	B	SE	β
Semester Cross-Lag Paths												
6th fall → 6th spring	.47	.03	.32**	.29	.05	.21**	.34	.06	.24**	.41	.03	.29**
6th spring → 7th fall	.08	.04	.06	.25	.05	.18**	.05	.06	.04	.17	.03	.12**
7th fall → 7th spring	.19	.04	.14**	.18	.05	.13*	.01	.05	.01	.10	.03	.08*
7th spring → 8th fall	.17	.04	.14**	.07	.05	.06	.15	.05	.12*	.13	.02	.11**
8th fall → 8th spring	.13	.04	.11*	.02	.05	.02	.05	.05	.04	.01	.03	.01
One-Year Cross-Lag Paths												
6th spring → 7th spring	x	x	x	x	x	x	x	x	x	x	x	x
7th spring → 8th spring	x	x	x	x	x	x	x	x	x	x	x	x

p < .05*, p < .01**

Table 3.8: *Reciprocal Paths: Indirect Effects of Victimization by Ethnicity*

Path: Depressive Symptoms -> Victimization -> Depressive Symptoms								
	African-American		Asian		White		Latino	
	B	SE	B	SE	B	SE	B	SE
One-Year Cross-Lags								
6 th fall → 6 th spring → 7 th fall	.00	.01	.00	.01	.01	.01	.02*	.01
7 th fall → spring 7 th → fall 8th	.00	.00	.00	.01	.00	.00	.00	.00
Two-Year Cross-Lags								
6 th spring → 7 th spring → 8 th spring	X	x	x	x	x	x	x	x
Three-Year Cross-Lags								
6 th fall → 6 th spring → 7 th fall → 7 th spring → 8 th fall	.00	.00	1.09	.00	3.77	.00	.00	.00

p < .05*, p < .01**

Table 3.9: *Reciprocal Paths: Indirect Effects of Depressive Symptoms by Ethnicity*

Path: Victimization -> Depressive symptoms -> Victimization									
	African-American		Asian		White		Latino		
	B	SE	B	SE	B	SE	B	SE	
One Year Cross-Lags									
6 th fall → 6 th spring → 7 th fall	.00	.00	.00	.01	.00	.00	.01*	.01	
7 th fall → spring 7 th → fall 8th	.01	.00	.00	.00	-.00	.01	.01*	.00	
Two-Year Cross-Lags									
6 th spring → 7 th spring → 8 th spring	x	x	x	x	x	x	x	x	
Three-Year Cross-Lags									
6 th fall → 6 th spring → 7 th fall → 7 th spring → 8 th fall	.00	.00	.00	.00	-.00	.00	.00	.00	

p <.05*, p <.01**

Table 4.1: *Attrition at each Wave by Ethnicity*

	AA N=577	Asian N=228	White N=212	Latino N=1003
Time 1	31%	21%	28%	21%
Time 2	25%	20%	19%	20%
Time 3	39%	21%	28%	21%
Time 4	45%	18%	25%	27%
Time 5	49%	20%	30%	29%
Time 6	51%	21%	33%	30%

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