Dynamic Changes in Peer Victimization and Adjustment across Middle School: Does Friends' Victimization Alleviate Distress?

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Abstract

Although some adolescents are chronically bullied throughout middle school, others may only experience peer victimization temporarily. This study examined the effects of time-invariant (average level) and time-varying (year-to-year) victimization experiences across middle school on adolescents' depressive symptoms, somatic complaints, and self-blame. A key question was whether friends' victimization buffered students from their victimization-related distress. The diverse sample (n=5,991) was surveyed four times between 6th and 8th grade (M_{age} at 6th grade=11.54 years). Three-level multilevel models revealed both time-invariant and time-varying effects of victimization on adjustment, but these maladaptive associations were attenuated when adolescents' friends experienced more victimization across middle school. The results suggest that even temporarily victimized youth may have unmet mental health needs, and sharing social plight with friends can protect victims.

Keywords

peer victimization; friendship; self-blame

Although adolescents who encounter chronic peer victimization across middle school are at high risk for adjustment problems (Nylund, Bellmore, Nishina, & Graham, 2007), many youth experience victimization only periodically during their schooling years (e.g., Kochenderfer-Ladd & Waldrop, 2001; Sheppard, Giletta, & Prinstein, 2016). Thus, it is important to understand both how cumulative exposure to victimization over time, as well as relative increases or decreases in such social experiences from year to year, relate to adolescents' adjustment difficulties. To gain further insights into the robustness of victimization-adjustment links across multiple time points, it is also critical to consider whether bullied youth affiliate with friends who have had similar experiences at school. Social comparisons become increasingly common during the adolescent years (Ruble et al., 2004); however, whether it serves youth well or poorly to affiliate with friends who have experienced similar peer mistreatment remains unclear. The current study is designed to examine peer victimization as a dynamic social experience over time, the meaning of which varies depending on whether adolescents' friends have also been bullied during middle

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school. Below, we first discuss the two conceptual and methodological approaches for studying victimization that guide the current study before turning to the study's central focus on the effects of friends' victimization.

Nomothetic and Idiographic Approaches to Studying Peer Victimization

The dominant framework for studying the negative impact of peer victimization among adolescents has been a *nomothetic approach*, wherein the focus is on individual differences. Compared to students who experience little or no peer mistreatment, youth who encounter repeated victimization experiences over time (i.e., chronic victims) are at higher risk for multiple negative outcomes (e.g., Bradshaw, Waasdorp, & O'Brennan, 2013; Ladd, Ettekal, & Kochenderfer-Ladd, 2017; Nylund et al., 2007). For example, longitudinal studies provide robust evidence for associations between peer victimization and subsequent emotional distress (e.g., depressive symptoms; Reijntjes et al., 2010), physical health problems (e.g., somatic complaints; Nishina, Juvonen, & Witkow, 2005), and maladaptive internal attributions for victimization (e.g., characterological self-blame; Graham & Juvonen, 1998). Thus, a nomothetic approach reveals important information about the (mal)adjustment of youth experiencing more victimization compared to their peers.

Given that peer victimization is only moderately stable across adolescence (see Pouwels, Souren, Lansu, & Cillessen, 2016 for review), these negative social experiences may "come and go" rather unsystematically across time for many youth (Hoover, Oliver, & Hazler, 1992). As such, in addition to making comparisons across individuals (Abela & Hankin, 2009), it is equally important to consider adolescents' experiences of victimization from an *idiographic* perspective (Zeiders, Umana-Taylor, Updegraff, & Jahromi, 2015). Idiographic frameworks consider how relative increases or decreases in an individual's *own* levels of social stress shapes his or her adjustment. Studies within this framework have found that high school students report more depressive symptoms and anxiety during years when they also experience more victimization (Leadbeater, Thompson, & Sukhawathanakul, 2014), and 6th grade students experience greater anxiety and humiliation on school days that they are victimized (Nishina & Juvonen, 2005). Thus, relative, or temporal, changes in youth's victimization experiences can also have a significant impact on their emotional well-being, at least over the course of the high school years or on a day-to-day basis during middle school. However, to our knowledge, no studies have simultaneously considered how average levels of victimization (*time-invariant* effects) and relative changes in victimization from year to year (*time-varying* effects) independently contribute to adolescents' emotional problems, physical complaints, and maladaptive attributions across the three years of middle school. Combining nomothetic and idiographic frameworks to disentangle time-invariant and time-varying effects of peer victimization on psychological distress is valuable, insofar as it provides insight into different developmental questions—one concerning individual differences in victimization and adjustment and the other concerning within-person changes in victimization and adjustment.

Peer Victimization Experienced by Friends

During middle school, students' psychological adjustment is likely to be shaped not only by their own overall and time-varying levels of peer victimization, but also by the social experiences of their close friends (Bagwell & Schmidt, 2011; Schwartz, Hopmeyer Gorman, Dodge, Pettit, & Bates, 2008). Indeed, the early adolescent years are characterized by increased time spent with friends, who comprise a proximal social reference group impacting how adolescents come to make sense of their own experiences (Berndt, 1992). On one hand, friends who are themselves targeted by peers may not be able to provide the same types of social provisions as friends that are socially well-adjusted (Prinstein & Giletta, 2016). However, having friends who encounter similar negative social experiences may also offer adaptive social comparisons, helping youth realize that they are not the only ones targeted by peers (Brendgen et al., 2013). Such an understanding, in turn, might then alleviate victimization-related distress.

A few studies have examined the impact of friends' victimization on the adjustment of adolescents who are victimized by peers. Based on the findings, there are competing hypotheses about risks and protection. According to *emotional contagion* hypotheses (Brendgen et al., 2013; Dishion & Tipsord, 2011), having victimized friends amplifies feelings of vulnerability among youth experiencing victimization themselves. Indeed, there is evidence that adolescents are at increased risk for continued mistreatment over time if their friends are also more victimized (e.g., Echols & Graham, 2016; Sentse, Dijkstra, Salmivalli, & Cillessen, 2013), and bullied youth who engage in more negative, problem-focused discussions with their best friends experience worse internalizing symptoms (Guarneri-White, Jensen-Campbell, & Knack, 2015). These findings suggest that links between peer victimization and adjustment problems are particularly pronounced for students affiliating with friends who are similarly mistreated by peers.

However, evidence also suggests that friendships with bullied peers offer protection for peer victimized youth by promoting adaptive social comparisons (e.g., not just me), referred to herein as the *shared plight* hypothesis (Brendgen et al., 2013; Taylor, Buunk, & Aspinwall, 1990). For example, Brendgen et al. (2013) found that higher levels of victimization among children's friends buffered links between self-perceived victimization and concurrent depressive symptoms. Indirect support for this notion also comes from studies showing that students in schools or classrooms where victimization is more common are less likely to experience victimization-related distress (Bellmore, Witkow, Graham, & Juvonen, 2004; Huitsing, Veenstra, Sainio, & Salmivalli, 2012). One potential explanation proposed in the past studies of friend victimization is that youth are less likely to blame themselves for being targeted when they see that others are also mistreated. That is, sharing social plight with friends could challenge maladaptive self-blame (e.g., "there's something wrong with *me*"), just as being in a school with less bullying buffers links between victimization and characterological self-blame (Schacter & Juvonen, 2015). However, the hypothesis that friends' victimization may mitigate maladaptive attributions has yet to be directly tested.

Past research on friends' social experiences as it relates to the adjustment of victimized youth is predominantly guided by a nomothetic approach. That is, individual differences in

peer victimization-related adjustment are moderated by friends' average level of victimization. Thus, several questions remain. One question is whether time-varying fluctuations in friends' victimization, in addition to average friends' victimization across middle school, might contribute to adolescents' own victimization-related adjustment in any given school year. Moreover, it is unclear if friends' experiences of peer mistreatment might also moderate the emotional effects of relative changes in peer mistreatment (i.e., not only time-invariant) across multiple school years. Examining how adolescents' friends' victimization (typical or changing level) uniquely contribute to their own average and time-varying well-being can answer vital questions about the impact of friends' social experiences over time (Rulison et al., 2010). However, we are not aware of any studies that have examined both time-invariant and time-varying peer victimization effects simultaneously for self and friends.

The Present Study

The current study is guided by both theoretical (Abela & Hankin, 2009) and methodological (Curran & Bauer, 2011) frameworks positing the importance of studying individual differences (nomothetic) and within-person changes (idiographic) in social experiences across development. Moreover, assuming that friends provide valuable social comparison information, we examined the effects of friends' victimization experiences as potential moderators of distress associated with peer mistreatment. Before examining the friend effects, we tested whether both time-invariant and time-varying peer victimization were related to depressive symptoms, somatic complaints, and characterological self-blame. We presumed that both individual differences (average victimization across middle school) as well as temporal changes (relative increases) in victimization experiences across three years are related to increased depression, somatic complaints, and self-blame. Our main goal was then to reconcile inconsistent findings from past research suggesting that victimized friends can be both detrimental (emotional contagion hypothesis) and protective (shared plight hypothesis). Specifically, we investigated whether friends' average victimization across middle school buffers or intensifies the adjustment difficulties of youth experiencing a) more victimization than peers across middle school and b) more victimization than usual during any given school year. These questions consider how *typically* affiliating with victimized friends in middle school impacts adolescents' average and time-varying victimization-related adjustment. Additionally, we tested whether time-varying victimization of friends (i.e., relatively higher or lower levels of friends' victimization during any given year) moderates any of the time-varying effects of victimization on adjustment. Together these analyses provide important developmental insight into how adolescents' friendship contexts (typical and changing) contribute to their own victimization-related distress. By focusing on characterological self-blame as one of the outcomes, we were also able to directly test the shared plight hypothesis—that students blame themselves less for being victimized if their friends have also been mistreated by peers.

We focus here on the three years of middle school that are critical in shaping adolescents' subsequent psychological well-being. Studying these patterns during middle school is developmentally significant insofar as this is a time when bullying tends to increase in prevalence (Pellegrini & Long, 2002) and when adolescents' experiences of peer

victimization oftentimes change from year to year (Ryoo, Wang, & Swearer, 2015). Relying on multiple sources of data (self- and friend-reported victimization), four time points, a large ethnically diverse sample, and statistical methods that take into account the nested structure of the data and control for time-related change in adjustment, the study provides a strong methodological examination of victimization and friends' victimization effects across middle school. Additionally, by including multiple indicators of well-being (i.e., depressive symptoms, somatic complaints, self-blame), we capture the breadth of psychological, physical, and social cognitive outcomes that may be impacted by peer victimization.

Method

Participants

The current study includes 5,991 adolescents (52% female) who were part of a large, longitudinal study of adolescent development across the middle school years. Students were recruited in three consecutive yearly cohorts, such that data collection in middle schools began in 2009 and concluded in 2014. The sample was recruited from 26 urban public schools in California that systematically varied in their ethnic composition. All school districts provided permission to conduct the study, and during 6th grade recruitment all students and families received informed consent and informational letters. Parental consent rates averaged 81.4% and student assent rates averaged 83.1% across the schools. Only students who turned in signed parental consent and provided written assent participated (n=5,991). The number of participating students in each school ranged from 78 to 445 (M=281.57, SD=111.68).

Based on self-reported ethnicity in the Fall of 6th grade, the sample was 32% Latino/a, 20% Caucasian/White, 13% East/Southeast Asian, 14% Multiethnic/Biracial, 12% African American/Black, 3% Filipino/Pacific Islander, 2% Middle Eastern, 2% South Asian, and 2% other. Participants also came from families ranging in socioeconomic status as indicated by parental level of education (18% less than high school, 13% high school education or GED, 29% some college, 22% college degree, 19% graduate degree). The present study relies on data collected across four distinct time points: Fall of 6th grade, Spring of 6th grade, Spring of 7th grade, and Spring of 8th grade. Based on available victimization data (central predictor of interest), participation rates were 91% (6th grade fall), 91% (6th grade spring), 82% (7th grade spring), and 75% (8th grade spring), with 99% of the original sample providing victimization data at least once across the four waves. The lowest participation rate (i.e., in 8th grade) is comparable to other longitudinal studies among ethnically diverse students in urban school settings (Nylund et al., 2007; Seidman, Allen, Amber, & Mitchell, et al., 1994). There was additional missing data on two outcomes due to the study's planned missing design, which is discussed in more detail below (see Analytic Plan).

Procedure

Students were informed about confidentiality and reminded that participation was voluntary prior to participation. They received cash or gift certificate compensation ($5 in the Fall and Spring of 6th grade and $10 in the Spring of 7th grade and 8th grade) after participation.

Researchers read most items aloud as students followed along and completed the written questionnaires within a classroom setting.

Measures

Students' self-perceptions of victimization and their friends' self-perceptions of victimization were assessed at all four waves and each were considered as both time-varying (Level 1) and time-invariant (cross-time average; Level 2) predictors. Sex and ethnicity were included as time-invariant demographic covariates at Level 2, as was school diversity at Level 3. Three measures of adjustment difficulties were used as outcomes: depressive symptoms, somatic complaints, and characterological self-blame. Somatic complaints and characterological self-blame were assessed at all four waves of data collection, and depressive symptoms were assessed at three waves (all except Spring of 6th grade).

Peer victimization—Perceptions of peer victimization were measured using items based on an instrument (Neary & Joseph, 1994) designed to reduce social desirability effects (Harter, 1982). Consistent with the rationale laid out in a recent longitudinal study by Ladd and colleagues (2017), we rely on self-reports, as opposed to peer reports, of victimization in order to a) capture students' relative level of victimization, rather than peer consensus, b) increase consistency of reporting source across multiple time points, and c) avoid the influence of students' reputational biases among peers, which is likely to be stable in adolescence (Pouwels et al., 2016). For each item, students read two statements separated by the word "but" and were asked first to choose one of these options (e.g., some kids are not called bad names by other kids but other kids are often called bad names by other kids). After selecting one statement, students rated if it was "really true" or "sort of true," such that each item was rated on a 4-point scale (from 1 to 4). Three items that were included at all four waves of data collection were averaged to compute a victimization score for each student at each time point (α_{W1}=.72; α_{W2}=.75; α_{W3}= .74; α_{W4}=.73). The items asked about being called names, being the target of gossip, and being pushed around by others. In addition to this time-varying victimization variable, a time-invariant victimization score was computed by taking the mean victimization score of a student across the four waves (M=1.95, SD=.64).

Friends' victimization—Using an unlimited nomination procedure, students listed the names of their good friends in their grade at school at each wave of data collection. We rely on all given nominations for the analyses. Although a focus on reciprocal friendships may provide a stricter criterion for friendship, adolescents' outgoing nominations are meaningful to the nominator (Furman, 1996) and perceived friends may be just as, if not more, influential as reciprocal ones (Vitaro, Boivin, & Bukowski, 2009; Echols & Graham, 2016). Across the four waves of data collection, approximately 70% of the total friends nominated were also participants in the study, which should yield good reliability (Marks, Babcock, Cillessen, & Crick, 2013). On average, students nominated 3 friends each wave who were also participants (i.e., provided victimization data; M=3.07, SD=1.17). To capture time-varying friends' victimization, at each wave we calculated the average victimization scores reported by the nominated friends. In addition, a time-invariant friends' victimization score was computed for each participant by averaging their friends' victimization scores across the

four waves (M=1.93, SD=.42). This measure captures the characteristics (i.e., average victimization level) of students' full friendship network over the course of three years. We do not consider stability of friendships from year to year in light of evidence that there is often stability in the characteristics of friends over time (Dishion et al., 1997), even when the friends change.

Demographic control variables—At the beginning of 6th grade, students self-reported their sex and ethnicity. These were both included as time-invariant predictors. Sex was represented as a dichotomous variable with boys as the reference group (boys=0, girls=1). Ethnicity was represented by four separate dichotomous dummy codes (African American, Asian, White, Other), such that Latino students, as the largest ethnic group in the sample, served as the reference group.

School-level ethnic diversity—Given its known associations with victimization (more diversity related to less victimization; Juvonen, Nishina, & Graham, 2006; Juvonen, Kogachi & Graham, 2017) and the ethnic diversity of the sample, school-level diversity was controlled for in the main analyses. Simpson's index (Simpson, 1949) was computed for each of the 26 schools in 6th grade as an indicator of diversity. This proportion score with scores ranging from 0 to 1 indicates the likelihood of two randomly drawn students from a given school being from different ethnic groups. Because scores did not substantially change within schools from year to year, diversity was treated as a time-invariant covariate.

Depressive symptoms—An adapted version of the Center for Epidemiologic Studies Depression Scale (CES-D; Radloff, 1977) was used to assess depressive symptoms (e.g., "I felt depressed," "I felt sad," "My sleep was restless"). Depressive symptoms was the only outcome assessed at only three, rather than four, waves of data collection: Fall of 6th grade (Wave 1), Spring of 7th grade (Wave 3), and Spring of 8th grade (Wave 4). Participants were asked how often they had experienced each item in the past week. A 4-point scale was used (1=*rarely or none of the time* to 4=*almost all the time*). Eight items that students completed at all three waves of data collection were averaged into a composite at each wave, such that higher scores indicated greater depressive symptoms (α_{W1}=.80; α_{W3}=.82; α_{W4}=.85).

Somatic complaints—At each wave, participants rated how many times in the past 2 weeks they had experienced 5 somatic symptoms (e.g., headaches, poor appetite, sleep problems, upset stomach). Each symptom was rated on a 4-point scale (1 = *not at all* to 4 = *almost every day*). The symptoms included here were adapted from the larger list used in the National Longitudinal Study of Adolescent Health (Add Health; Resnick et al., 1997; Udry & Bearman, 1998). Ratings were summed and averaged at each wave (α_{W1}=.73; α_{W2}=.75; α_{W3}=.75; α_{W4}=.77).

Characterological self-blame—Attributions for victimization experiences were assessed through vignettes; students responded to a different hypothetical victimization incident at each time point (see Graham & Juvonen, 1998). For example, in the Fall of 6th grade, students were presented with a scenario in which another student trips them in the lunch line, causing their food to spill all over their clothes, and all the other students in line to start laughing at them. For each of the scenarios, students rated on a 5-point scale (1=*Definitely*

would not think to 5=*Definitely would think*) how much they agreed with 17 statements assessing different types of causal attributions. Here we specifically focused on six items capturing characterological self-blame (e.g., "more likely to happen to me than to other kids"; "know this will happen to me again"). At each wave, the six items were averaged into a composite, with higher scores indicating greater characterological self-blame (α_{W1}=.79; α_{W2}=.80; α_{W3}=.83; α_{W4}=.84).

Analytic Plan

The data were analyzed using three-level multilevel modeling (MLM) in MPlus 7.31 (Muthén & Muthén, 1998-2016), with repeated measures (Level 1) nested within students (Level 2) who were nested within schools (Level 3). We first examined three-level unconditional means models (i.e., no predictors) and calculated the intraclass correlation coefficient (ICC) for the time-varying victimization and friends' victimization predictors and the three outcomes. The next set of main effects models were tested to determine whether both individual differences and time-varying fluctuations in victimization related to students' adjustment outcomes across middle school. Each outcome was tested as a function time-varying victimization ($Vict_{tij}$) at Level 1 and its cross-time mean (i.e., time-invariant effect; $\overline{Vict}_{ij}$) at Level 2. All models also controlled for time-related change (t_{tij}) at Level 1, sex (Sex_{ij}) and ethnicity ($Eth1-4_{ij}$) at Level 2, and school diversity (Div_j) at Level 3.

To test the moderating role of friends' victimization, the final set of models added the time-varying effect of friends' victimization ($FrVict_{tij}$) at Level 1, its cross-time mean (i.e., time-invariant effect; $\overline{FrVict}_{ij}$) at Level 2, and three two-way interaction terms. Specifically, we examined: 1) time-varying victimization X time-varying friends' victimization (γ_{12}), 2) time-varying victimization X time-invariant friends' victimization (γ_{13}), and 3) time-invariant victimization X time-invariant friends' victimization (γ_{14}). An equation representing a prototypical final model is presented below.

$$Y_{tij} = \gamma_0 + \gamma_1 t_{tij} + \gamma_2 Vict_{tij} + \gamma_3 \overline{Vict}_{ij} + \gamma_4 Sex_{ij} + \gamma_5 Eth1_{ij} + \gamma_6 Eth2_{ij} + \gamma_7 Eth3_{ij} + \gamma_8 Eth4_{ij} + \gamma_9 Div_j$$
$$+ \gamma_{10} FrVict_{tij} + \gamma_{11} \overline{FrVict}_{ij} + \gamma_{12}(Vict_{tij})(FrVict_{tij}) + \gamma_{13}(Vict_{tij})(\overline{FrVict}_{ij}) + \gamma_{14}(\overline{Vict}_{ij})(\overline{FrVict}_{ij}) + u_{0j}$$
$$+ r_{0ij} + \varepsilon_{tij}$$

In all models, time (i.e., wave of data collection) was expressed as the number of waves since the start of the study. To capture the time-varying effects of victimization ($Vict_{tij}$) and friends' victimization ($FrVict_{tij}$) at Level 1, we used within-person centering (Singer & Willet, 2003), also known as group-mean centering. For example, each student's yearly victimization scores were expressed as deviations from his or her overall average victimization score, such that a positive value indicates that a student's victimization was higher than his or her average victimization level, whereas a negative value indicates that a student's victimization was lower than his or her average victimization level. Time-invariant victimization ($\overline{Vict}_{ij}$) and friends' victimization ($\overline{FrVict}_{ij}$) were grand-mean centered at Level 2. By group-mean centering Level 1 victimization and friends' victimization and

including their cross-time means at Level 2, we ensured that time-varying effects captured purely within-student variability, whereas the time-invariant effects captured purely between-student variability. Sex and ethnicity variables were dummy coded, such that the reference group for sex was boys, and the reference group for ethnicity was Latino (largest ethnic group in the study).

There were missing data on the analysis variables largely due to students transferring to other schools or because they were absent on multiple data collection days. To maximize data collection efficiency and reduce participant burden, the study also implemented a planned missing design (Graham, Taylor, Olchowski, & Cumsille, 2006). In the spring of 6th, 7th, and 8th grade (Waves 2-4), participants were randomly chosen to complete one of three questionnaires, each of which excluded a different set of measures. In the current analyses, depressive symptoms and somatic complaints were part of the planned missing design. Additionally, depressive symptoms were not assessed at all in the Spring of 6th grade (Wave 2).

The missing data were handled using full information maximum likelihood (FIML) estimation in Mplus version 7.31 (Muthén & Muthén, 1998-2016). The robust standard error option (MLR) was used to correct for non-normality. By treating all observed predictors as single-item latent variables, FIML estimation allows each individual to contribute whatever data they have to the likelihood function. Methodologists currently regard maximum likelihood estimation as a state-of-the-art missing data technique because it improves the accuracy and the power of the analyses relative to other missing data handling methods (Schafer & Graham, 2002).

Results

Below we first present descriptive analyses, reviewing bivariate correlations between victimization, friends' victimization, and the three adjustment outcomes across the four time points of the study. Results from multilevel models are then described in several steps. First, we discuss findings from unconditional means models for each outcome. We then present the results from a main effects model separately for each outcome, followed by the results from final models with interaction effects separately for each outcome.

Stability Correlations

Appendix A shows bivariate correlations between victimization, friends' victimization, and adjustment difficulties across the four study time points (three for depressive symptoms). There was moderate stability in victimization from the Fall to Spring of 6th grade (r=.451, p<.001), Spring of 6th grade to Spring of 7th grade (r=.475, p<.001), and Spring of 7th grade to Spring of 8th grade (r=.467, p<.001). Victimization at the beginning middle school was also related to victimization at the end of middle school (r=.335, p<.001). These correlations suggest that although students victimized at one time point were more likely to be victimized at other time points, there was also variability in victimization across time. Friends' victimization was also somewhat stable across consecutive waves, with correlations ranging from .276 to .325 (ps<.001). Correlations between students' own victimization and their friends' victimization at each wave ranged from .147 to .217 and, similarly, students'

own and their friends' time-invariant victimization were correlated at .284 (p<.001). These relatively weak correlations suggest that including both terms in our main models should not bias the results (e.g., issues of multicollinearity). Finally, there was moderate stability in the adjustment outcomes across consecutive school years, with correlations ranging from .487 to .536 (ps<.001).

Multilevel Models

Appendix B depicts the results of unconditional means models for the main time-varying predictors and the three different adjustment outcomes, including variance estimates at all three levels of analysis and corresponding ICCs at the student and school level. The ICC for victimization at the student level was .379 and at the school level was .044, indicating that almost 60% of the variation in victimization was within students. This further corroborates the idea that victimization exhibits considerable within-person variability and highlights the need to account for both its time-invariant and time-varying effects in the analyses. The ICC statistics also indicated substantial variation at both Level 1 (within students) and Level 2 (between-students) for all adjustment outcomes. There was considerably less variability in victimization and the adjustment outcomes at Level 3 (<.05), indicating that the majority of variance in these variables was within or between students, rather than between schools.

Main effects models—As shown in Table 1, there were several differences in adjustment difficulties based on time-invariant demographic and school factors. Compared to boys, girls experienced greater depressive symptoms, somatic complaints, and characterological self-blame. In terms of ethnic differences, compared to Latino students, White students experienced greater depressive symptoms, and both White and African American students reported more somatic complaints. African American students had significantly lower levels of characterological self-blame compared to Latino students, who in turn had lower levels of self-blame compared to Asian students.

Additionally, there were both significant time-invariant and time-varying victimization effects for all outcomes. Students who were more, compared to less, victimized across middle school felt more depressed, physically ill, and blamed themselves more. Moreover, during school years when students experienced increased peer victimization relative to their average victimization, they also experienced relative increases in depressive symptoms, somatic complaints, and characterological self-blame. Accordingly, during school years when students experienced a relative decrease in victimization, they experienced less distress than usual. In supplementary analyses, final models also tested time-varying X time-invariant victimization effects. These models were identical to those presented in Table 2, with the addition of an interaction between students' own time-varying and time-invariant victimization. The interactions were nonsignificant, indicating that increases in victimization were related to worse adjustment for students, regardless of their average levels of victimization across middle school. These nonsignificant interactions were dropped from final models for the sake of parsimony.

Testing friends' victimization as a moderator—Time-varying friends' victimization was not a significant moderator of any time-varying associations between self-perceived

victimization and adjustment (i.e., no significant time-varying victimization X time-varying friends' victimization interactions). This interaction term was therefore excluded from all final models. However, as seen in the cross-level interaction section of Table 2, time-*invariant* friends' victimization was a significant moderator of time-varying associations between self-perceived victimization and depressive symptoms as well as characterological self-blame. This cross-level interaction indicates that increases in adolescents' victimization at any given time point (relative to average level) were differentially related to concurrent adjustment difficulties depending on whether their friends were more or less victimized across middle school. As seen in Figure 1a, although students experienced relative increases in depressive symptoms during school years that they experienced relative increases in victimization, this association was attenuated for students with friends who were, on average, more (+1 SD, $b=.066$, $p<.001$) as opposed to less (−1 SD, $b=.127$, $p<.001$) victimized across middle school. As seen in Figure 1b, although students experienced relative increases in characterological self-blame during years that they experienced relative increases in victimization, this link was weakened for students with friends who were, on average, more (+1 SD, $b=.138$, $p<.001$) compared to less (−1 SD, $b=.234$, $p<.001$) victimized across middle school. That is, when students typically had friends who were more, as opposed to less, victimized over the three years of middle school, fluctuations in their own victimization (i.e., experiencing more victimization than usual) were less strongly related to adjustment difficulties. These findings support the shared plight hypothesis.

Turning to the time-invariant interaction effects, for all outcomes there were significant time-invariant victimization X time-invariant friends' victimization interactions at Level 2 (see Table 2). Although students who were more victimized across middle school experienced, on average, more depressive symptoms, this association was significantly attenuated for students with friends who were, on average, more victimized (+1SD, $b=.225$, $p<.001$) compared to less victimized (−1SD, $b=.295$, $p<.001$) across middle school (see Figure 2a). Similarly, although students who were more victimized across middle school reported, on average, more somatic complaints, this link was significantly weakened for students with friends who were, on average, more victimized (+1SD, $b=.221$, $p<.001$) compared to less victimized (−1SD, $b=.280$, $p<.001$) across middle school (see Figure 2b). The same pattern emerged for characterological self-blame—although students who were more victimized across middle school were more likely to endorse characterological self-blame, this link was significantly weakened for students with friends who were, on average, more victimized (+1SD, $b=.492$, $p<.001$) compared to less victimized (−1SD, $b=.614$, $p<.001$) across middle school (see Figure 2c). That is, victimized youth whose friends were also victimized by peers were less likely to blame themselves for being bullied.

Discussion

Scholars have documented the instability of peer victimization during adolescence (Kochenderfer Ladd & Ladd, 2001; Nylund et al., 2007) and thus emphasized the need for longitudinal studies that account for both time-invariant and time-varying effects of negative social experiences (Leadbeater et al., 2014; Rulison, et al., 2010). However, longitudinal investigations that integrate both nomothetic and idiographic frameworks to examine the dynamic nature of adolescents' peer victimization experiences over time remain sparse.

Relatedly, despite widespread recognition that adolescents' friendships are salient developmental contexts for peer victimization (Bagwell & Schmidt, 2011), relatively little is known about how friends' peer victimization experiences both within and across time may promote more or less adaptive social comparisons when adolescents are themselves victimized. The current study was designed to address these gaps in the literature.

Time-Invariant and Time-Varying Effects of Peer Victimization

The current study extends prior work by investigating how individual differences in victimization as well as year-to-year fluctuations in these negative experiences uniquely contribute to adolescents' psychological adjustment across middle school. Although past longitudinal studies have documented the negative effects of peer victimization during adolescence, very few studies explicitly differentiate between time-invariant and time-varying victimization effects. And yet, disentangling these effects is critical, insofar as it allows us to understand how both "typical" (time-invariant) and "unique" (time-varying) features of adolescents' negative social experiences relate to their well-being across time (Curran & Bauer, 2011; Rulison et al., 2010). Here we demonstrate important contributions of both overall and time-specific victimization experiences—students were not only at risk for feeling depressed, reporting somatic complaints, and blaming themselves when they were more victimized than peers from 6th to 8th grade, but also when they experienced relative increases in their own victimization during any given school year.

These findings corroborate past work showing both time-invariant and time-varying associations between victimization and depressive symptoms (Leadbeater et al., 2014; Reijntjes et al., 2010) and offer novel evidence that experiencing relative increases in victimization relates to students' concurrent somatic complaints and characterological self-blaming attributions. That is, at times when adolescents were more victimized than usual, they felt more physically sick (e.g., nauseous, headaches), and they were more likely to attribute their victimization to stable, internal, and uncontrollable causes (i.e., characterological self-blame). Given that the etiology of adolescents' somatic health complaints is often poorly understood, the finding that adolescents experienced relative increases in somatic symptoms during school years when they were victimized more than usual highlights that interpersonal stress is closely related to adolescents' health (Nishina et al., 2005). Additionally, the time-varying effect of victimization on characterological self-blame suggests that adolescents' causal attributions are not necessarily static or "trait-like" social cognitions, but rather that negative social encounters may increase the accessibility of maladaptive explanations for experiencing peer victimization (i.e., self-blame). When students are more victimized than is typical for them, this likely contributes to the sense, at that given time point, that there is "something wrong with me". Importantly, these findings also highlight that many youth exhibit resilience in the face of victimization—during school years when students were less victimized than usual, they were also less likely to feel distressed, sick, and at fault for being bullied. For students who transition to middle school and find themselves being pushed around and excluded by peers during 6th grade, even relative decreases in these negative social experiences may thus enable them to "bounce back."

Protective Effects of Friends' Victimization

The most novel and possibly provocative contribution of the current study was identifying friends' victimization as a moderator of victimization-related adjustment problems. Although students experiencing more victimization than usual also reported feeling more depressed and making more self-blaming attributions than usual, these associations were attenuated among youth whose friends were, on average, more victimized across middle school. These moderation hypotheses were also supported for time-invariant victimization effects—although students who were more victimized across middle school (i.e., compared to others) reported more adjustment difficulties, such links were weaker among students with friends who also experienced peer victimization during middle school. Thus, the current results provide strong support for the shared plight hypothesis: for students that experience peer mistreatment, whether temporarily or consistently, it is adaptive to have friends who have gone through similar social experiences.

Results from the model examining characterological self-blame as an outcome offer novel and critical insight into how friends' victimization can serve a buffering role—the time-invariant and time-varying effects of victimization on characterological self-blame were weakened among students who had friends that were, on average, more victimized. Students are likely to ask themselves "why me" when victimized, and friends serve as an important reference group as bullied youth come to understand this question (Chen & Graham, 2012). The current findings suggest that students engage in social comparisons with their friends; affiliating with peers going through the same social difficulties as oneself appears to facilitate less negative attributions and an understanding that "this isn't just about me". Relatedly, downward social comparisons with friends who have experienced similar or even worse peer mistreatment could alleviate students' sense of personal responsibility for their own victimization (Taylor et al., 1990). This finding is important because although it has been suggested that friends' victimization alleviates self-blaming attributions of bullied youth (e.g., Brendgen et al., 2013), this proposition has not been directly tested until now. Future studies testing mechanisms underlying the documented patterns can also provide more detailed insight into how exactly friends' victimization impacts students' victimization-related attributions. Although we presume a social comparison mechanism, we do not know the specific process through which friends (and their own peer experiences) may affect adolescents' causal attributions. In future studies, it would be important to directly assess if youth indeed are engaging in these social comparisons with peers, thereby reducing self-blame. Relying on underutilized methods to study friendships "in vivo", such as behavioral observations of youth interacting with their friends, could clarify *how* adolescents talk to one another about their negative social experiences in ways that may discourage maladaptive internal attributions and feelings of personal responsibility for victimization.

The current results also showed that higher levels of friends' victimization attenuated associations between victimization and internalizing distress. The sense that "we're in this together" might help to ward off feelings of despair and sadness (i.e., depressive symptoms) among socially vulnerable youth. Moreover, given that self-blame has been shown to mediate the relations between peer victimization and depressive symptoms (Graham &

Juvonen, 1998), one possibility is that friends' victimization serves as a buffer from depressive symptoms insofar as it reduces self-blame. Understanding how friends can modulate students' physical responses (i.e., somatic complaints) to victimization is an interesting question that should be explored in future research. Although there is strong evidence from other research areas that social relationships and experiences have a significant impact on physical health in adulthood (Uchino, 2004), much less is known about the extent to which these processes operate similarly when considering peer victimization experiences among adolescents and their friends. Understanding such pathways will also help reconcile the current findings with past studies showing that friends' victimization can actually exacerbate links between victimization and externalizing symptoms (Brendgen et al., 2013), as well as future victimization (Echols & Graham, 2016). Whereas sharing social plight with friends' may promote adaptive social comparisons that alleviate internalizing distress, exposure to friends' victimization may also promote social learning (i.e., modeling reactive aggression) that in turn increases students' future externalizing behavior and risk of victimization.

Finally, it is important to note that the current study did not provide any evidence for the moderating effects of time-varying friends' victimization. This is consistent with past research which has found that the typical characteristics of adolescents' friends over time, rather than relative changes in these characteristics, are most closely related to adolescents' own well-being (e.g., Rulison et al., 2010). These findings suggest that students, despite being sensitive to their own changes in victimization, may not be closely tuned into fluctuations in their friends' victimization experiences from year to year. Rather, affiliating with peers who tend to experience higher levels of victimization or have been bullied at *some point* across middle school appears to be most important for alleviating adolescents' own victimization-related distress.

Limitations and Strengths of the Study

There are several limitations of the current study. First, this study focused on concurrent associations between victimization, friends' victimization, and adjustment difficulties, limiting conclusions about causality. However, testing these time-specific associations longitudinally is nevertheless critical for understanding how temporary increases in experiences of harassment or exclusion may be accompanied by higher levels of adjustment difficulties, given that adolescents' exposure to victimization can vary considerably over time. The current study relied on self-reports of students' own victimization experiences and corresponding adjustment. Self-reports were warranted in light of the longitudinal study design (e.g., consistent reporting source), the specific research questions of interest (e.g., changes in degree of victimization), and to avoid issues of reputational biases (see Ladd et al., 2017); however, the documented associations could nevertheless be inflated due to shared method variance. Additionally, given that we cannot disentangle the extent to which friends' victimization experiences influence students' own self-perceptions of victimization, future studies incorporating both self- and peer-reported victimization are warranted.

Another methodological issue raised by the current study that merits more extended discussion is our measure of friends' victimization. Consistent with methods used in prior

studies of friend characteristics during adolescence (e.g., Brendgen et al., 2013; Echols & Graham, 2016), we calculated friends' victimization by taking an average of friends' self-reported victimization at each wave (time-varying) and across time (time-invariant). A strength of this approach is that it captures the typical characteristics of an adolescent's full friendship network (Berndt & Keefe, 1995; Brendgen, Lamarche, Wanner, & Vitaro, 2010). However, averages obscure potentially meaningful variability in friends' victimization; the measure assumes that all friends exert equivalent influence and does not capture relative stability versus instability in friends' identities across time (Rulison et al., 2010). Although friendships in middle school are quite unstable (Bowker, 2004), friends' characteristics tend to be similar over time (Kindermann, 1993; Kindermann & Gest, 2009). Thus, we speculate that general exposure to friends' victimization, rather than exposure to the victimization of particular (e.g., stable) friends, is most critical for promoting a sense of shared plight. However, a critical future research direction will be considering how friendships that range in stability, quality, and other important features make differential contributions to adolescents' adjustment outcomes. We also want to underscore that although our indicator of friends' victimization is imperfect, measuring and analyzing the effects of peer characteristics remains a challenging endeavor. The development of advanced social network analysis (SNA) approaches offer elegant solutions for correcting data dependencies, assessing similarity among friends, and disentangling selection and influence effects that are difficult to address in traditional multilevel models. Nevertheless, SNA for complex models with nested data (e.g., multiple schools; cross-level interactions) remain underdeveloped, and multilevel models allow for meaningful parsing of between- and within-person effects. Thus, future collaborative efforts across domains of expertise (e.g., friendship researchers, statisticians) will be critical for further advancing methodological frameworks for studying friend effects across development.

Despite these limitations, the current study had several important methodological and theoretical contributions. In terms of methodological strengths, the analyses relied on an ethnically diverse sample of students, spanned three years of middle school, incorporated self- and peer-reports, and assessed several key adjustment domains (depressive symptoms, somatic complaints, and self-blame). Relatedly, the results highlight the benefits of using a multilevel modeling approach to address questions about how differences between and within students relate to their adjustment over time. The findings in turn underscore that it is not just youth who are generally more victimized by peers across middle school that experience risk for distress, but that even time-limited exposure to victimization places students at risk for emotional difficulties. Moreover, the results suggest that adolescents likely engage in both temporal comparisons (e.g., "this didn't happen to me last year") and social comparisons (e.g., "my friends aren't bullied, but I am") when making sense of their own peer mistreatment from year to year.

Implications and Conclusions

Together, these findings have meaningful implications for understanding how to meet the social and emotional needs of bullied adolescents. While it is clear from past work that students who are more victimized across middle school represent a particularly high-risk group (e.g., Sheppard et al., 2016), the current findings also show that relative increases in

victimization can be harmful, even among those not highly victimized by peers across time. Thus, these results underscore the need for school personnel, parents, and policymakers to be cognizant of not only who is at risk for adjustment difficulties, but also circumstances under which the risk occurs. In turn, attending to changes in students' behavior may help adults identify when youth are encountering concurrent social difficulties. For example, when students start reporting more physical complaints than usual, making more visits to the school nurse, or staying home from school feeling sick, this may be an important "red flag" indicator of concurrent social problems (Vernberg, Nelson, Fonagy, & Twemlow, 2011).

Relatedly, in terms of identifying appropriate and feasible targets for intervention among victimized youth, the current study highlights the value of understanding adolescents' explanations for *why* they were bullied (i.e., causal attributions). Anti-bullying programs that aim to reduce the prevalence of victimization within schools should also recognize that, in doing so, they may leave those who continue to be victimized feeling particularly singled out and vulnerable (Garandeau, Lee, & Salmivalli, 2016). Targeting and modifying victims' maladaptive attributions offers an underutilized intervention method that can be administrated universally and without requiring the same resources as programs that individually target students' mental health difficulties (e.g., depressive symptoms). Additionally, the current results show that adolescents' attributions in part reflect the changing state of their negative social experiences (i.e., victimization), suggesting that interventions targeting adolescents' attributions need to also be sensitive to the fluctuating nature of their victimization over time. Finally, given that affiliating with victimized friends across middle school alleviated the sense that "there's something wrong with me" among victimized adolescents, attributional retraining methods may be most successful when they promote adaptive social comparisons and help students recognize that they are not alone in their plight.

Supplementary Material

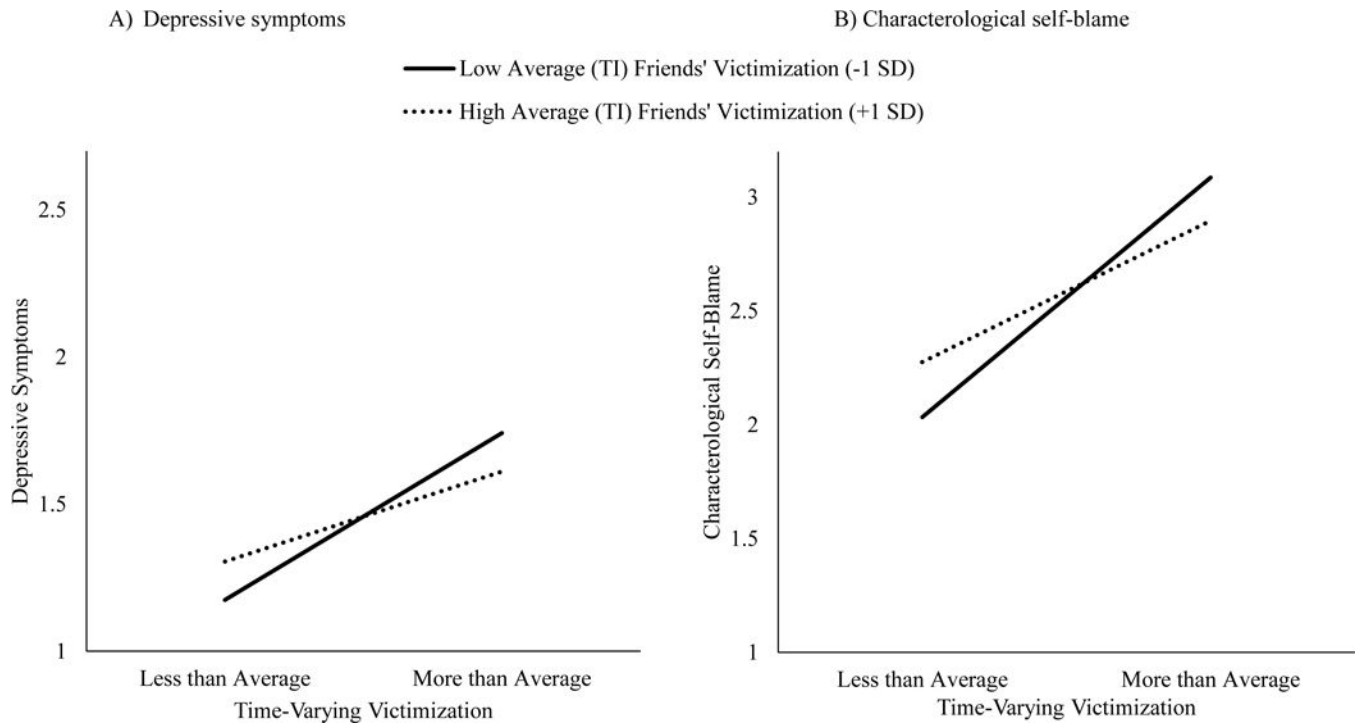Refer to Web version on PubMed Central for supplementary material.

Acknowledgments

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A) Depressive symptoms

B) Characterological self-blame

—— Low Average (TI) Friends' Victimization (-1 SD)

····· High Average (TI) Friends' Victimization (+1 SD)

Figure 1.
Time-varying (TV) victimization X time-invariant (TI) friends' victimization interaction predicting A) depressive symptoms and B) characterological self-blame.

Note. X-axis represents full range of group-mean centered time-varying victimization variable (−2.25 to 2.25)
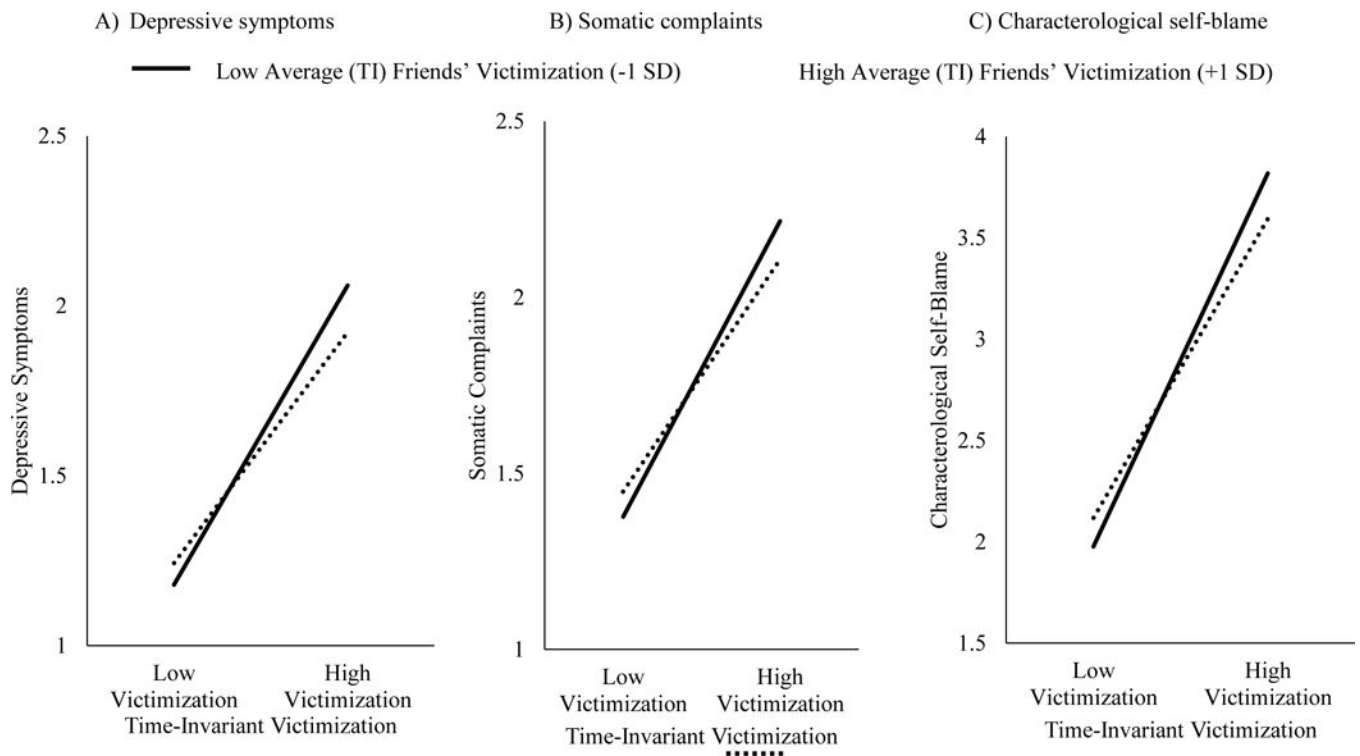
Figure 2.
Time-invariant (TI) victimization X time-invariant (TI) friends' victimization interaction predicting A) depressive symptoms B) somatic complaints and C) characterological self-blame.

Note. X-axis represents full range of grand-mean centered between-person victimization variable (−.95 to 2.05).

Table 1

Time-Varying and Time-Invariant Main Effects of Victimization on Adjustment Outcomes.

	Depressive Symptoms	Somatic Complaints	Characterological Self-Blame
Fixed Effects			
Intercept	1.453(.02) ***	1.647(.02) ***	2.567(.03) ***
Level 1			
Time	0.032(.01) ***	0.002(.01)	−0.073(.01) ***
TV Victimization	0.095(.01) ***	0.077(.01) ***	0.182(.01) ***
Level 2			
Sex	0.170(.01) ***	0.225(.01) ***	0.052(.02) **
African American	−0.017(.02)	0.061(.03) *	−0.111(.03) ***
Asian	0.028(.03)	−0.038(.05)	0.117(.04) **
White	0.045(.02) *	0.054(.02) *	−0.007(.03)
Other	0.056(.03)	0.056(.02) *	0.027(.03)
TI Victimization	0.257(.02) ***	0.248(.01) ***	0.548(.02) ***
Level 3			
School Diversity	0.140(.10)	−0.003(.10)	−0.195(.14)
Random Effects			
Intercept (student)	0.104(.01) ***	0.142(.00) ***	0.287(.01) ***
Intercept (school)	0.000(.00)	0.000(.00)	0.000(.00)
Residual	0.203(.01) ***	0.207(.01) ***	0.459(.01) ***

Note. TV=time-varying; TI=time-invariant. Standard errors listed in parentheses.

***
 $p<.001$;

**
 $p<.01$;

*
 $p<.05$

Table 2

Friends' Victimization as a Moderator of Victimization Effects on Adjustment

	Depressive Symptoms	Somatic Complaints	Characterological Self-Blame
Fixed Effects			
Intercept	1.458(.02)***	1.650(.02)***	2.573(.03)***
Level 1			
Time	0.032(.01)***	0.002(.01)	−0.073(.01)***
TV Victimization	0.097(.01)***	0.077(.01)***	0.186(.01)***
TV Friends' Victimization	−0.007(.01)	0.007(.01)	0.009(.01)
Level 2			
Sex	0.171(.01)***	0.226(.01)***	0.054(.02)**
African American	−0.019(.02)	0.060(.03)*	−0.112(.03)***
Asian	0.027(.03)	−0.036(.05)	0.121(.04)**
White	0.046(.02)*	0.061(.02)**	0.007(.02)
Other	0.056(.03)	0.059(.02)*	0.033(.03)
TI Victimization	0.260(.01)***	0.250(.01)***	0.553(.02)***
TI Friends' Victimization	0.000(.02)	0.017(.02)	0.031(.03)
TI Victimization X TI Friends' Victimization	−0.080(.02)***	−0.071(.02)**	−0.145(.03)***
Cross-Level Interaction			
TV Victimization X TI Friends' Victimization	−0.069(.02)***	−0.020(.01)	−0.114(.02)***
Level 3			
School Diversity	0.132(.10)	0.000(.09)	−0.196(.14)
Random Effects			
Intercept (student)	0.104(.01)***	0.141(.01)***	0.285(.01)***
Intercept (school)	0.000(.00)	0.000(.00)	0.000(.00)
Residual	0.202(.01)***	0.207(.01)***	0.458(.01)***

Note. TV=time-varying; TI=time-invariant. Standard errors in parentheses.

***
$p < .001$;

**
$p < .01$;

*
$p < .05$