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Joseph C. Jochman

University of Nebraska-Lincoln, joseph.jochman@gmail.com

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by

Joseph C. Jochman

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A Mediational Analysis of the Influence of Negative Coping Behaviors on Health

Outcomes Associated with Adolescent School Bullying

Joseph C. Jochman, M.A.

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Adviser: Jacob E. Cheadle

Adolescent school bullying is a significant public health issue with approximately

20% of US adolescents reporting victimization or perpetration in schools. Much

prior research has established that school bullying is associated with significant

somatic and depressive health consequences. Additionally, prior research has

examined the beneficial impact of positive coping strategies on negative health

outcomes associated with school bullying. However, given that bully-involved

adolescents often have less access to positive coping outlets, less research has

examined the influence of negative coping behaviors on health outcomes associated

with school bullying. Using the Health Behavior of School Aged Children 2005-2006

dataset, I examine the extent that negative coping behaviors mediate the association

between bully involvement on somatic and depressive symptoms. Results show

that negative coping behaviors mediate the influence of low-level bullying on

somatic symptoms and partially mediate the effect of high-level bullying and certain

subtypes of bully-victimization on both somatic and depressive symptoms.

However, the positive association of bullying on somatic and depressive symptoms

largely remains after introducing negative coping behaviors. This study advances

current bullying and health research by focusing on the influence of negative coping

behaviors on the somatic and depressive health outcomes associated with bullying.

Introduction

School bullying during adolescence is a significant public health issue because of its negative consequences for individuals' physical and mental health (Bogart et al. 2014). Today, approximately 20% of U.S. youth report being victims or perpetrators of bullying (Battey & Ebbeck 2013). In particular, victimization is associated with an increased risk of suicide, depression, anxiety, and somatic symptoms (Bauman et al. 2013; Gini & Pozzoli 2009). Additionally, the negative health consequences of victimization can persist into adulthood and significantly affect quality of life (Heino et al. 2000). Among perpetrators, bullying is associated with increased risks for depression, substance abuse, and behavioral problems (Gini et al. 2008; Heino et al. 2000). The health consequences for perpetrators may be especially pronounced when perpetrators are also recognized as victims, or those referred to as "bully-victims" (Houbre 2006; Olweus 1997). In light of the negative consequences of school bullying on adolescent health outcomes, researchers have examined the health-protective factors of positive coping resources including social support, self-efficacy, and problem-based coping strategies when managing stress associated with bullying. Adolescents with access to and use of positive coping resources may experience less victimization, may be less likely to engage in perpetration, have improved somatic and mental health, and may report greater overall life satisfaction during both adolescence and into adulthood (e.g. Kenny et al. 2013; Kendrick et al. 2012; Tenenbaum et al. 2011; Gini et al. 2009).

Less is known, however, about the health consequences of negative coping behaviors in response to bullying. Researchers have outlined a number of structural

and interpersonal factors that may limit the use and availability of positive coping resources among adolescents involved in school bullying. Lack of social supports, lower levels of self-esteem and self-efficacy, and higher likelihoods of engaging in aggressive or substance-use related coping have all been identified as potential structural and interpersonal barriers to more positive coping outlets (Thornberg et al. 2011; O'Brennen 2009; Houbre 2006). Thus, adolescents involved in school bullying may rely more heavily on negative coping behaviors when addressing bullying stress. Additionally, the impact of negative coping behaviors may vary across bullying statuses and degrees of bully-involvement. Using the Health Behavior of School-Aged Children 2005-2006 (HBSC) dataset, this paper examines a) the differential somatic and depressive health consequences of adolescents identified as victims, bullies, and/or bully-victims (Olweus 1978) and b) the extent to which the use of negative coping behaviors mediate the association between bully-involvement on somatic and depressive health outcomes. The present research addresses this gap in the literature by identifying the potential mediating role of negative coping on the well-established relationship between bully involvement and negative somatic and depressive health outcomes in adolescence.

Review of Research

I. Definitions and Types of Adolescent School Bullying

School bullying is defined as "aggressive behavior or intentional harmdoing, which is carried out repeatedly and over time, and in an interpersonal relationship characterized by an imbalance of power" (Olweus 1997:496). Researchers

generally define these roles as "victims", "bullies", and "bully-victims". Within school contexts, victims tend to be viewed by peers as unpopular, physically or emotionally weak, and lacking in social skills (O'Brennen et al. 2009; Toblin et al. 2005; Schwartz 2000). Victims often report feeling stupid, excluded, and having lower self-esteem and feelings of self-worth than the non-involved (Thornberg 2011; Houbre 2006; Hawker & Boulton 2000). Alternatively, bullies generally have average or below average popularity with small but close-knit groups of friends (Houbre 2006). Bullies tend to report more behavioral problems including aggression and impulsivity, increased drug and alcohol use, and may report lower self-esteem than non-bullies (Houbre 2006; Schwarz 2000). Bullying behavior is generally highest during the middle school years and gradually decreases in later adolescence, although some students continue bullying younger students as they age (Thornberg et al. 2012; Guerra et al. 2011).

Bully-victims are also now recognized as a distinct subtype of school bullies. Schwartz (2000) defines bully-victims as "aggressive victims", or victims who retaliate towards others (i.e. towards bullies, non-aggressive victims, or other non-involved adolescents). Bully-victims are often identified by patterns of proactive aggression to seek power or status in peer hierarchies, or reactive aggression to relieve frustration or anxiety (Lester et al. 2012). As a result of these coping patterns, bully-victims may experience less self-esteem and greater peer rejection than either victims or bullies (O'Brennen et al. 2009; Toblin et al 2005; Heino et al. 2000). Bully-victims may also be more likely to persist in aggressive and impulsive patterns across then lifespan (O'Brennen et al. 2009). As such, bully-victims are

viewed as sharing traits of both victims and bullies. On the one hand, bully-victims

share characteristics of victims such as having limited social networks and difficulty

in establishing protective social networks (Frisen et al. 2012; Guerra et al. 2011).

Likewise, bully-victims share characteristics of bullies including being considered

less popular than non-bullies and having higher likelihoods of using drugs or alcohol

(Houbre 2006; Olweus 1997). These characteristics of bully-victims are thought to

arise from complex patterns of adjustment to victimization as well as perceptions of

social positioning relative to other adolescents (Lester et al. 2012).

II. Somatic and Mental Health Consequences of School Bullying

The negative somatic and mental health consequences of school bullying are

well documented. Victims of school bullying report higher levels of depression,

anxiety, suicidal ideation, and isolation than non-victims (Bauman et al. 2013;

Campbell et al. 2013; Gini & Pozzoli 2009). Additionally, victims report elevated

somatic symptoms such as headaches, difficulty sleeping, stomachaches and higher

overall feelings of stress than non-victims (Gini et al. 2009, Gini 2007, Jellesma et al.

2006). These health consequences may be related to social status and coping

resources among victims. For example, victims may experience the negative health

effects of bullying through fewer opportunities to release from the role of victim or

through an inability protect oneself via social or cognitive resources (O'Brennen et

al. 2009; Toblin et al. 2005). Victims may also cope by withdrawing, isolating,

crying, or feelings of self-blame, further perpetuating the cycle of victimization

(Frisen et al. 2012; Tenenbaum et al. 2011). As a result of these coping behaviors,

victims may be more likely to internalize stress into somatic and depressive

symptoms than bullies or those who are not involved (Houbre et al. 2006). In fact, victims may continue to experience negative thoughts and feelings resulting from patterns of victimization into later adolescence and adulthood (Thornberg 2011).

The negative health effects among perpetrators follow the pattern of victims, although often to a less serious degree. Bullies tend to report higher levels of depression, behavioral problems, substance use, and maladjustment than non-involved adolescents (Gini et al. 2008; Heino et al. 2000). Bullies may also experience anxiety in the form of greater hypervigilance and aggression relative to victims or the non-involved (O'Brennen et al. 2009). However, relative to victims, bullies may have fewer negative somatic and mental health outcomes because they have higher levels of social support and may internalize stress less than victims or bully-victims (O'Brennen et al. 2009; Heino et al. 2000). These coping differences may result from the social positioning of bullies to release frustrations on lower status peers (Schwartz 2000). Additionally, bullies tend to experience greater ease when navigating social environments (Andreou et al. 2005). These characteristics among bullies suggest stronger feelings of self-efficacy and access to personal and social resources than victims (Thornberg 2011; Andreou et al. 2005), resulting in less severe negative health outcomes as a consequence of participating in bullying.

The final group, bully-victims tend to have the poorest somatic and mental health outcomes among the bullying sub-groups. Relative to victims, bully-victims have similar rates of internalizing stress and mood disorders (O'Brennen et al. 2009), but report higher emotional dysregulation, more significant behavioral problems, lower feelings of self-esteem and self-worth, and elevated negative

somatic symptoms relative to both victims and bullies-only (Houbre et al. 2006; Toblin et al. 2005). Bully-victims also report higher likelihoods of eating disorders, weapons offenses, and may be at higher risk for adult criminality than victims or bullies-only (Lester et al. 2012). Research investigating bully-victims presumes the role of the "aggressive victim"; that is, an adolescent who is identified as a victim first and bully second (Schwartz 2000; Olweus 1978). In this manner, bully-victims are thought to cope with victimization using proactive or reactive aggression. Bully-victims using proactive-aggressive strategies cope by bullying others to increase the loss of power or status in victimization. Bully-victims using reactive-aggressive strategies cope by bullying others to release frustrations or anxiety in victimization (Lester et al. 2012). These coping strategies among bully-victims intensify negative health outcomes and lead bully-victims to "emerge as a group that is at particularly high risk for long-term maladjustment" (Schwartz 2000: 191).

In line with these findings, the first goal of this paper is to test the hypothesis *that victims, bullies, and bully-victims experience more negative somatic and depressive symptoms than non-involved adolescents.* The second goal is to assess the relative ordering of somatic complaints and depressive symptoms *with the hypothesized ordering from worst to best being bully-victims, victims, bullies, and finally the non-involved.*

III. Stress Processes and Negative Coping among Bully-Involved Adolescents

Prior research has not examined the possible mediating role of negative coping behaviors on the association between bully-involvement and somatic and depressive health outcomes. Stress process theorists argue that positive coping

strategies may buffer the impact of stressful events on health outcomes; however, adolescents involved in school bullying may have decreased personal and/or social access to positive coping outlets. Here, the absence of positive coping strategies may incline bully-involved adolescents to seek more negative types of coping behaviors, which in turn may help explain some of the negative somatic and depressive health consequences associated with bullying. Using stress process theory, the remainder of this review addresses the differential access to positive coping resources among the bully-involved and the mediating role that negative coping behaviors may have on the association between bully-involvement and somatic and depressive symptoms.

Stress process theorists suggest that negative somatic and depressive symptoms result from elevated exposure to stressors (i.e. chronic, acute, traumatic, daily events) beyond which the individual is effectively able to cope (Aneshensel 1992; Pearlin 1989). Stress process research has emphasized the beneficial effects of positive coping resources including social support, self-mastery, self-efficacy, and optimism as buffering or mediating the impact of daily or chronic stressors on health outcomes (Aneshensel 2009; Thoits 2006). In the absence of positive coping resources, stress process theory argues that stressors accumulate, increasing stress levels and resulting in poorer health outcomes (Aneshensel 2009). Furthermore, as a result of structural and interpersonal factors (e.g. race, class, gender, positioning, personal characteristics), access to and the use of positive coping resources are unequally distributed among individuals (Thoits 2006). Accordingly, individuals who are unable to access more positive coping resources in response to stressors

may be more likely to engage in negative coping including social withdrawal, social isolation, or substance use (e.g. Thoits 2010; Aneshensel 2009).

Researchers have often viewed bullying along lines of stress-process theory; that is, bullying has been viewed as having characteristics of chronic stressors, daily hassles, or major traumas (Thornberg 2011; Houbre et al. 2006; Schwartz 2000). For example, adolescents have reported infrequent and mild forms of bullying such as occasional name-calling or being left out, whereas others have reported frequent and severe forms of bullying including physical violence and ongoing harassment (Thornberg 2011; Smokowski & Kopasz 2005). In fact, Schwartz (2000) notes that victimization is often a significant adolescent stressor characterized as persistent and extreme in some cases (p. 191). Along the lines of stress process theory, all bullying subtypes may experience the negative impact of bullying stress. Further as noted, bully-involved adolescents often experience coping limitations including less social bonding and friendship support, lack of self-efficacy and self-esteem, and tendencies towards withdrawal, avoidance, isolation, aggression and impulsivity (Guerra et al. 2011; O'Brennen 2009 et al.; Houbre 2006; Schwartz 2000).

Researchers have demonstrated that high levels of social support may substantially buffer the negative effects of stress (e.g. Scheid & Brown 2010). In terms of bullying, adolescents with positive social support and social bonds are generally more liked, more accepted, and are less likely to report victimization or bully-victimization (Farmer et al. 2010). Additionally, adolescents with strong social supports and bonds are less likely to experience depressive symptoms, more likely to report concerns to friends or parents, and are more likely to share common

activities with others (Cornwall 2003; Colarossi 2001). However, victims and bully-victims tend to report smaller and less-bonded friendship networks than bullies or non-involved adolescents (Thornberg et al. 2011; O'Brennen 2009; Houbre 2006). As such, victims and bully-victims may have less access to the positive buffering effects of social support and thus may be more likely to rely on negative coping behaviors to mitigate bullying stress than bullies or the non-involved. However, the extent to which resulting negative coping behaviors mediate the stressful influences of bullying on health outcomes has not been examined in prior literature.

Additionally, high levels of self-esteem and self-efficacy may have a positive effect on health in the presence of stressors. High levels of self-esteem and self-efficacy produce a sense of mastery over life situations and may encourage more active and positive coping strategies across the lifespan (Thoits 2010). Here, high levels of self-esteem and self-efficacy in adolescence may inhibit the likelihood that adolescents will engage in bullying behaviors (Guerra et al. 2011; Andreuo et al. 2005). Additionally, high levels of self-efficacy and self-worth have been associated with an increased use of positive coping strategies in stressful situations among adolescents (Natvig et al. 2001; Olafsen and Viemero 2000). In the context of school bullying, victims, bullies, and bully-victims tend to report lower levels of self-esteem and self-worth than non-involved adolescents, with victims and bully-victims likely experiencing the lowest levels of self-esteem and self-worth (Thornberg et al. 2011; O'Brennen 2009; Houbre 2006). Low self-esteem has also been linked to increased likelihoods of victimization in adolescence (e.g. Guerra et al. 2011). However, lower levels of self-esteem and self-efficacy in adolescence can lead to increased substance

use, aggression, and avoidant behaviors, particularly among bully-involved youth

(Guerra et al. 2011; Megaghan 2010; Andreuo et al. 2005).

In summary, bullies and bully-victims may engage in more aggressive and

substance use behaviors due to a) lower levels of self-esteem, b) more restricted

social networks, and c) shared peer influences among the social networks of bullies

and bully-victims as compared to the non-involved (Guerra et al. 2011; Houbre

2006). In fact, alcohol use among bullies may serve to improve self-perceptions of

social skills and to reduce feelings of social inadequacy relative to peers (Houbre et

al. 2006). Likewise, victims may engage in more withdrawing and avoidant patterns

of coping due to a) lower levels of self-esteem, b) lower self-efficacy, and c) from an

absence of social support and bonding (Thornberg et al. 2011; O'Brennen 2009;

Houbre 2006). However, researchers note that bullies report higher self-esteem,

self-efficacy, and report greater ease when navigating their social environments

than victims or bully-victims (Guerra et al. 2011; Houbre 2006; Andreuo et al.

2005). As such, bullies may have increased access to more positive coping outlets,

which may explain why bullies report lower somatic and depressive symptoms than

victims and bully-victims. Additionally, bullies may be more likely to engage in risk

behaviors generally, and therefore risk behaviors among bullies may help explain

negative somatic and depressive outcomes more so than victims or bully-victims[1].

Given that bully-involved adolescents have less access to positive coping

outlets, negative coping behaviors may potentially help explain the some of the

somatic and depressive health consequences associated with bully-involvement.

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[1] See Appendix IV

However, prior research has not examined the extent to which negative coping behaviors may be responsible for the negative somatic and depressive health outcomes associated with school bullying. Thus, the final research goal of this paper is to test the hypothesis that *negative coping behaviors mediate the association between bully-involvement and somatic and depressive symptoms.*

IV. Purpose of Study

The purpose of this study, therefore, is to examine the extent to which negative coping behaviors mediate the relationship between bully-involvement and negative health outcomes among adolescents identified as victims, bullies, and bully-victims. Using the Health Behavior of School-Aged Children 2005-2006 survey, this study examines the a) somatic and depressive outcomes of bully-involved adolescents, and b) examines the mediating role of negative coping across each bullying sub-group. The study is propelled by a stress-process theory. Specifically, the stress-process model proposes that a) bullying is a stressful process that leads to poor somatic and mental health outcomes, b) that as a result of social positioning and personal characteristics, bully-involved adolescents will have less access to positive coping resources than non-involved adolescents, c) that due to the decreased use and access to positive coping resources, bully-involved adolescents will engage in more negative coping behaviors, and d) that the somatic and depressive outcomes among bully-involved adolescents are shaped by both involvement in bullying and through the increased predisposition towards the use of negative coping behaviors. Understanding the influence of negative coping on the association between bully-involvement and somatic and depressive symptoms is

key given that adolescent school bullying is associated with significant physical and mental health concerns, increased risk of suicide, and other behavioral and identity issues that significantly affect quality of life and life chances in adolescence and across the lifespan (e.g. Bauman et al. 2013; Gini & Pozzoli 2009; Heino et al. 2000).

The study has three main hypotheses:

H1: Victims, bullies, and bully-victims experience more negative somatic and depressive outcomes than non-involved adolescents.

H2: Bully-victims experience the most negative somatic and depressive outcomes, followed by victims, and last bullies distinct from the impact of risk behaviors.

H3: Negative coping behaviors mediate the association between bully-involvement and somatic and depressive symptoms.

Data and Methods

This study uses the Health Behavior of School-Aged Children 2005-2006 dataset. The HSBC is a repeated cross-sectional nationally representative survey of 6th through 10th graders in public and private schools with a resulting sample 9,227 students. The HSBC was conducted using a stratified design across three phases; 1) schools districts, 2) schools, and 3) classrooms. Schools within school districts were selected at random resulting in a total of 227 schools. Classes were then selected at random and students were surveyed within individual classrooms. The response rate for students within the classrooms was 87.2%. School administrators were also surveyed, with 195 out of 227 school supervisors completing the survey yielding an

85.9% response rate. Due to a subsample of 6th graders who did not complete the

bullying portion of the survey (N=1161), these students are not available for

inclusion in the analysis. The resulting sample was 8,066 students across grades 6-

10. Missing data ranged between 0 and 7% for all covariates except parental SES,

which was 22%. Ten imputed data sets were created and used to account for

missing values across all study variables (Little & Rubin 2002). Regression output

using listwise deletion prior to imputation is located in Appendix I. Table 1 shows

the observed N's for all study variables prior to imputation and all variables are

reported in their non-standardized metrics. All subsequent analyses use a student

weight variable to adjust for sampling probabilities at each stage of sampling as well

as to adjust for race and grade selection probabilities based upon National totals

from the National Center of Educational Statistics (Iannotti 2006). Additionally, the

student weight variable was also adjusted for when creating the imputed datasets.

I. Dependent variables

Two dependent variables were used in the analysis. The somatic symptom

scale was constructed using 6 items from the HBSC data: frequency of a) headaches,

b) stomachaches, c) backaches, d) feeling dizzy, e) difficulty sleeping, and f) feeling

like not eating. Frequency of headaches, stomachaches, backaches, feeling dizzy,

and difficulty sleeping were asked "over the past 6 months" and reverse-coded

where 1 = "rarely or never" to 5 = "about everyday". Feeling like not eating was

asked "over the past 30 days" and were reverse coded where 1 = "never" to 5 =

"always". The intercorrelation of the somatic symptoms scale was confirmed using

unrotated factor analysis with an inter-item reliability of 0.73. Two items (feelings

like not eating, difficultly sleeping) are consistent with "somatic complaint" items

specified by the Center for Epidemiologic Studies Depression Scale (CES-D)

(Perreira et al. 2005). Frequency of headaches, stomachaches, backaches, and

dizziness, however, were not included in the CES-D somatic complaint construct but

are consistent with the Somatic Complaints Scale used in previous bullying research

(e.g. Gini et al. 2009). The final somatic symptom scale was averaged across the six

items and was ranked 1 = "low somatic symptoms" to 5 = "high somatic symptoms".

The scale was then standardized for use in the analysis.

The depressive symptom scale was constructed from the following 3 items:

a) feeling low, b) feeling sad, and c) feeling hopeless. The frequency for feeling low,

was asked "over the past 6 months" and reverse-coded where 1 = "rarely or never"

to 5 = "about everyday". Frequencies for feeling sad and hopeless were asked "over

the past 30 days" and were reverse-coded where 1 = "never" to 5 = "always".

Frequency of feeling irritable, feeling nervous, and having difficulty concentrating

were included in the initial factor analysis but were dropped due to low promax

factor loadings for a unified "mental health" construct. The intercorrelation of the

depressive symptoms scale was confirmed using unrotated factor analysis with an

inter-item reliability of 0.78. All three items were consistent with the "negative

affect" construct of the CES-D (Perreira et al. 2005). The final depressive symptoms

scale was averaged across the three items and ranked 1 = "low depressive

symptoms" to 5 = "high depressive symptoms". The scale was then standardized for

use in the analysis.

II. Independent variables

Measures of bully victimization and perpetration were used as the primary independent variables in this study. Victimization items were chosen from 9 items within the HBSC dataset including how often the respondent had been teased or called names, left out of activities, hit or pushed, spread rumors, victimized for one's race, sexuality, religion, and whether the respondent had been bullied via a computer or cellphone. Response choices for each of the victimization items ranged from 1 = "I haven't been bullied in this way" to 5 = "several times per week". The intercorrelation of the victimization scale was confirmed using unrotated factor analysis with an inter-item reliability of 0.93. The victim scale was subsequently divided into three categories; a) those reporting no victimization (0 = no, 1 = yes), b) those reporting at least some victimization but less than or equal to the median value of victimization (0.33) (0 = no, 1 = yes) and c) those reporting greater than the median value of victimization (0 = no, 1 = yes). The three created dummy categories are conceptualized as "non-victim involved, "low-victim involved", and "high-victim involved" respectively. Construction of the victimization scale was consistent with the Olweus Bully/Victim Questionnaire (Solberg & Olweus 2003).

Similarly, the perpetration variable was constructed from the same items, however, these items asked the respondent how often they had *committed* acts of teasing, pushing, etc. against another student. Response values for the perpetration items ranged from 1 = "I haven't been bullied in this way" to 5 = "several times per day". The intercorrelation of the victimization scale was confirmed using unrotated factor analysis with an inter-item reliability of 0.98. Similar to the victim scale, the perpetration scale was divided into three categories; a) those reporting no

perpetration (0 = no, 1 = yes), b) those reporting at least some perpetration but less than or equal to the median value of perpetration (0.22) (0 = no, 1 = yes) and c) those reporting greater than the median value of perpetration (0 = no, 1 = yes). The three created dummy categories are conceptualized as "non-bully involved, "low-bully involved", and "high-bully involved" respectively. The rationale for creating the victim and bully dummy variables was threefold: a) to adjust for the high right-skew of the victim and bully scales, b) to test for differences between low and high victim and bully-involved groups, and c) to produced more specific estimates among bullying subtypes by excluding those reporting no victimization, no perpetration, or no bully-victimization. Construction of the perpetration scale was consistent with the Olweus Bully/Victim Questionnaire (Solberg & Olweus 2003).

Additionally, four interaction terms were created from the victim and bully dummy categories to test for bully-victims. First, *low bully-low victims* was constructed by interacting the low bully*low-victim categories. Secondly, *low bully-high victims* was constructed by interacting the low bully*high-victim categories. Third, *high bully-low victims* were constructed by interacting the high bully*low-victim categories. Lastly, *high bully-high victims* were constructed by interacting the high bully*high-victim categories". *No bully-no victims* serve as the omitted reference group. Creating bully-victim terms in this manner allows the analysis to test for differences between degrees of bully-victim involvement; that is, low-victims who report high bullying are conceptually different from high-victims who report a low bullying. Due to the complex structural and interactional nature of bullying, the negative health consequences among victim, bullies, and bully-victims

at different levels of severity, and in line with evidence that victims, bullies, and
bully-victims navigate their roles in complex and different ways, examining victims,
bullies, and bully-victims in this manner is conceptually and theoretically warranted
(e.g. Guerra et al. 2011; Heino et al. 2000).

III. Negative Coping Behaviors

Frequencies of alcohol, fighting, junk food consumption, excessive TV use,
and engaging in high-risk dieting are used in the analysis as potential mediating
negative coping behaviors. A) Frequency of alcohol use was constructed from four
items: "How often do you drink" a) beer, b) wine, c) liquor, and d) other pre-mixed
drinks where 1= never to 5= everyday. The alcohol variable was mean-scaled with
an inter-item reliability of 0.85. B) Frequency of fighting was constructed from one
item: "During the past year, how many times were you in a physical fight where
0=never to 5=four or more times. C) Frequency of junk food consumption was
taken from 5 items: consuming sweets, fries, chips, and soda were asked as "how
often do you consume" where 1= "never" to 7= "everyday, more than once".
Frequency of eating fast food was asked as "how often do you eat" where 1= "never"
to 7= "five or more days per week". Promax factor analysis confirmed the
intercorrelation of the junk food scale relative to other food items including eating
fruits, vegetables, milk products, cereals and breads, and low-fat food items. The
junk food consumption scale was mean-scaled with an inter-item reliability of 0.78.
D) Excessive TV use was constructed from 1 item: "About how many hours a day do
you usually watch television" where 0=never to 8=7+ hours/day. Lastly, E) high-
risk dieting was constructed from three items: "Which of the following things did

you do to control your weight during the last 12 months" a) vomiting, b) laxatives, and c) smoke more. Promax factor analysis confirmed the intercorrelation of the high-risk dieting scale relative to other dieting methods including eat more fruits and vegetables, eat less fat, drink fewer soft drinks, and exercise. The "eating less" item was not correlated with the other high-risk forms of dieting. The high-risk dieting scale was subsequently row-totaled where 0=never engage in these forms of dieting and 1=engage in one of more of these forms. The inter-item reliability of the three high-risk dieting variables was 0.63. Tobacco and marijuana frequency variables were omitted from the analysis due to statistical insignificance.

IV. Controls variables

Nine control variables were included in the analysis (i.e. age, grade, sex, race, BMI, family structure, siblings, time spent with friends and family SES). Baseline age ranged from 10-17 and grade in school ranged from 6th -10th. Sex was dummy-coded where male=0 and female=1. Race was dummy-coded where black=1, Hispanic=1, and other race=1. White was the omitted race category. Pre-computed BMI was dummy coded for underweight=1 and overweight=1. Healthy weight was omitted as the reference BMI category. Family structure was constructed from two items whether the respondent reported living with one or both parents. Four dummy-variables were created for living with both parents=1, living with the mother only=1, living with the father only=1, or living with a stepparent=1. Respondents living with grandparents or in other family structures (N = 614) were omitted due to mismatching on the provided family SES variable. Living with both parents was omitted as the reference category for family structure.

Number of siblings was created from the total number of siblings reported across the four family structures. Due to the lack of variables addressing peer social support specifically, a "time with friends" variable was created from three variables; a) number of days spent with friends after school, b) number of nights spent with friends, and c) how often you call and/or text with your friends. Number of days spent after school and during nights ranged from 0 = none to 6 = 6 days. How often a respondent called or texted with friends ranged from 1 = rarely or never to 5 = everyday. The time with friends variable was mean-scaled with an inter-item reliability of 0.63. Lastly, the parental SES variable was created from measures of both the mothers and fathers SES. For respondents living with both parents, both mothers and fathers SES was used. The SES variable was then adjusted by including mother-only SES for respondents living with their mothers only, father-only SES for respondents living with their fathers only, and mothers or fathers SES for respondents based upon which parent was not the stepparent for stepfamilies. Descriptive statistics for all study variables are located in Table 1 with observed N's before imputation. Additionally, all study variables in Table 1 are presented in their non-standardized metric.

V. Analytic Strategy

This study uses a fixed-effects regression model. The fixed-effects regression equation is formulated as $y_{ij} = \beta_0 + \beta_1 X_{ij} + \alpha_j + \varepsilon_{ij}$ (Allison 2005) where:

y_{ij} = Value of the dependent variable for person i in school j

X_{ij} = A vector of independent variables for person i in school j

β_0 = Intercept for person in schools j

β = A vector of regression coefficients

α_j = Fixed effect for school j

ε_{ij} = Random error of person i in school j

The fixed-effect regression model is used to adjust for fixed school characteristics. In other words, fixed-effects regression models estimate average within-school effects, leveraging between-adolescent variation within schools by differencing-out fixed school characteristics (Allison 2005). Preliminary analysis showed that both dependent variables were slightly left truncated. Results were consistent when using a tobit estimator for both dependent variables. However, tobit results indicate slightly larger coefficients, but the larger magnitude may reflect the fact that temporally invariant confounders were not adjusted for in the model. Appendix II shows tobit and fixed-effect regression comparisons for both dependent variables with and without student-level weights. All analyses were conducted using Stata 13. Missing data was imputed across 10 data sets using the Stata 13 "ice" command and subsequent analysis was estimated using Stata's "mi" function suite. Cases were dropped prior to imputation if respondents were missing on two or more somatic symptom items, one or more depressive symptom items, and if missing on the gender variable. Thus, I did not impute values for the dependent variables or gender, a potential moderator. Appendix III demonstrates consistent regression results by gender. School-level means were calculated for both the dependent and independent bullying variables prior to imputation and

included in the imputation model to reflect the fixed-effects estimator employed. Student-level weights were also applied during the analysis across all models.

The primary dependent variables (somatic and depressive symptoms) were examined separately by bullying statuses and risk behaviors across three models. Both somatic and depressive symptoms scales were standardized prior to analysis. Standardizing the dependent variables was conducted to allow for interpretations in terms of standardized increases or decreases in somatic and depressive rather than in original scale metric. Additionally, the alcohol, excessive TV watching, high-risk dieting, and junk food variables were also standardized to allow for a consistent metric across the variables. Family SES and time spent with friends were the only standardized control variables in the analyses. Model 1 shows results for somatic and depressive symptoms by bullying statuses and interaction terms. Model 2 introduces control variables to bullying statuses and the interaction terms. Lastly, model 3 introduces the five mediating negative coping variables. Adolescents who reported no victimization, no perpetration, and no victimization/perpetration for the categorical terms are omitted as the reference categories for all models. Results begin with 1) somatic symptoms and 2) depressive symptoms for bullying statuses, then add controls, and lastly negative coping behaviors.

Results

[Insert Table 1 about here]

Table 1 shows descriptive statistics for all study variables. As noted, all variables are presented in their pre-standardized metrics. Both primary dependent

variables are scaled by item averages and show similar scale means; the depressive symptom scale is slightly more left-skewed than the somatic symptoms scale. All six focal independent variables are constructed as dummy variables where the mean represents the proportion of adolescents reporting victimization or perpetration. For the risk behavior mediators, alcohol use and junk food consumption are scaled according to their specific item averages. High-risk dieting was constructed as a dummy variable; as noted, only 7% of the sample reported at least one high-risk dieting behavior. Frequency of fighting is represented as a count over the past year. Lastly, excessive TV viewing is mean centered from a single variable. The observed N shows responses for each variable prior to imputation along with the percentage missing on each variable. Post-imputation resulted in a total sample size of 7951. Prior to imputation, cases were dropped if respondents were missing on two or more of the somatic scale items and one or more of the depressive scale items. Cases were also dropped if the respondent was missing on the gender variable. Thus, the post-imputation sample size is slightly lower than the pre-imputation max available sample (N = 8066) assuming no missing values on the specific variable.

I. Somatic Symptoms

Table 2 shows fixed-effect OLS regression results for somatic symptoms by bullying statuses and risk behaviors where bully-victims are reported as *interactions*. Table 3 demonstrates the same findings where bully-victims are reported as *categories*. Model 1 shows that all bullying categories (i.e. low-victim, high-victim, low-bully, high-bully) are significantly associated with standardized differences in somatic symptoms. High-level victims reported the highest

differences in somatic symptoms (0.68sd[2]) and low-level bullies reported the lowest

differences (0.19sd). Moreover, as demonstrated in Table 3, high victim-high bullies

reported the highest somatic symptoms across all bullying categories, followed by

high victim-low bullies, and then high-victims only. However, as noted in Table 2, all

interaction terms are negative indicating that the combined effects of victimization

and perpetration appear to slightly buffer the independent effects of victimization

and perpetration specifically. Here, the impact of bullying on somatic symptoms

appears to be related to the frequency or intensity of bully involvement rather than

the categorization of bully-victims strictly defined. Additionally, the role of victim

appears to have a stronger impact on somatic symptoms than the role of bully in the

bully-victim dynamic. Thus, Model 1 provides support for Hypothesis 1; that is,

bully-involved adolescents experience, on average, higher somatic symptoms than

non-involved adolescents who attend the same schools. Additionally, Model 1

provides partial support for Hypothesis 2; bully-victims in general report higher

somatic symptoms than victims or bullies, however this finding again appears to be

related to the impact of victimization in particular as well as the frequency and/or

intensity of bully-involvement.

[Insert Table 2 about here]

[Insert Table 3 about here]

Model 2 reports control variables. In short, somatic complaints of bullying

and victimization are independent of these background facts; victims, bullies, and

bully-victims consistently report higher somatic complaints. In Model 2, female,

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[2] sd = Standard deviation

black, Hispanic, other race, overweight, respondents living with the father only or

stepparents, and time spent with friends show statistically significant differences in

standardized somatic symptoms. Females reported significantly higher somatic

differences than males (0.42sd). Blacks (-0.14sd) and other-race respondents

(-0.10sd) reported fewer somatic differences than Whites. Hispanics (0.12)

reported significantly higher standardized somatic differences than Whites.

Respondents living with the father-only (0.29 sd) and respondents living with a

stepparent (0.12) reported higher somatic differences than individuals living with

both biological parents. Lastly, time spent with friends was negative associated

with somatic symptoms (-0.06sd). Controls in Model 2 did not significantly impact

the direction, strength, or magnitude of differences in somatic symptoms across any

of the eight bullying statuses. Figure 1 shows somatic symptom coefficients with

controls as specified by Model 2 using standard error bar plots. For all subsequent

figures, bully categories are organized according to the independent effects first and

interactional effects second, noting the categorical impacts of bullying on somatic

and depressive symptoms ranging from low to high respectively.

[Insert Figure 1 about here]

Model 3 introduces the proposed mediating negative coping behaviors. As

noted in Table 2, alcohol use, fighting, high-risk dieting, and junk food consumption

are all linked with standardized differences in somatic symptoms. Excessive TV was

not associated with standardized differences in somatic symptoms. High-risk

dieting (0.53sd) shows a particularly high effect on somatic symptoms. Appendix III

shows that the effect of high-risk dieting is more pronounced among girls than boys,

however both effects are large and highly significant. Additionally, Table 3 shows

that the presence of negative coping behaviors fully mediates the influence of low

bullying on somatic symptoms (Model 2 = 0.17** to Model 3 = 0.11$^{n.s.}$). Additionally,

negative coping behaviors appear to partially mediate the influence of high-level

bullying (51% decrease), low victim-high bullies (32% decrease) and high victim-

high bullies (26% decrease) on somatic symptoms. Negative coping had little

impact among those reporting victimization specifically. Thus, somatic symptoms

for both high and low-level bullies, as well as bully-victims reporting high levels of

perpetration, may result in part from participating in negative coping behaviors.

However, somatic symptoms remain significant for each bully category, excepting

low-bullies, indicating that bullying continues to have a significant effect on somatic

symptoms after introducing negative coping behaviors. Figure 2 shows somatic

symptom coefficients with controls and negative coping behaviors as specified in

Model 3.

[Insert Figure 2 about here]

The findings in Model 3 generally do not support Hypothesis 3; that is,

negative coping behaviors fully mediate the association between low-bullying and

somatic symptoms, but only partially mediate the association among high-bullies,

low victim-high bullies, and high victim-high bullies. Moreover, negative coping

behaviors had little influence on somatic symptoms for victims. These findings may

suggest that a) engaging in negative coping is more common among bullies, b) that

negative coping is more of an expression of risk behavior generally among bullies,

or c) that bullies have greater access to social support, self-esteem, and self-efficacy

when navigating bullying contexts which results in less somatic stress than victims. Of note, Appendix IV shows OLS regression results for negative coping behaviors by bullying statuses. Appendix IV reveals that bullies and bully-victims are, in fact, more likely to engage in various negative coping or risk behaviors than victims specifically. Conversely, negative coping did not appear to mediate the somatic symptoms among other bullying sub-types. In fact, when introducing negative coping behaviors, bullies reported far fewer somatic symptoms whereas victims reported only slightly less somatic symptoms. Additionally, somatic symptoms among bully-victims appear to be related more to victimization in particular rather than the categorization of bully-victims as specified in Table 3.

II. Depressive Symptoms

Depressive symptom findings are similar to somatic symptoms. Table 4 introduces results for depressive symptoms by bullying statuses and risk behaviors where bully-victims are reported as *interactions*. Table 5 shows the same results where bully-victims are shown as *categories*. Model 1 shows that low-victims, high-victims, and high-bullies are each significantly associated with standardized differences in depressive symptoms. Low-bullies were not significantly different from the non-involved on depressive symptoms. Similar to somatic symptoms, high-victims reported the highest differences in depressive symptoms (0.80sd), followed by low-victims (0.37sd), and high-bullies (0.28sd). Additionally, Table 5 reports standardized differences across each of the eight bully subtypes. High victim-low bullies (0.84sd) and high victim-high bullies (0.34sd) reported the highest differences in depressive symptoms. Noteworthy, the impact of bullying

among bully-victims was almost half of the impact associated with victimization

(low victim-low bully = 0.35sd; low victim-high bully = 0.46sd). Again, the impact of

bullying on depressive symptoms is likely related to being in the role of the victim as

well as the frequency or intensity of bullying involvement. Thus, Model 1 provides

support for Hypothesis 1; bullying increases depressive symptoms risk for all

bullying categories excepting low-bullies. Additionally, Model 1 provides partial

support for Hypothesis 2; bully-victims generally report higher depressive

symptoms, although this finding is more associated with victimization rather than

perpetration in the bully-victim dynamic.

[Insert Table 4 about here]

[Insert Table 5 about here]

Model 2 introduces control variables. Results shown are similar to Model 1.

In Model 2, grade, female, Hispanic, and respondents living in family structures

other than with both parents demonstrated statistically significant differences in

standardized depressive symptoms. These results are similar to somatic symptoms.

Higher grade levels (0.11sd) were associated with increased depressive symptoms.

Females reported higher depressive symptom differences than males (0.41sd).

Hispanic respondents reported higher depressive symptoms than Whites (0.09sd).

Lastly, respondents living with the mother-only (0.15sd), with the father-only

(0.29sd), and in stepparent families (0.09) were each associated with standardized

increases in depressive symptoms. Controls in Model 2 did not significantly affect

the direction, strength, or magnitude of differences in depressive symptoms across

any of the eight bullying statuses. Interestingly, unlike somatic symptoms, the

amount of time spent with friends was not significantly associated with decreased depressive symptoms among adolescents. Figure 3 shows depressive symptom coefficients with controls as specified by Model 2 using standard error bar plotting.

[Insert Figure 3 about here]

Model 3 introduces negative coping. Alcohol use, fighting, high-risk dieting, and junk food consumption were all associated with standardized differences in depressive symptoms. Of note, fighting and junk food consumption demonstrated less of an influence on depressive symptoms than somatic symptoms. Again, excessive TV was not associated with standardized differences in depressive symptoms. Table 5 shows that negative coping behaviors do not mediate the influence of any of the eight bullying subtypes on depressive symptoms. However, similar to somatic symptoms, negative coping appears to partially mediate the influence among high-bullies (42% decrease), high bully-low victims (22% decrease), and high bully-high victims (16% decrease) for depressive symptoms. Negative coping behaviors had little influence on victim's depressive symptoms. Similar to somatic symptoms, depressive symptoms were highest among victims and bully-victims reporting high levels of victimization, and lower among bullies and bully-victims reporting high levels of perpetration. Again, these findings may suggest that bullies engage in more negative coping than victims, that negative coping represents risk behavior generally among bullies, or that bullies experience less depressive symptoms as a result of higher levels of social support, self-esteem, or self-efficacy than victims. Figure 4 illustrates the influence of negative coping on depressive symptoms as noted in Model 3.

[Insert Figure 4 about here]

For depressive symptoms, the results do not support Hypothesis 3. Negative coping only slightly mediated the influence of bullying on depressive symptoms, and less so than somatic symptoms. Additionally, negative coping did not mediate the influence of victimization on depressive symptoms (also less so compared to somatic symptoms). The results indicate that bullying remains a significant predictor of depressive symptoms among adolescents in the presence of negative coping behaviors. This is particularly true for victims and bully-victims reporting high levels of victimization. Thus, the findings indicate support for Hypothesis 1, partial support for Hypothesis 2 for both somatic and depressive symptoms, and do not support for Hypothesis 3 for either somatic or depressive symptoms, with the notable exceptions of low-bullies on somatic symptoms and partial support for high-bullies, low victim-high bullies, and high victim-high bullies on both somatic and depressive health outcomes.

Discussion and Conclusions

Consistent with prior research, victims, bullies, and bully-victims showed significantly higher somatic and depressive symptoms than the non-involved. Specifically, victimization is harmful for both somatic and depressive health; both low and high-level victims reported greater somatic and depressive symptoms than the non-involved. Among bullies, perpetration was associated with significantly higher reports of somatic complaints, but less so for depressive complaints. In fact, low-level bullies did not report statistically different levels of depressive symptoms

than the non-involved. Lastly, bully-victims reported higher somatic and depressive

symptoms than the non-involved. As a whole, these findings support Hypothesis 1

that victims, bullies, and bully-victims experience higher somatic and depressive

symptoms than the non-involved, with the noted exception of depressive symptoms

among low-level bullies.

In terms of Hypothesis 2, bullies reported the fewest somatic and depressive

symptoms relative to victims and bully-victims across all the models. However, the

relative ordering of somatic and depressive complaints reflected both the role of

victimization as well as the level of engagement in bullying behavior. Bully-victims

who reported high levels of victimization were similar to high-level victims on both

somatic and depressive symptoms. Bully-victims who reported higher levels of

perpetration, however, showed only slightly higher somatic and depressive

symptoms than bullies specifically. Thus, the results provide partial support for

Hypothesis 2 as the magnitude of somatic and depressive symptoms among bully-

involved adolescents was more strongly related to victimization than perpetration.

Lastly, the results demonstrate little to no support for Hypothesis 3. In

summary, negative coping fully mediated the association between low-level bullying

and somatic symptoms. Additionally, negative coping significantly reduced the

magnitude of somatic and depression symptoms among bullies specifically as well

as bully-victims who reported high levels of bullying behavior. No other strong

evidence of mediation was found across bullying subgroups for either somatic or

depressive outcomes. As suggested, the influence of negative coping on bullies

somatic and depressive symptoms may be related to higher likelihoods among

bullies to engage in risk behaviors generally, and not specifically higher likelihoods of engaging in negative coping behaviors. Additionally, the findings may suggest higher social support and self-esteem among bullies, which negates some of the somatic and depressive health consequences associated with bullying (O'Brennen et al. 2009; Andreuo et al. 2005; Heino et al. 2000). Appendix IV demonstrates the increased likelihood for bullies to engage in negative coping behaviors and shows that these results are consistent with the mediation model (Baron and Kenney 1986).

These findings lead to three primary conclusions; first, victimization is strongly predictive of negative somatic and depressive health outcomes despite the influence of negative coping behaviors. Victims report significantly higher somatic and depressive symptoms than bullies in the presence of negative coping behaviors. Thus, the role and process of victimization is detrimental to somatic and depressive health despite other negative health behaviors that may account for these negative health outcomes. Secondly, bullies were less influenced by bully-involvement when adding negative coping behaviors. This conclusion is supported by the decreased magnitude of somatic and depressive coefficients in the presence of negative coping, as well as higher likelihoods for bullies to engage in negative coping behaviors as noted in Appendix IV. However, bullying continues to remain predictive of somatic and depressive symptoms in the presence of negative coping mechanisms, albeit less so than victims and bully-victims specifically. Lastly, somatic and depressive symptoms associated with bully-victimization appear to be more strongly related to victimization than perpetration. These findings suggest that being a victim is more

damaging for somatic and depressive health than being a bully, and further that

negative coping behaviors do not significantly account for the negative health

outcomes among the most affected group, namely the victims.

Two primary implications may be drawn from this research. First, the

findings suggest that victimization is particularly damaging to adolescents' somatic

and depressive health. Researchers and clinicians should continue to explore and

explain why victimization is more damaging than perpetration, as well as continuing

to develop strategies that empower victims through pro-social approaches to

increase social bonding, self-esteem, and self-efficacy. Additionally, given that the

negative health outcomes associated bully-victimization appears to be more

strongly related to victimization specifically, such approaches likely apply to bully-

victims as well. Secondly, although bullying is associated with negative somatic and

depressive outcomes, a significantly proportion of these health outcomes is

associated with bullies' higher likelihoods to engage in negative coping behaviors.

Researchers should explore why bullies are more likely to engage in negative coping

behaviors (of which bullying behavior itself may be a form of negative coping) and

develop ways engage bullies in more constructive and health-promoting strategies

to manage stress and social environments that may influence bullying behaviors.

As with any study, there are limitations that need to be addressed. In terms

of theoretical assumptions, most stress-process theory research has focused

specifically on adults. Less stress-process research has focused on the mechanisms

and/or the use of positive coping resources among children or adolescents. This

may be a limitation of stress-process theory in general or the choice of framing the

health consequences of bullying within stress process theory throughout the research. However, given the evidence that bullying is a stressful process for adolescents, and secondly that bully-involved adolescents may have less outlets for positive coping strategies than the non-involved, it is important to address the increased likelihood and impact of more negative coping strategies and risk behaviors as a response to bullying stress. Future research can expand stress-process theory and applications to children and adolescents, as well as addressing the implications of negative coping resulting in risk behaviors among adolescents.

Additionally, this study uses cross-sectional data and therefore we cannot determine causality. That is, are adolescents who report lower or higher somatic and depressive symptoms more likely to be bullied? Preliminary analyses suggested that these differences might be gendered; girls were more likely to report bullying other girls, in particular, when the female victim reported higher levels of depressive symptoms. However, this was less true of boys; boys were more likely to report bullying other boys when somatic symptoms were higher. Additional research is needed to determine why and how these propensities towards bullying and victimization may vary by gender and for what reasons. However, as noted in Appendix III, somatic and depressive symptom outcomes across bullying categories did not substantially differ by gender.

Another potential limitation is the construction of the scales. For example, measures of irritability and anxiety were included in an initial mood symptoms scale; however, these items did not load adequately with sadness, loneliness, and hopelessness and were subsequently dropped from the scale. However, including

measures of nervousness and anxiety in depressive scales has been used in the past in other mental health scales including the CES-D (Perreira et al. 2005). Therefore, dropping the irritability and anxiety items may have resulted in the loss of some dimensions of depressive symptoms. Additionally, constructing the bully and victim measures by using the median is subject to interpretation; that is, does falling slightly below the median value of bullying or victimization adequately reflect an adolescent who is bullying or bullied at a low level? This is a conceptual and contextual problem that may be better addressed with more qualitative methods.

Another possible avenue of research would be to distinguish between different types of negative coping; that is, grouping negative coping behaviors as depressive, aggressive, withdrawing or self-destructive (e.g. Lewis-Dise 1991). For purposes of this study, negative coping behaviors were grouped generally; no specific distinction was made regarding these potentially different types of negative coping behaviors. This is a limitation insofar as victims, bullies, and bully-victims may rely on different types of negative coping when navigating the bullying context (Tenenbaum et al. 2011). Additionally, this paper did not distinguish between negative coping behaviors and risk behaviors specifically; that is, it is possible that bullies and bully-victims engage in risk behaviors more generally, which influence somatic and depressive health outcomes different than that of victims. Future research could expand on the distinctions between negative coping behaviors and risk behaviors generally within adolescence and bullying contexts.

Lastly, there is an issue with the "mind-body" connection; that is, to what extent are mental and physical health outcomes correlated with or dependent upon

one another? Prior research has shown the connections of the mind and body in

terms of cardiovascular health, pain and depression, cancer risks, placebo effects,

and immunology (Goosby 2013; Loving and Campbell 2012; Sherman and Hickner

2007). However, this research assumes a certain disconnection between somatic

and depressive health. Sociological research could begin to frame somatic and

depressive health outcomes as a more singular construct rather than two separate

factors that are often assumed to be distinct. In this regard, longitudinal data may

help shed light on how somatic and depressive health are linked over time. Doing so

may help advance understandings and research on the connections between

somatic and depressive symptoms in the context of adolescent school bullying and

for other groups and within other contexts.

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Tables and Figures

Table 1: Descriptive Statistics [a]

Variables:	Mean	SD	Min	Max	Observed N [b]	% Missing
Focal Dependent:						
Somatic symptoms:	2.11	0.99	1	5	7961	1.3%
Depressive symptoms:	2.09	0.86	1	5	7936	1.6%
Focal Independent:						
No victimization:	0.41		0	1	7728	4.2%
Low victimization:	0.32		0	1	7728	4.2%
High victimization:	0.27		0	1	7728	4.2%
No perpetration:	0.54		0	1	7675	4.8%
Low perpetration:	0.24		0	1	7675	4.8%
High perpetration:	0.22		0	1	7675	4.8%
Negative Coping:						
Alcohol use:	0.41	0.68	-1.28	4	7752	3.9%
Fighting:	0.71	1.16	0	4	7760	3.8%
High-risk dieting:	0.07		0	1	8066	0%
Excessive TV viewing:	0.00	1.93	-4.22	4.71	7828	3.0%
Junk food consumption:	4.16	1.28	1	7	7995	1%
Controls:						
Age:	13.7	1.47	10.6	17	7946	1.5%
Grade:	8.04	1.36	6	10	8066	0%
Female:	0.52		0	1	8037	0.4%
White:	0.55		0	1	7943	1.5%
Black:	0.18		0	1	7943	1.5%
Hispanic:	0.25		0	1	7825	3.0%
Other race:	0.26		0	1	7943	1.5%
Healthy weight:	0.65		0	1	8066	0%
Underweight:	0.03		0	1	8066	0%
Overweight:	0.32		0	1	8066	0%
Both parents:	0.57		0	1	7514	6.8%
Mother-only:	0.24		0	1	7514	6.8%
Father-only:	0.03		0	1	7514	6.8%
Step-family:	0.15		0	1	7514	6.8%
Siblings:	2.09	1.81	0	22	8066	0%
Time with Friends:	3.18	1.39	0	6.5	7918	1.8%
Family SES:	2.75	1.36	-2.17	7.07	6342	21.4%

a: Post-imputation N = 7951
b: Pre-imputation N = 8066

Table 2: Fixed-effects OLS Regression on Somatic Symptoms by Bullying Statuses and Negative Coping

	Model 1			Model 2			Model 3		
	β		SE	β		SE	β		SE
Bully Statuses:									
Low Victim: [a]	0.29	***	0.04	0.25	***	0.04	0.25	***	0.04
High Victim:	0.68	***	0.06	0.65	***	0.06	0.59	***	0.06
Low Bully: [b]	0.19	**	0.07	0.17	**	0.06	0.11		0.06
High Bully:	0.40	***	0.08	0.41	***	0.07	0.20	**	0.08
Bully-Victim Interactions:									
Low Victim*Low Bully:	-0.20	*	0.08	-0.19	*	0.08	-0.15	*	0.08
High Victim*Low Bully:	-0.17		0.10	-0.18		0.10	-0.15		0.09
Low Victim*High Bully:	-0.19		0.10	-0.17		0.10	-0.12		0.10
High Victim*High Bully:	-0.34	***	0.10	-0.32	**	0.10	-0.24	*	0.10
Negative Coping:									
Alcohol:							0.12	***	0.02
Fighting:							0.07	***	0.01
High-risk Dieting:							0.50	***	0.06
Excessive TV:							0.02		0.02
Junk Food:							0.07	***	0.02
Controls:									
Age:				0.01		0.02	-0.01		0.02
Grade:				0.06		0.04	0.05		0.04
Female:				0.42	***	0.03	0.45	***	0.03
Black: [c]				-0.14	**	0.05	-0.16	**	0.05
Hispanic:				0.12	**	0.04	0.10	*	0.04
Other race:				-0.10	*	0.04	-0.10	*	0.04
Underweight: [d]				0.04		0.08	0.00		0.07
Overweight:				0.06	*	0.03	0.06		0.03
Mother-only: [e]				0.07		0.04	0.04		0.04
Father-only:				0.29	**	0.09	0.25	**	0.09
Step-parent:				0.12	**	0.04	0.09	*	0.04
Siblings:				0.02		0.01	0.01		0.01
Time with Friends:				-0.06	***	0.01	-0.01		0.01
Family SES:				0.03		0.02	0.03	*	0.02
Intercept:	-0.35	***	0.03	-1.23	***	0.29	-0.85	**	0.28

N = 7951

a. Never-victim is the omitted reference group
b. Never-bully is the omitted reference group
c. White is the omitted reference group
d. Healthy weight is the omitted reference group
e. Both-parents is the omitted reference group
* p < .05   ** p < .01   *** p < .001

Table 3: Interaction Coefficients for Bullying Statuses and Negative Coping on Somatic Symptoms

	N	Model 1			Model 2			Model 3		
		β		SE	β		SE	β		SE
Victim-only:										
Low Victim:	1297	0.29	***	0.04	0.25	***	0.05	0.25	***	0.04
High Victim:	694	0.68	***	0.06	0.65	***	0.06	0.59	***	0.06
Bully-only:										
Low Bully:	539	0.19	**	0.07	0.17	**	0.06	0.11		0.06
High Bully:	405	0.40	***	0.08	0.41	***	0.07	0.20	***	0.08
Bully-Victims: [a]										
Low Victim*Low Bully:	804	0.27	***	0.05	0.24	***	0.05	0.21	***	0.05
High Victim*Low Bully:	569	0.70	***	0.06	0.65	***	0.06	0.55	***	0.06
Low Victim*High Bully:	413	0.50	***	0.07	0.50	***	0.06	0.34	***	0.06
High Victim*High Bully:	921	0.75	***	0.05	0.74	***	0.05	0.55	***	0.05

Total N = 7951

a: No Victim*No Bully N = 2309

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

Figure 1: Somatic Symptoms by Bullying Statuses (Model 2)

Somatic Symptoms by Bullying Statuses (Model 2)
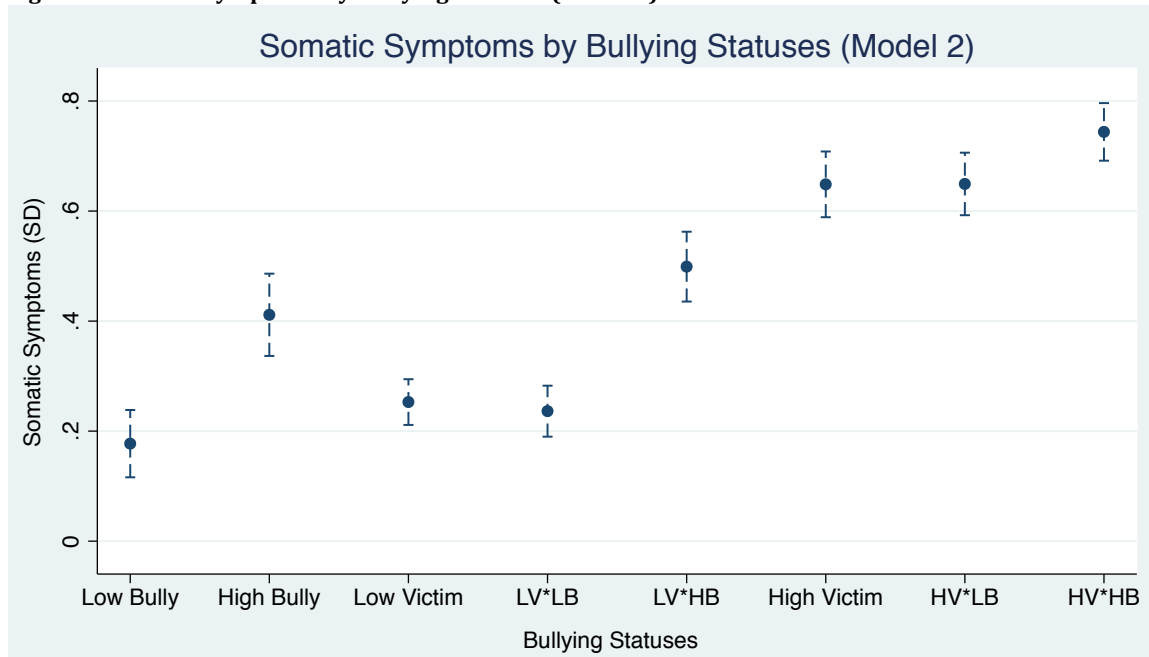
Figure 2: Somatic Symptoms by Bullying Statuses (Model 3)

Somatic Symptoms by Bullying Statuses (Model 3)
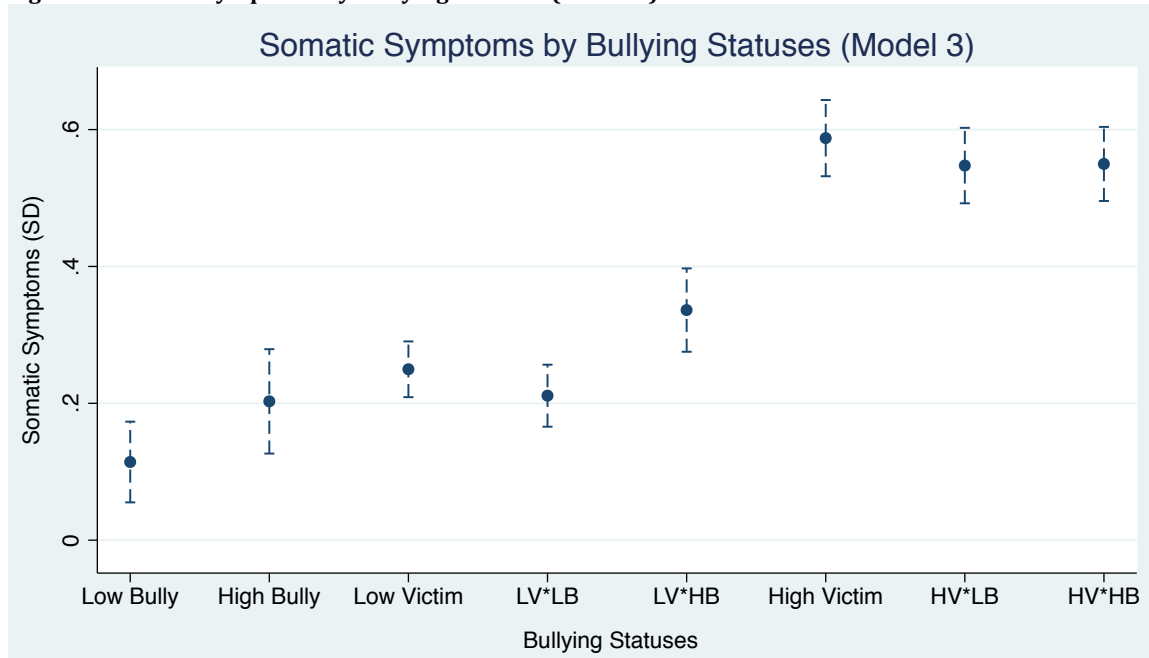
Table 4: Fixed-effects OLS Regression on Depressive Symptoms by Bullying Statuses and Negative Coping

	Model 1			Model 2			Model 3		
	β		SE	β		SE	β		SE
Bully Statuses:									
Low Victim: [a]	0.37	***	0.04	0.33	***	0.04	0.32	***	0.04
High Victim:	0.80	***	0.06	0.76	***	0.05	0.72	***	0.05
Low Bully: [b]	0.09		0.06	0.09		0.05	0.05		0.05
High Bully:	0.28	***	0.06	0.31	***	0.06	0.18	**	0.06
Bully-Victim Interactions:									
Low Victim*Low Bully:	-0.11		0.08	-0.11		0.07	-0.08		0.07
High Victim*Low Bully:	-0.05		0.10	-0.06		0.09	-0.05		0.09
Low Victim*High Bully:	-0.18		0.09	-0.17		0.09	-0.14		0.09
High Victim*High Bully:	-0.24	**	0.09	-0.24	**	0.09	-0.20	*	0.09
Negative Coping:									
Alcohol:							0.08	***	0.02
Fighting:							0.03	*	0.01
High-risk Dieting:							0.47	***	0.06
Excessive TV:							0.01		0.02
Junk Food:							0.04	*	0.02
Controls:									
Age:				0.03		0.03	0.02		0.03
Grade:				0.11	**	0.04	0.10	*	0.04
Female:				0.44	***	0.03	0.45	***	0.03
Black: [c]				-0.08		0.05	-0.08		0.05
Hispanic:				0.09	*	0.04	0.07		0.04
Other race:				0.03		0.04	0.04		0.04
Underweight: [d]				0.04		0.08	0.02		0.08
Overweight:				0.06		0.03	0.05		0.03
Mother-only: [e]				0.15	***	0.04	0.12	***	0.04
Father-only:				0.29	***	0.08	0.27	***	0.08
Step-parent:				0.09	*	0.04	0.07		0.04
Siblings:				0.01		0.01	0.00		0.01
Time with Friends:				-0.00		0.01	0.03		0.01
Family SES:				0.00		0.02	0.00		0.02
Intercept:	-0.36	***	0.03	-2.07	***	0.28	-1.78	***	0.28

N = 7951

a. Never-victim is the omitted reference group
b. Never-bully is the omitted reference group
c. White is the omitted reference group
d. Healthy weight is the omitted reference group
e. Both-parents is the omitted reference group
* p < .05   ** p < .01   *** p < .001

Table 5: Interaction Coefficients for Bullying Statuses and Negative Coping on Depressive Symptoms

	N	Model 1			Model 2			Model 3		
		β		SE	β		SE	β		SE
Victim-only:										
Low Victim:	1297	0.37	***	0.04	0.33	***	0.04	0.32	***	0.04
High Victim:	694	0.80	***	0.06	0.76	***	0.05	0.72	***	0.05
Bully-only:										
Low Bully:	539	0.09		0.06	0.09		0.05	0.05		0.05
High Bully:	405	0.28	***	0.06	0.31	***	0.06	0.18	**	0.06
Bully-Victims: [a]										
Low Victim*Low Bully:	804	0.35	***	0.04	0.31	***	0.04	0.30	***	0.04
High Victim*Low Bully:	569	0.84	***	0.06	0.79	***	0.06	0.72	***	0.06
Low Victim*High Bully:	413	0.46	***	0.07	0.47	***	0.06	0.37	***	0.06
High Victim*High Bully:	921	0.83	***	0.05	0.83	***	0.05	0.70	***	0.05

Total N = 7951

a: No Victim*No Bully N = 2309

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

Figure 3: Depressive Symptoms by Bullying Statuses (Model 2)

Depressive Symptoms by Bullying Statuses (Model 2)
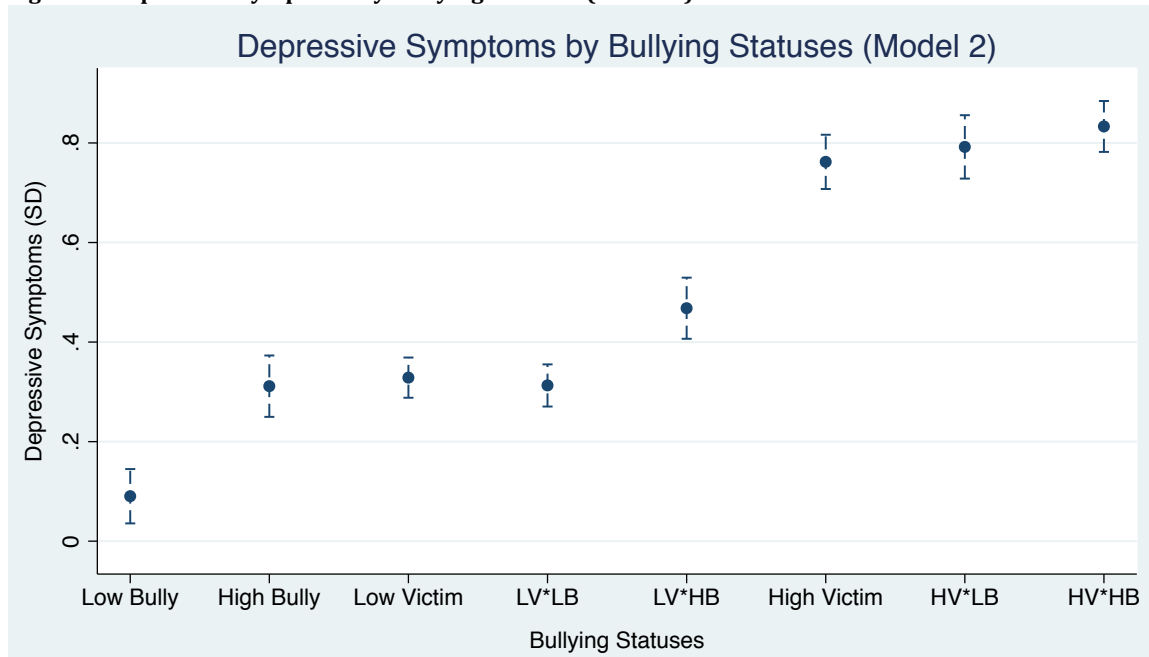
**Figure 4: Depressive Symptoms by Bullying Statuses (Model 3)**

Depressive Symptoms by Bullying Statuses (Model 3)
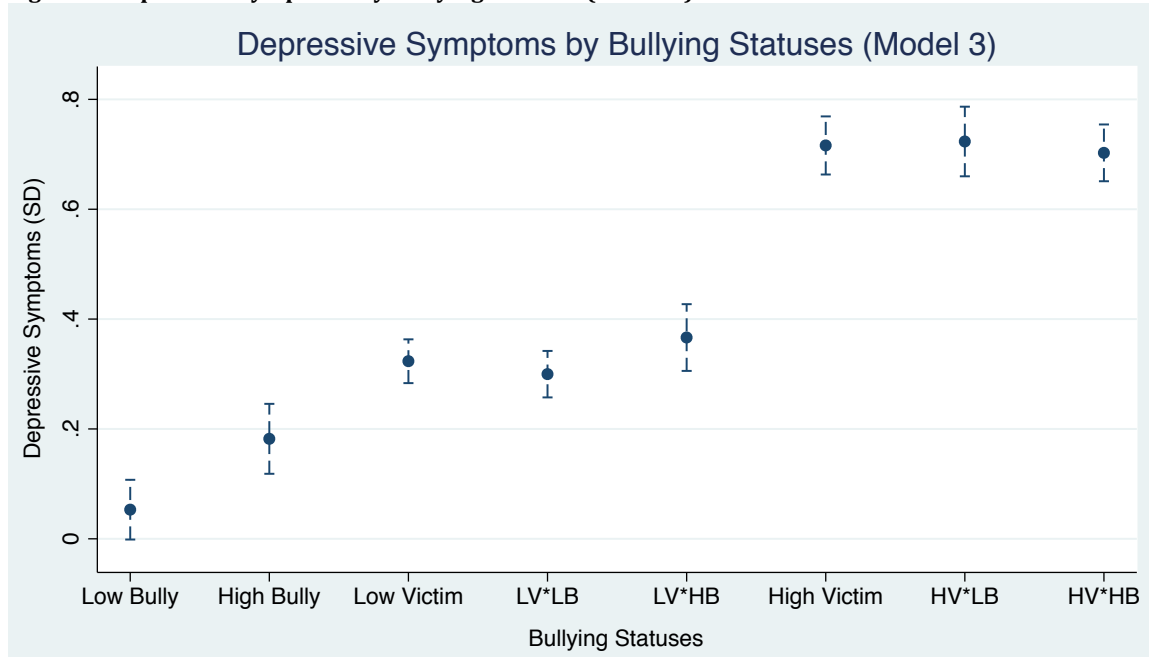
Appendices

Appendix I: Fixed-effect OLS with student weights using listwise deletion

Somatic symptoms: Fixed-effects OLS regression with student weights using listwise deletion

	Model 1		SE	Model 2		SE	Model 3		SE
	β			β			β		
Bully Statuses:									
Low Victim: [a]	0.27	***	0.05	0.23	***	0.05	0.21	***	0.05
High Victim:	0.63	***	0.07	0.61	***	0.07	0.55	***	0.06
Low Bully: [b]	0.17	*	0.08	0.17	*	0.07	0.12		0.07
High Bully:	0.49	***	0.09	0.49	***	0.09	0.32	***	0.09
Bully-Victim Interactions:									
Low Victim*Low Bully:	-0.24	*	0.10	-0.24	**	0.09	-0.19	*	0.09
High Victim*Low Bully:	-0.08		0.12	-0.11		0.11	-0.10		0.11
Low Victim*High Bully:	-0.35	**	0.12	-0.30	**	0.11	-0.27	*	0.11
High Victim*High Bully:	-0.41	***	0.12	-0.40	***	0.12	-0.32	**	0.11
Negative Coping:									
Alcohol:							0.14	***	0.02
Fighting:							0.06	***	0.02
High-risk Dieting:							0.52	***	0.07
Excessive TV:							0.02		0.02
Junk Food:							0.06	***	0.02
Controls:									
Age:				0.03		0.03	0.01		0.03
Grade:				0.05		0.04	0.04		0.04
Female:				0.43	***	0.03	0.45	***	0.03
Black: [c]				-0.18	**	0.06	-0.19	**	0.07
Hispanic:				0.13	*	0.05	0.12	*	0.05
Other race:				-0.15	**	0.05	-0.16	***	0.05
Underweight: [d]				-0.00		0.09	-0.02		0.08
Overweight:				0.06		0.04	0.06		0.03
Mother-only: [e]				0.04		0.04	0.02		0.04
Father-only:				0.31	**	0.09	0.28	**	0.09
Step-parent:				0.08		0.05	0.05		0.05
Siblings:				0.02		0.01	0.02		0.01
Time with Friends:				-0.06	***	0.02	-0.01		0.02
Family SES:				0.02		0.02	0.03		0.02
Intercept:	-0.35	***	0.03	-1.42	***	0.32	-1.02	***	0.32

N = 5555
a. Never-victim is the omitted reference group
b. Never-bully is the omitted reference group
c. White is the omitted reference group
d. Healthy weight is the omitted reference group
e. Both-parents is the omitted reference group
* p < .05   ** p < .01   *** p < .001

Fixed-effects OLS regression on depressive symptoms with student weights using listwise deletion

	Model 1			Model 2			Model 3		
	β		SE	β		SE	β		SE
Bully Statuses:									
Low Victim: [a]	0.36	***	0.05	0.31	***	0.05	0.30	***	0.05
High Victim:	0.74	***	0.07	0.71	***	0.06	0.67	***	0.06
Low Bully: [b]	0.08		0.07	0.08		0.06	0.05		0.06
High Bully:	0.35	***	0.08	0.38	***	0.08	0.26	***	0.08
Bully-Victim Interactions:									
Low Victim*Low Bully:	-0.11		0.09	-0.09		0.08	-0.06		0.08
High Victim*Low Bully:	0.08		0.12	0.05		0.11	0.05		0.11
Low Victim*High Bully:	-0.28	*	0.11	-0.25	*	0.10	-0.23	*	0.10
High Victim*High Bully:	-0.22		0.12	-0.21		0.11	-0.16		0.11
Negative Coping:									
Alcohol:							0.10	***	0.02
Fighting:							0.03		0.02
High-risk Dieting:							0.49	***	0.07
Excessive TV:							0.01		0.02
Junk Food:							0.05	*	0.02
Controls:									
Age:				0.06		0.04	0.04		0.03
Grade:				0.09		0.05	0.08		0.05
Female:				0.46	***	0.03	0.47	***	0.03
Black: [c]				-0.06		0.06	-0.06		0.06
Hispanic:				0.11	*	0.05	0.10		0.05
Other race:				-0.01		0.05	-0.01		0.05
Underweight: [d]				0.01		0.09	-0.01		0.09
Overweight:				0.08	*	0.03	0.07	*	0.03
Mother-only: [e]				0.11	**	0.04	0.09	*	0.04
Father-only:				0.29	***	0.09	0.27	**	0.09
Step-parent:				0.04		0.04	0.02		0.04
Siblings:				0.00		0.01	-0.00		0.01
Time with Friends:				0.01		0.02	0.04	**	0.02
Family SES:				-0.00		0.02	-0.00		0.02
Intercept:	-0.39	***	0.03	-2.22	***	0.32	-1.91	***	0.32

N = 5555

a. Never-victim is the omitted reference group

b. Never-bully is the omitted reference group

c. White is the omitted reference group

d. Healthy weight is the omitted reference group

e. Both-parents is the omitted reference group

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

Appendix II: Fixed-effect and tobit regression comparisons using imputed datasets by student weights (final model):

Somatic symptoms: Comparison table for fixed-effect and tobit regression results using imputed datasets by student weights:

	With student weight						Without student weight					
	Fixed-effect			Tobit			Fixed-effect			Tobit		
	β		SE	β		SE	β		SE	β		SE
Bully Statuses:												
Low Victim: [a]	0.25	***	0.04	0.27	***	0.05	0.21	***	0.03	0.23	***	0.04
High Victim:	0.59	***	0.06	0.62	***	0.06	0.59	***	0.03	0.63	***	0.06
Low Bully: [b]	0.11		0.06	0.11		0.08	0.12	**	0.04	0.14	**	0.05
High Bully:	0.20	***	0.08	0.22	**	0.07	0.16	***	0.05	0.19	***	0.05
Bully-Victim Interactions:												
Low Victim*Low Bully:	-0.15	*	0.08	-0.13		0.10	-0.11		0.06	-0.10		0.06
High Victim*Low Bully:	-0.15		0.09	-0.15		0.10	-0.16	*	0.07	-0.19	**	0.07
Low Victim*High Bully:	-0.12		0.10	-0.13		0.09	-0.01		0.07	-0.04		0.07
High Victim*High Bully:	-0.24	*	0.10	-0.25	**	0.09	-0.17	**	0.07	-0.18	*	0.07
Negative Coping:												
Alcohol:	0.12	***	0.02	0.12	***	0.02	0.14	***	0.01	0.14	***	0.02
Fighting:	0.07	***	0.01	0.07	***	0.02	0.08	***	0.01	0.07	***	0.01
High-risk Dieting:	0.50	***	0.06	0.51	***	0.07	0.53	***	0.04	0.53	***	0.05
Excessive TV:	0.02		0.02	0.01		0.02	0.04	**	0.01	0.04	**	0.01
Junk Food:	0.07	***	0.02	0.08	***	0.02	0.07	***	0.01	0.08	***	0.01
Controls:												
Age:	-0.01		0.02	-0.00		0.03	-0.01		0.02	-0.01		0.02
Grade:	0.05		0.04	0.05		0.03	0.03		0.03	0.05	*	0.02
Female:	0.45	***	0.03	0.48	***	0.04	0.40	***	0.02	0.43	***	0.03
Black: [c]	-0.16	**	0.05	-0.18	***	0.05	-0.19	***	0.04	-0.25	***	0.04
Hispanic:	0.10	*	0.04	0.08		0.04	0.02		0.03	0.02		0.04
Other race:	-0.10	*	0.04	-0.14	***	0.04	-0.09	**	0.03	-0.13	***	0.03
Underweight: [d]	0.00		0.07	0.01		0.08	0.08		0.06	0.08		0.07
Overweight:	0.06		0.03	0.06		0.03	0.10	***	0.02	0.10	***	0.03
Mother-only: [e]	0.04		0.04	0.05		0.04	0.07	*	0.03	0.06	*	0.03
Father-only:	0.25	**	0.09	0.28	**	0.09	0.20	***	0.06	0.22	***	0.06
Step-parent:	0.09	*	0.04	0.11	*	0.04	0.13	***	0.03	0.14	***	0.03
Siblings:	0.01		0.01	0.01		0.01	0.00		0.01	0.01		0.01
Time with Friends:	-0.01		0.01	-0.01		0.02	0.01		0.01	0.01		0.01
Family SES:	0.03	*	0.02	0.02		0.02	0.02		0.01	0.01		0.01
Intercept:	-0.85	**	0.28	-1.05	***	0.20	-0.68	***	0.20	-0.97	***	0.16

Depressive symptoms: Comparison table for fixed-effect and tobit regression results using imputed datasets by student weights:

| | With student weights | | | | | | Without student weights | | | | | |
| | Fixed-effect | | | Tobit | | | Fixed-effect | | | Tobit | | |
	β		SE	β		SE	β		SE	β		SE
Bully Statuses:												
Low Victim: [a]	0.32	***	0.04	0.43	***	0.05	0.26	***	0.03	0.37	***	0.04
High Victim:	0.72	***	0.05	0.87	***	0.07	0.70	***	0.03	0.85	***	0.05
Low Bully: [b]	0.05		0.05	0.04		0.08	0.04		0.04	0.09		0.06
High Bully:	0.18	**	0.06	0.26	***	0.08	0.15	**	0.05	0.23	***	0.06
Bully-Victim Interactions:												
Low Victim*Low Bully:	-0.08		0.07	-0.04		0.11	-0.01		0.06	-0.04		0.07
High Victim*Low Bully:	-0.05		0.09	-0.02		0.12	-0.02		0.07	-0.06		0.09
Low Victim*High Bully:	-0.14		0.09	-0.21	*	0.10	-0.07		0.07	-0.12		0.08
High Victim*High Bully:	-0.20	*	0.09	-0.25	*	0.12	-0.14	*	0.07	-0.18	*	0.09
Negative Coping:												
Alcohol:	0.08	***	0.02	0.09	***	0.02	0.10	***	0.01	0.12	***	0.02
Fighting:	0.03	*	0.01	0.04	*	0.02	0.04	***	0.01	0.05	***	0.01
High-risk Dieting:	0.47	***	0.06	0.47	***	0.07	0.48	***	0.04	0.50	***	0.06
Excessive TV:	0.01		0.02	0.00		0.02	0.01		0.01	0.01		0.01
Junk Food:	0.04	*	0.02	0.03	*	0.02	0.04	***	0.01	0.04	**	0.01
Controls:												
Age:	0.02		0.03	0.02		0.03	0.03		0.02	0.01		0.02
Grade:	0.10	*	0.04	0.07	*	0.03	0.05		0.03	0.05	*	0.02
Female:	0.45	***	0.03	0.57	***	0.03	0.42	***	0.02	0.54	***	0.03
Black: [c]	-0.08		0.05	-0.17	**	0.05	-0.09	*	0.04	-0.21	***	0.04
Hispanic:	0.07		0.04	0.10		0.06	-0.00		0.03	0.00		0.05
Other race:	0.04		0.01	0.03		0.06	0.05		0.03	0.05		0.04
Underweight: [d]	0.02		0.08	-0.02		0.10	0.04		0.06	0.02		0.07
Overweight:	0.05		0.03	0.05		0.03	0.10	***	0.02	0.11	***	0.03
Mother-only: [e]	0.13	***	0.04	0.14	***	0.04	0.13	***	0.03	0.13	***	0.03
Father-only:	0.27	***	0.08	0.29	**	0.10	0.29	***	0.06	0.30	***	0.08
Step-parent:	0.07		0.04	0.07		0.04	0.10	***	0.03	0.11	**	0.04
Siblings:	0.00		0.01	-0.00		0.01	0.00		0.01	-0.00		0.01
Time with Friends:	0.03		0.01	0.04	*	0.02	0.04	***	0.01	0.05	***	0.01
Family SES:	0.00		0.02	-0.00		0.02	-0.00		0.01	-0.01		0.01
Intercept:	-1.78	***	0.28	-1.73	***	0.23	-1.43	***	0.20	-1.54	***	0.15

Fixed-effect and tobit regression comparisons for bullying categories (final model):

Somatic symptoms: Comparison table for fixed-effect and tobit regression results using imputed datasets by student weight:

	With student weights						Without student weights					
	Fixed-effect			Tobit			Fixed-effect			Tobit		
	β		SE	β		SE	β		SE	β		SE
Bully Statuses:												
Low Victim: [a]	0.25	***	0.04	0.27	***	0.05	0.21	***	0.03	0.23	***	0.04
High Victim:	0.59	***	0.06	0.62	***	0.06	0.59	***	0.04	0.63	***	0.06
Low Bully: [b]	0.11		0.06	0.11		0.08	0.12	**	0.04	0.14	**	0.05
High Bully:	0.20	***	0.08	0.22	**	0.07	0.16	***	0.05	0.19	***	0.05
Bully-Victims:												
Low Victim*Low Bully:	0.21	***	0.05	0.25	***	0.06	0.23	***	0.04	0.26	***	0.05
High Victim*Low Bully:	0.55	***	0.06	0.59	***	0.06	0.55	***	0.04	0.57	***	0.05
Low Victim*High Bully:	0.34	***	0.06	0.37	***	0.07	0.36	***	0.05	0.38	***	0.06
High Victim*High Bully:	0.55	***	0.05	0.60	***	0.06	0.58	***	0.04	0.63	***	0.06

Depressive symptoms: Comparison table for fixed-effect and tobit regression results using imputed datasets by student weight:

	With student weights						Without student weights					
	Fixed-effect			Tobit			Fixed-effect			Tobit		
	β		SE	β		SE	β		SE	β		SE
Bully Statuses:												
Low Victim: [a]	0.32	***	0.04	0.43	***	0.05	0.26	***	0.03	0.37	***	0.04
High Victim:	0.72	***	0.05	0.87	***	0.07	0.70	***	0.04	0.85	***	0.05
Low Bully: [b]	0.05		0.05	0.04		0.08	0.04		0.04	0.09		0.06
High Bully:	0.18	**	0.06	0.26	***	0.08	0.15	**	0.05	0.23	***	0.06
Bully-Victims:												
Low Victim*Low Bully:	0.30	***	0.04	0.44	***	0.04	0.29	***	0.04	0.42	***	0.04
High Victim*Low Bully:	0.72	***	0.06	0.89	***	0.06	0.72	***	0.04	0.88	***	0.04
Low Victim*High Bully:	0.37	***	0.06	0.49	***	0.08	0.34	***	0.05	0.48	***	0.05
High Victim*High Bully:	0.70	***	0.05	0.88	***	0.05	0.71	***	0.04	0.89	***	0.05

Appendix III: Fixed-effect OLS regression results by gender with student weights:

Boys: Somatic symptoms

Boys: Fixed-effect OLS regression on somatic symptoms by bullying statuses and negative coping

	Model 1			Model 2			Model 3		
	β		SE	β		SE	β		SE
Bully Statuses:									
Low Victim: [a]	0.24	***	0.05	0.25	***	0.05	0.26	***	0.05
High Victim:	0.54	***	0.08	0.55	***	0.08	0.52	***	0.08
Low Bully: [b]	0.12		0.07	0.12		0.07	0.09		0.07
High Bully:	0.37	***	0.08	0.35	***	0.08	0.19	*	0.08
Bully-Victim Interactions:									
Low Victim*Low Bully:	-0.10		0.10	-0.11		0.10	-0.09		0.09
High Victim*Low Bully:	-0.07		0.13	-0.07		0.13	-0.04		0.13
Low Victim*High Bully:	-0.17		0.11	-0.17		0.11	-0.12		0.11
High Victim*High Bully:	-0.21		0.12	-0.19		0.12	-0.15		0.12
Negative Coping:									
Alcohol:							0.07	**	0.02
Fighting:							0.06	***	0.02
High-risk Dieting:							0.39	***	0.09
Excessive TV:							0.00		0.02
Junk Food:							0.08	***	0.02
Controls:									
Age:				0.01		0.03	-0.00		0.03
Grade:				0.04		0.04	0.04		0.05
Black: [c]				-0.11		0.06	-0.14	*	0.06
Hispanic:				0.12	*	0.06	0.11		0.06
Other race:				-0.09		0.06	-0.08		0.06
Underweight: [d]				0.01		0.12	-0.03		0.10
Overweight:				0.05		0.04	0.06		0.04
Mother-only: [e]				0.06		0.05	0.04		0.05
Father-only:				0.11		0.11	0.09		0.11
Step-parent:				0.11	*	0.05	0.10		0.05
Siblings:				0.01		0.01	0.00		0.01
Time with Friends:				-0.02		0.02	0.01		0.02
Family SES:				0.02		0.02	0.02		0.02
Intercept:	-0.53	***	0.03	-1.13	***	0.36	-0.85	***	0.35

N = 3817

a. Never-victim is the omitted reference group

b. Never-bully is the omitted reference group

c. White is the omitted reference group

d. Healthy weight is the omitted reference group

e. Both-parents is the omitted reference group

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

Boys: Depressive symptoms

Boys: Fixed-effect OLS regression on depressive symptoms by bullying statuses and negative coping

	Model 1			Model 2			Model 3		
	β		SE	β		SE	β		SE
Bully Statuses:									
Low Victim: [a]	0.36	***	0.05	0.36	***	0.05	0.36	***	0.05
High Victim:	0.55	***	0.08	0.56	***	0.07	0.54	***	0.08
Low Bully: [b]	-0.05		0.06	-0.04		0.06	-0.06		0.06
High Bully:	0.26	***	0.07	0.26	***	0.07	0.17	*	0.08
Bully-Victim Interactions:									
Low Victim*Low Bully:	-0.10		0.08	-0.10		0.08	-0.09		0.08
High Victim*Low Bully:	0.30	*	0.13	0.30	*	0.12	0.32	*	0.13
Low Victim*High Bully:	-0.27	*	0.11	-0.27	*	0.11	-0.23	*	0.11
High Victim*High Bully:	-0.07		0.12	-0.06		0.11	-0.03		0.11
Negative Coping:									
Alcohol:							0.04		0.02
Fighting:							0.02		0.02
High-risk Dieting:							0.34	***	0.09
Excessive TV:							-0.02		0.02
Junk Food:							0.04		0.02
Controls:									
Age:				0.05		0.04	0.04		0.04
Grade:				0.08		0.05	0.08		0.05
Black: [c]				-0.06		0.06	-0.06		0.06
Hispanic:				0.06		0.06	0.05		0.06
Other race:				0.01		0.06	0.03		0.06
Underweight: [d]				0.01		0.10	-0.01		0.10
Overweight:				-0.00		0.04	0.00		0.04
Mother-only: [e]				0.12	*	0.05	0.11	*	0.05
Father-only:				0.09		0.11	0.08		0.11
Step-parent:				0.03		0.05	0.09		0.05
Siblings:				0.01		0.01	0.01		0.01
Time with Friends:				0.02		0.02	0.05	*	0.02
Family SES:				-0.03		0.02	-0.03		0.02
Intercept:	-0.53	***	0.03	-2.06	***	0.37	-1.85	***	0.37

N = 3817
a. Never-victim is the omitted reference group
b. Never-bully is the omitted reference group
c. White is the omitted reference group
d. Healthy weight is the omitted reference group
e. Both-parents is the omitted reference group
* p < .05   ** p < .01   *** p < .001

Girls: Somatic symptoms

Girls: Fixed-effect OLS regression on somatic symptoms by bullying statuses and negative coping

	Model 1			Model 2			Model 3		
	β		SE	β		SE	β		SE
Bully Statuses:									
Low Victim: [a]	0.27	***	0.06	0.27	***	0.06	0.25	***	0.06
High Victim:	0.78	***	0.09	0.76	***	0.09	0.66	***	0.08
Low Bully: [b]	0.21	*	0.10	0.20	*	0.10	0.11		0.09
High Bully:	0.49	***	0.15	0.46	**	0.15	0.24		0.15
Bully-Victim Interactions:									
Low Victim*Low Bully:	-0.22		0.12	-0.21		0.12	-0.15		0.12
High Victim*Low Bully:	-0.31	*	0.14	-0.28		0.14	-0.26		0.13
Low Victim*High Bully:	-0.11		0.18	-0.11		0.19	-0.11		0.18
High Victim*High Bully:	-0.43	*	0.18	-0.41	*	0.18	-0.32		0.18
Negative Coping:									
Alcohol:							0.18	***	0.03
Fighting:							0.08	**	0.03
High-risk Dieting:							0.58	***	0.08
Excessive TV:							0.03		0.02
Junk Food:							0.08	**	0.02
Controls:									
Age:				-0.01		0.04	-0.03		0.04
Grade:				0.10		0.06	0.07		0.06
Black: [c]				-0.17	*	0.08	-0.17	*	0.08
Hispanic:				0.13		0.07	0.08		0.07
Other race:				-0.09		0.07	-0.11		0.07
Underweight: [d]				0.10		0.12	0.10		0.11
Overweight:				0.09		0.05	0.05		0.05
Mother-only: [e]				0.08		0.06	0.04		0.05
Father-only:				0.57	***	0.15	0.51	***	0.14
Step-parent:				0.14	*	0.06	0.10		0.06
Siblings:				0.02		0.02	0.01		0.02
Time with Friends:				-0.08	***	0.02	-0.01		0.02
Family SES:				0.04		0.03	0.04		0.02
Intercept:	-0.16	***	0.04	-0.92	*	0.46	-0.42		0.46

N = 4134
a. Never-victim is the omitted reference group
b. Never-bully is the omitted reference group
c. White is the omitted reference group
d. Healthy weight is the omitted reference group
e. Both-parents is the omitted reference group
* p < .05   ** p < .01   *** p < .001

Girls: Depressive symptoms

Girls: Fixed-effect OLS regression on depressive symptoms by bullying statuses and negative coping

	Model 1			Model 2			Model 3		
	β		SE	β		SE	β		SE
Bully Statuses:									
Low Victim: [a]	0.32	***	0.06	0.31	***	0.06	0.30	***	0.06
High Victim:	0.93	***	0.08	0.90	***	0.08	0.83	***	0.07
Low Bully: [b]	0.20	*	0.09	0.19	*	0.09	0.12		0.09
High Bully:	0.36	***	0.11	0.36	**	0.11	0.20		0.11
Bully-Victim Interactions:									
Low Victim*Low Bully:	-0.11		0.12	-0.10		0.12	-0.04		0.11
High Victim*Low Bully:	-0.34	*	0.13	-0.31	*	0.14	-0.30	*	0.13
Low Victim*High Bully:	-0.03		0.15	-0.06		0.15	-0.06		0.15
High Victim*High Bully:	-0.35	*	0.14	-0.34	*	0.15	-0.29	*	0.14
Negative Coping:									
Alcohol:							0.12	***	0.03
Fighting:							0.06	*	0.02
High-risk Dieting:							0.56	***	0.08
Excessive TV:							0.03		0.02
Junk Food:							0.04		0.02
Controls:									
Age:				0.02		0.04	0.01		0.04
Grade:				0.14	*	0.06	0.12	*	0.06
Black: [c]				-0.08		0.07	-0.09		0.07
Hispanic:				0.12		0.06	0.09		0.06
Other race:				0.09		0.07	0.08		0.06
Underweight: [d]				0.12		0.13	0.11		0.12
Overweight:				0.13	**	0.05	0.10	*	0.04
Mother-only: [e]				0.17	**	0.05	0.14	**	0.05
Father-only:				0.58	***	0.13	0.53	***	0.13
Step-parent:				0.12	*	0.06	0.10		0.06
Siblings:				0.00		0.01	-0.01		0.01
Time with Friends:				-0.04		0.02	0.01		0.02
Family SES:				0.03		0.02	0.02		0.02
Intercept:	-0.18	***	0.04	-1.79	***	0.45	-1.41	**	0.45

N = 4134
a. Never-victim is the omitted reference group
b. Never-bully is the omitted reference group
c. White is the omitted reference group
d. Healthy weight is the omitted reference group
e. Both-parents is the omitted reference group
* p < .05   ** p < .01   *** p < .001

Appendix IV: Fixed-effect OLS regression on negative coping by bullying statuses with student weights (first model):

Fixed-effect OLS regression on negative coping by bullying statuses with student weights:

	N	Alcohol		Fighting [a]		High-risk Dieting [b]		Excessive TV		Junk Food	
		β	SE	β	SE	β	SE	β	SE	β	SE
Victim-only:											
Low Victim:	1297	-0.02	0.04	-0.13 ***	0.04	0.01	0.01	-0.05	0.04	0.00	0.04
High Victim:	694	0.10 *	0.05	0.14 *	0.06	0.06 ***	0.02	0.06	0.06	-0.06	0.06
Bully-only:											
Low Bully:	539	0.23 ***	0.06	0.30 ***	0.08	0.01	0.01	0.04	0.06	0.15 **	0.06
High Bully:	405	0.79 ***	0.09	0.96 ***	0.10	0.08 ***	0.02	0.17 *	0.07	0.44 ***	0.07
Bully-Victims: [c]											
Low Victim*Low Bully:	804	0.16 ***	0.04	0.00	0.05	-0.01	0.01	0.02	0.05	0.09	0.05
High Victim*Low Bully:	569	0.25 ***	0.05	0.23 ***	0.07	0.07 ***	0.02	0.15 *	0.06	0.09	0.06
Low Victim*High Bully:	413	0.67 ***	0.08	0.54 ***	0.09	0.06 **	0.02	0.12	0.07	0.41 ***	0.07
High Victim*High Bully:	921	0.63 ***	0.06	0.59 ***	0.07	0.12 ***	0.02	0.21 ***	0.06	0.29 ***	0.05
Intercept:		-0.19 ***	0.02	0.51 ***	0.03	0.04 ***	0.01	-0.08 ***	0.02	-0.15 ***	0.02

Total N: 7951

a-b: Fixed-effect OLS regression substituted for ordinal logistic regression (fighting, high-risk dieting)

c: No Victim*No bully N = 2309

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