

Abstract

Background: Peer victimization is associated with an increased risk for depression, but there is less evidence on how certain factors such as friend support can buffer this association. This study investigated the associations between friend support and depressive symptoms among victimized and non-victimized adolescent girls and boys from South Korea.

Methods: Participants includes 2258 students from the Korea Children and Youth Panel Survey, a nationally representative sample of middle school students in South Korea, from year 1 to year 3. Self-reported perceived friend support, depressive symptoms and peer victimization were measured using validated scales during middle school year 3 (mean age= 15.7 years). Friend support and depressive symptoms raw scores were converted to z-scores to ease interpretation.

Results: The association of peer victimization and depressive symptoms varied by sex (p for sex by peer victimization interaction $<.05$). Peer victimization was more strongly associated with same year depressive symptoms in girls ($\beta=.55$) than boys ($\beta=.24$). After controlling for key confounders, including prior year mental health symptoms, higher levels of friend support were found to attenuate the association between peer victimization and depressive symptoms (p for friend support by peer victimization interaction $<.05$). Peer victimization was associated with more depressive symptoms for adolescents with low and moderate friend support, but not those with high friend support.

Limitations: Peer victimization, depressive symptoms, and friend support, were self-reported and measured the same year.

Conclusions: Friend support protects victimized South Korean adolescents from the negative effect of peer victimization on depressive symptoms, hence contributing to close the gap in depression between victimized and non-victimized adolescents. Thus, leveraging friend support may represent an economical way to reduce the harm of victimization on depressive symptoms.

Keywords: peer victimization, bullying, depressive symptoms, friend support, protective.

Introduction

Peer victimization, defined as physical, verbal, or psychological harm caused by peers outside the norms of appropriate conduct (Finkelhor et al., 2012), is a major public health concern around the world (Craig et al., 2009; Geoffroy et al., 2018; Koyanagi et al., 2019). It includes, but is not limited to, bullying which is characterized by an imbalance of power between the perpetrator and the victim (Olweus, 1993). Peer victimization is a common experience in adolescence. A large survey of adolescents in 40 countries indicated that 12.6% of 11- to 15-year-olds reported being exposed to bullying victimization in the past 2 months, with varying prevalence across sex, age, and countries (Craig et al., 2009).

Systematic reviews, meta-analyses, and recent studies found that peer victimization is associated with poor mental health including depressive symptoms, as well as a clinical diagnosis of depression in adolescence and later in adulthood (Bowes et al., 2016; Copeland et al., 2013; Geoffroy et al., 2018; Klomek et al., 2015; Moore et al., 2017; Reijntjes et al., 2010). Such associations were independent from prior mental health symptoms (including externalizing and internalizing symptoms) and family characteristics that are known for their associations with both peer victimization and depressive symptoms, and could have acted as confounders. To illustrate, Geoffroy et al. (2018) reported that children from the Quebec Longitudinal Study of Children Development (Canada) who were chronically victimized by their peers from 6 to 13 years old were at higher risk of experiencing debilitating depressive symptoms in mid-adolescence compared to those who had not been victimized, even after adjusting for a range of mental health and family characteristics (e.g. prior depressive symptoms and family hardship) concurrent or prior to peer victimization. Similarly, in the Avon Longitudinal Study of Parents and Children (ALSPAC, United Kingdom), adolescents who were frequently victimized by peers

had over a twofold increase in odds for clinical depression in early adulthood, even after adjusting for previous depressive symptoms and other key confounders (Bowes et al., 2016).

Similarly in South Korea, associations of peer victimization and depressive symptoms have been reported in children from elementary to high school (Bhang et al., 2012; Jung et al., 2017; Kim et al., 2016; Yang et al., 2006), however only one study had adjusted for key confounders (Yang et al., 2006). Controlling for these individual and familial vulnerabilities is key to avoid reporting inflated estimation of the real magnitude of association between peer victimization and depressive symptoms, due to reciprocal effects (Martin-Storey et al., 2018; Oncioiu et al., 2020).

Furthermore, it is unclear whether peer victimization affects depressive symptoms in boys and girls similarly. While the vast majority of studies reported that victimized boys and girls were equally likely to report depressive symptoms (Craig, 1998; Geoffroy et al., 2018; Saluja et al., 2004; Turner et al., 2013), few reported that victimized girls are at higher risk than boys (Bond et al., 2001; Klomek et al., 2007; Takizawa et al., 2014; Williams et al., 2017), and one study reported that victimized boys reported more depressive symptoms compared to girls (Cheng et al., 2008).

To date, research on depression in youth has mostly focused on risk factors, such as peer victimization. However, less is known about factors that may buffer the putative effect of these adverse social experiences (Arango et al., 2018; Patel et al., 2007). For example, a recent systematic review of studies in Western countries showed that children and adolescent with greater social support reported fewer depressive symptoms, but the role of social support in the context of adversity was not investigated (Garipey et al., 2016). As adolescence is a period where peers are a salient source of support against depressive symptoms (Rueger et al., 2016), peers

may also help young people cope with the negative consequences of adverse life experiences such as peer victimization.

Many studies have found that social and friend support is associated with a lower risk of depressive symptoms in youth in general (Auerbach et al., 2011; Hall-Lande et al., 2007; La Greca et al., 2005; Minkkinen, 2014; Rueger et al., 2010; Scardera et al., 2020), but it is unclear whether friend support can benefit adolescents in the context of peer victimization (Cheng et al., 2008; Cooley et al., 2015; Holt et al., 2007; Pouwelse et al., 2011; Tanigawa et al., 2011; Yin et al., 2017). On the one hand, some studies have reported that friend support is associated with fewer depressive symptoms for all youth, whether they had been victimized or not (Pouwelse et al., 2011; Yin et al., 2017). On the other hand, other studies reported the protective effect of friend support only in those exposed to peer victimization (Cheng et al., 2008; Cooley et al., 2015). Sex differences may also exist as one study reported that all girls benefited from friend support regardless of whether they were victimized, while only victimized boys with friend support reported fewer depressive symptoms (Tanigawa et al., 2011).

As far as we are aware, evidence to date linking social support and depressive symptoms is largely based on cross-sectional samples, and most studies have not controlled for prior mental health symptoms (Garipey et al., 2016). This is problematic because youth who experience better mental health may perceive more social support in their environment, leading to an inflation of the real magnitude of the expected association (Cheng et al., 2008; Cooley et al., 2015; Holt et al., 2007; Pouwelse et al., 2011; Tanigawa et al., 2011; Yin et al., 2017). Thus, stronger support for the hypothesized buffering impact of friend support on depressive symptoms following peer victimization requires the inclusion of prospectively and repeatedly collected measures of

depressive symptoms and peer victimization to statistically control for reciprocal effects and thus, minimize the influence of reverse causality.

Furthermore, to the best of our knowledge, only two studies having investigated the role of friend support on the association between peer victimization and depressive symptoms in non-Western population (Cheng et al., 2008; Yin et al., 2017). This is important because peer victimization may be different in nature in non-Western countries; for example in South Korea, collective peer victimization, with several bullies targeting one victim, is a prevalent type of bullying (Lee, 2010). Furthermore, friend support may have a distinct significance and impact on mental health in collectivist societies such as South Korea (Lee, 2010; Park et al., 2015) or other non-Western countries.

Using data collected across three middle school years from the Korean Children and Youth Panel Survey, a large population-based cohort, the present study examined 1) the concurrent association between peer victimization and depressive symptoms in adolescents, and 2) whether perceived friend support moderates this association, while adjusting for key confounding factors in the prior years, including depressive symptoms. We also investigated the possibility of differential association by sex (or sex by peer victimization interaction). If significant sex interactions were found, associations were examined in boys and girls separately, if not, sex was adjusted for.

Methods

Participants

Participants were from the Korea Children and Youth Panel Survey (KCYPS), a nationally representative cohort conducted by the National Youth Policy Institute. The dataset includes 2351 year 1 middle school students in 2010 and followed up annually thereafter (NYPI, 2014).

The National Youth Policy Institute randomly selected KCYPS participants using a stratified multi-stage cluster sampling method by school size from 78 middle schools, in 9 provinces and 7 metropolitan areas (NYPI, 2010). The use of KCYPS data was approved by the Institutional Research Board at Korea University (IRB-2019-0288) with a waiver for informed consent since the data were obtained from a public depository freely accessible online. Further information about the KCYPS selection and data collection can be found online (NYPI, 2014). The present study included data from the baseline of the cohort in 2011 at year 1 of middle school (mean age=13.7; SD=0.33), at year 2 in 2012 (mean age=14.7; SD=0.33), and at year 3 in 2013 (mean age=15.7; SD=0.33). Follow-up rates for year 2 and year 3 were 97.0% (n=2346) and 96.1% (n=2337), respectively. Information on peer victimization, perceived friend support, and depressive symptoms was available for 2257 participants, and among those 2227 participants had complete information on confounding factors; representing 94.7% of the original cohort.

Measures

Peer victimization exposure in middle school year 3

Participants responded to the Korean School Violence Victimization Questionnaire (Hong et al., 2017; Kim et al., 2015; Lee et al., 2014) developed by the Korean National Youth Policy Institute (NYPI, 2014). The questionnaire assesses the presence (yes or no) of the following 7 victimization experiences by peers in the past 12 months (i.e. “being seriously teased or mocked”; “being bullied”, “being assaulted”, “being threatened”, “being robbed of money or goods”, “being sexually assaulted or harassed”, “hearing serious verbal violence”; Cronbach $\alpha=0.91$ in the study sample). The peer victimization measure was dichotomous; youth were considered victimized by peers if they reported at least one event of peer victimization.

Depressive symptoms outcome in middle school year 3

Symptoms of depression were measured by the depression subscale of the Symptom Checklist-90 Revised (SCL-90 revised) (Derogatis et al., 1974); translated into Korean (Kim et al., 1978; Lee et al., 2010; Park et al., 2016) and previously used in Korean adolescent samples (Bhang et al., 2012). The SCL-90 revised evaluates a broad range of psychological problems and symptoms of psychopathology in individuals 13 years or older (Derogatis et al., 1974). The depression scale consisted of 10 items assessing symptoms in the past week (e.g. “I feel unlucky”, “I feel sad and depressed”, “I want to die”; Cronbach $\alpha=0.91$ in the study sample). Responses were rated on a 4-point Likert scale (0=strongly disagree, 1=disagree, 2=agree, 3=strongly agree).

Perceived friend support in middle school year 3

Participants completed the adapted Korean version (Hwang, 2010; Lee et al., 2017) of the Inventory of Parent and Peer Attachment which includes a scale measuring friend support (degree of trust and communication) (Armsden et al., 1987). The scale includes 9 items (e.g. “my friends respect my opinions during conversations”, “I talk about my concerns with my friend”; Cronbach $\alpha=0.66$ in the study sample). Responses were rated on a 4-point Likert scale (0=strongly disagree, 1= disagree, 2=agree, 3=strongly agree).

Potential confounding factors in prior middle school years (year 1 or 2)

Potential confounders considered here were chosen a priori for their associations with both peer victimization and depressive symptoms in past studies based on Western samples (Geoffroy et al., 2018). However, as described in the analyses, only those associated with both peer victimization and depressive symptoms in this sample were controlled for in the analyses.

Prior mental health symptoms

Depressive symptoms in year 2 were measured using the depression subscale of the Symptom Checklist-90 revised (Derogatis et al., 1974; Kim et al., 1983), used in year 3 and described above.

Childhood externalizing problems in year 2 were assessed using the Emotional or Behavioral Problems Scale (Cho et al., 2003) adapted from the Walker Problem Behavior Identification Checklist (Walker, 1983) and the Child Behavior Rating Scale (Cassels, 1962). The full scale consists of 40 items, 7 of which were used to derive a *hyperactivity-inattention symptoms* score (e.g. “I often make mistakes/accidents because I do not pay attention”; Cronbach $\alpha=0.79$ in the study sample) and 6 items were used to compute an *aggressive behaviors* score (e.g. “I often get into fights for minor things”; Cronbach $\alpha=0.81$ in the study sample). Items are answered on a 4-point Likert scale (strongly disagree, disagree, agree, strongly agree).

Family factors

Childhood maltreatment at year 2, *parental affection*, and *parental monitoring* at year 1 subscales were obtained using the Parenting Behavior Inventory (Huh, 2000). History of *childhood maltreatment* by parents (including neglect, physical and emotional abuse) was self-reported using 8 items (e.g. “My parents take me to get treated if I am sick”, “My parents have treated me harshly to the point that I had bruises or scars left on my body”; Cronbach $\alpha=0.74$ in the study sample). *Parental monitoring* was assessed from 4 items (e.g. “My parents know how I spend my time”, Cronbach $\alpha=0.76$ in the study sample) and *parental affection* from 3 items (e.g., “My parents often express that they love me”; Cronbach $\alpha=0.82$ in the study sample).

Sociodemographic factors

Father and mother education levels (middle school, high school, college, university, graduate school) and *yearly household income* (in millions of Korean won) were reported by the participants.

Statistical Analysis

First, we reported descriptive statistics for our variables of interests, namely, peer victimization, friend support, and depressive symptoms in the total sample, as well as in girls and boys separately (**Table 1**). Second, in order to determine which confounders to control for in our analyses, we examined associations between a wide range of individual (e.g. prior depressive symptoms) and family (e.g. childhood maltreatment) characteristics measured in middle school year 1 and 2, and peer victimization in year 3 using t-tests and chi-squares, as well as depressive symptoms in year 3 using correlations (**Table 2**). Potential confounders simultaneously associated with both peer victimization and depressive symptoms were controlled for in the main analyses. Third, using linear regression we examined the association between concurrent peer victimization and depressive symptoms in adolescents during middle school year 3 (Step 1, **Table 3**), while adjusting for key confounders measured in prior years (Step 2, **Table 3**). To test whether there was a difference in associations by sex, we included an interaction term between sex and peer victimization in the adjusted model (Step 3, **Table 3**). If the interaction was significant, the association was stratified by sex. All analyses were set to a significance level of 0.05. Fourth, we further tested the protective role of perceived friend support (converted into a z-score) in the association between peer victimization and depressive symptoms by including a friend support by peer victimization interaction term in the adjusted model (**Figure 1**). We tested the three-way interaction between sex, peer victimization and friend support in the association

with depressive symptoms by entering a sex by peer victimization by friend support interaction in the adjusted model.

Results

Table 1 describes peer victimization, friend support, and depressive symptoms in the total sample, as well as in boys and girls separately. The prevalence of peer victimization was 8.2% in the total sample with a higher prevalence rate in boys (11.3%) than in girls (5.1%) ($p < .001$). Furthermore, boys reported lower levels of friend support ($p < .05$) and fewer depressive symptoms ($p < .001$) compared to girls.

Table 1: Descriptive statistics for peer victimization, perceived friend support and depressive symptoms in middle school year 3 (mean age = 15.7) in the total sample, and in girls and boys

	Total sample	Girls	Boys	Sex differences
	N(%) or mean(\pm sd)			p-value
N	2257	1118	1139	
Peer victimization	186(8.2%)	57(5.1%)	129(11.3%)	<.001
Friend support ^a	15.91(\pm 3.44)	16.08(\pm 3.04)	15.74(\pm 3.79)	.017
Depressive symptoms ^a	9.82(\pm 6.24)	10.76(\pm 6.29)	8.89(\pm 6.06)	<.001

N based on maximum available data for all variables (n=2257)

Based on chi-square and t-tests

^a Friend support and depressive symptoms were standardized Z-scores with a mean of 0 and standard deviation of 1

Table 2 presents mental health, family, and sociodemographic factors by peer victimization and depressive symptoms. Prior year mental health factors (but not family and sociodemographic factors) were associated with both peer victimization and depressive symptoms. Peer victimized participants experienced higher levels of mental health symptoms in middle school year 2, namely depressive symptoms, hyperactivity-inattention symptoms and aggressive behaviors, which in turn were associated with higher depressive symptoms in middle school year 3, and thus were controlled in subsequent analyses.

Table 2: Associations between peer victimization and depressive symptoms in middle school year 3 and potential confounders including prior year mental health, family and socioeconomic factors ^a

	Peer victimization		<i>p</i> -values ^b	Depressive symptoms	<i>p</i> -values ^c
	No N=2071	Yes N=186			
Mental health factors	Mean (SD)	(Mean (SD)		Correlation coefficient	
Depressive symptoms	9.19(6.11)	10.58(6.52)	.004	.492	<.001
Hyperactivity- inattention symptoms	9.67(3.68)	10.30(3.84)	.027	.232	<.001
Aggressive behaviors	6.72(3.40)	7.38(3.72)	.013	.291	<.001
Family factors					
Maltreatment	10.81(3.8 7)	11.24(3.87)	.151	.198	<.001
Parental affection	8.05(2.60)	7.72(2.71)	.100	-.197	<.001
Parental monitoring	6.47(1.95)	6.38(2.05)	.544	-.155	<.001
Sociodemographic factors					
Yearly household	45.17(25.	43.97(22.01)	.538	-.055	.012

income ^d	02)				
	N(%)	N(%)			
Father's education					
<i>More than High School</i>	1017(55.7 %)	93(57.8%)	.620	-.032	.155
Mother's education					
<i>More than High School</i>	801(43.2 %)	62(37.8%)	.188	-.048	.030

N based on maximum available data for all variables, n ranged from 1988 to 2257

^aSignificant associations between potential confounders with both peer victimization and depressive symptoms were bolded

^bBased on chi-square or T-tests

^cBased on Pearson correlation and Spearmans's rho for dichotomous variables

^dIn million KRW

Concurrent associations between peer victimization and depressive symptoms

There was a significant peer victimization by sex interaction ($\beta=.35, p<.05$) in the fully adjusted model suggesting that peer victimization was differentially associated with depressive symptoms in girls and boys, thus analyses stratified by sex are presented in **Table 3**. Girls were twice as likely to report depressive symptoms when victimized in comparison to boys in unadjusted (Step 1: Girls: $\beta=.78, p<.001$; Boys: $\beta=.33, p<.001$) and adjusted models (Step 2: Girls: $\beta=.55, p<.001$; Boys: $\beta=.24, p<.001$).

Table 3: Concurrent association between peer victimization and depressive symptoms in middle-school year 3 (mean age = 15.7 years)

		Total sample		Boys		Girls	
		Beta(±se)	p-value	Beta(±se)	p-value		p-value
Step 1 (Unadjusted)	Peer victimization (Y3)	.403(±.077)	<.001	.334(±.091)	<.001	.778(±.139)	<.001
Step 2 (Adjusted for prior mental health symptoms)	Peer victimization (Y3)	.330(±.067)	<.001	.235(±.082)	.004	.557(±.118)	<.001
	Sex	.201(±.037)	<.001	NA ^a	NA	NA	NA
	Depressive symptoms (Y2)	.431(±.021)	<.001	.380(±.030)	<.001	.483(±.030)	<.001
	Hyperactivity-inattention symptoms (Y2)	.059(±.022)	.008	.042(±.030)	.163	.076(±.033)	.020

	Aggressive behaviors (Y2)	.047(±.023)	.047	.038(±.032)	.245	.049(±.033)	.147
Step 3 (Interaction)	Sex interaction	.353(±.144)	.054	NA	NA	NA	NA

N based on maximum available data for all variables (n=2227) in total sample, in boys (n=1129), in girls (n=1098)

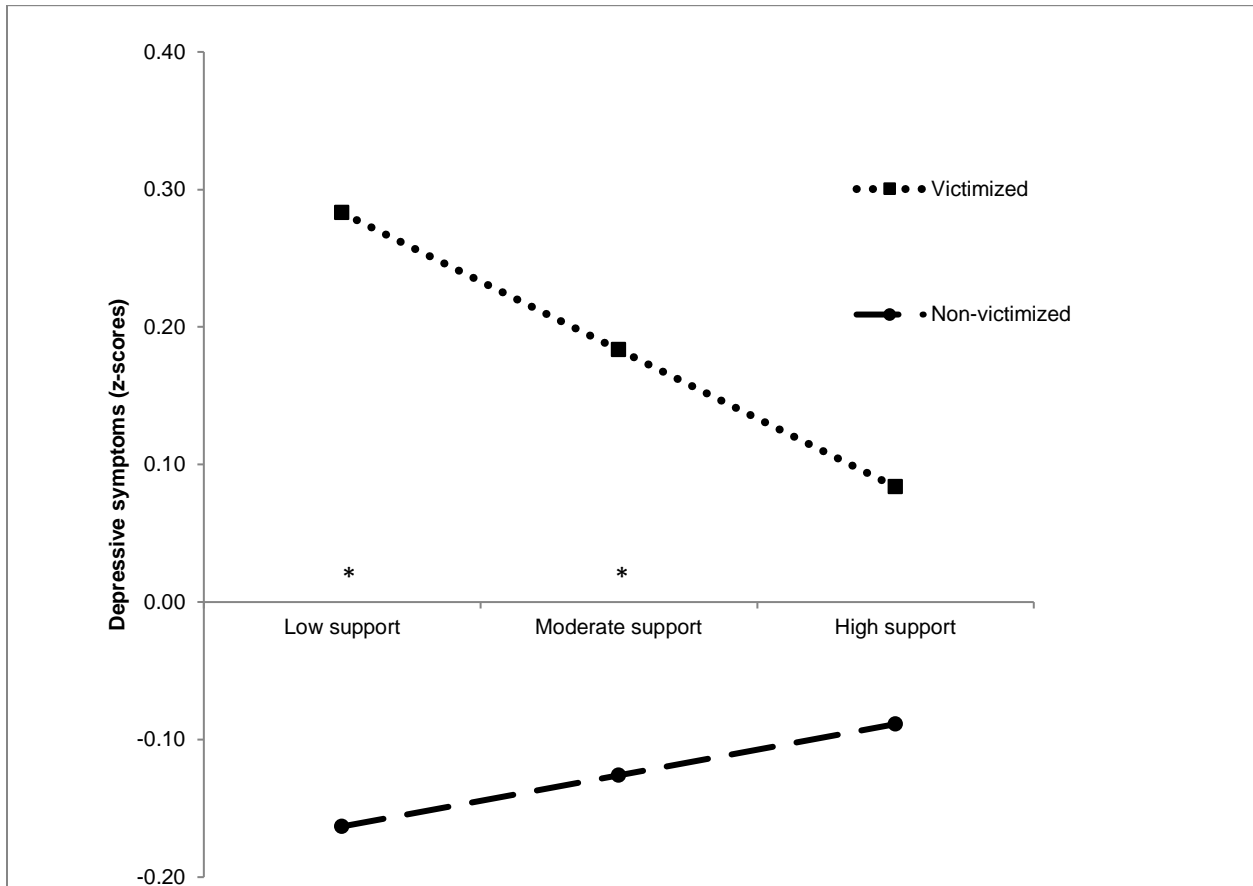
^aNot applicable

The protective role of social support in the concurrent associations between peer victimization and depressive symptoms

There was an interaction between friend support and peer victimization ($\beta = -.14, p < .05$, in model adjusted for prior year mental health symptoms), indicating that levels of friend support are differentially associated with depressive symptoms in victimized and non-victimized adolescents. However, the protective role of social support for depressive symptoms of victimized adolescents was similar for girls and boys as indicated by the non-significant three-way interaction between perceived friend support, peer victimization and sex ($\beta = .04, p = .810$).

Figure 1 illustrates the association of peer victimization on depressive symptoms at low (-1SD), moderate (sample's mean) and higher (+1SD) friend support. As shown in Figure 1, peer victimized adolescents reported more depressive symptoms compared to non-victimized adolescents with low friend support ($p < .001$) and moderate friend support ($p < .001$). However, there was no difference in depressive symptoms between victimized and non-victimized with high levels of friend support ($p = .073$).

Figure 1 : Associations between friend support and depressive symptoms in victimized and non-victimized adolescents during middle school year 3 (mean age 15.7 years)



N based on maximum available data for all variables (n=2227)

There was a peer victimization by perceived friend support interaction in predicting depressive symptoms in year 3 controlling for prior year depressive symptoms, inattention/hyperactivity symptoms and aggressive behaviors $\beta = -.14$, $p < .05$. The figure illustrates the association of peer victimization on depressive symptoms at low (-1 standard deviation), moderate (sample's mean) and higher (+1 standard deviation) friend support.

* indicates significant difference in depressive symptoms between victimized and non-victimized adolescents in low ($p < .001$) and moderate friend support ($p < .001$), but not in high friend support ($p < .073$).

In additional analyses, we re-examined the interaction between perceived friend support and peer victimization while adjusting simultaneously for all confounders available including prior year family factors (e.g., parental monitoring and affection, maltreatment), parental sociodemographic factors (e.g., yearly household income, father's and mother's education) and mental health symptoms (depressive symptoms, hyperactivity-inattention symptoms, and aggressive behaviors) and the interaction still remained significant ($\beta = -.14, p < .05$).

Discussion

Using the Korean Children and Youth Panel Survey, a large representative cohort of middle school students from South Korea, this study assessed (1) the concurrent associations of peer victimization with depressive symptoms, (2) the role of perceived friend support in these associations, and (3) the role of sex in these associations. Similarly to other studies (Moore et al., 2017), adolescents who were victimized by their peers reported higher depressive symptoms the same year, independently from their mental health symptoms the prior year. More importantly, we found that high friend support could attenuate depressive symptoms in adolescents who were victimized by their peers, suggesting that friend support can act as a protective factor. Further, while girls were more likely to experience higher levels of depressive symptoms than boys following peer victimization, we found that friend support benefited boys and girls equally.

Our findings showed that about 8% of South Korean middle schoolers reported having been exposed to peer victimization in their third year, similarly to other South Korean studies of middle school students (Hong et al., 2018; Koo et al., 2008). In this cohort, adolescents experiencing mental health problems, including internalizing and externalizing symptoms, in their second year of middle school were more likely to report being peer victimized in their third year. This is in line with prior studies around the world (Oncioiu et al., 2020; Turner et al., 2010)

including in South Korea (Yang et al., 2013) where the authors found that certain individual or familial vulnerabilities characteristics, such as experiencing behavioral or emotional problems, can put a child at risk of being victimized later on. Importantly, in the present study, controlling for prior year depressive symptoms, hyperactivity-inattention symptoms, and aggressive behaviors did not abolish the association between peer victimization and depressive symptoms. This is similar to many other large-scale studies based on Western samples of adolescents (Moore et al., 2017) showing an association of victimization on depression above and beyond prior vulnerabilities. Boys experienced more peer victimization in middle school, as previously reported in South Korean samples (Bhang et al., 2012; Jung et al., 2017; Kim et al., 2018; Kim et al., 2004) and in many other Western studies (Oncioiu et al., 2020). However, peer victimization was more strongly associated with depressive symptoms in girls than boys. Although most western studies found no sex differences in the association between peer victimization and depressive symptoms (Craig, 1998; Geoffroy et al., 2018; Saluja et al., 2004; Turner et al., 2013), a few studies in line with the present study reported that the effect of peer victimization on depressive symptoms were greater in girls compared to boys (Bond et al., 2001; Espelage et al., 2004; Klomek et al., 2007; Williams et al., 2017). For example, Klomek et al. (2007) found that girls were more at-risk to develop depressive symptoms if they were exposed to infrequent and frequent peer victimization, but boys were more at-risk only if they were exposed to frequent peer victimization. A prior study conducted in a small convenient sample of high-schoolers in Hong-Kong reported that boys, as opposed to girls, were more likely to experience depressive symptoms when exposed to peer victimization (Cheng et al., 2008). Future studies are needed to clarify sex differences in associations between peer victimization and depressive symptoms. For example, these associations may vary according to age, or the type of peer victimization (e.g.

relational versus physical victimization), the frequency or severity of peer victimization (e.g. frequent vs infrequent). As far as we are aware, our study is the first to investigate sex differences in the association of peer victimization and depressive symptoms in South Korean adolescents.

In terms of friend support, South Korean girls perceived greater friend support compared to boys, in line with other Asian studies (Cheng et al., 2008; Yin et al., 2017) and Western studies (Holt et al., 2007). Adolescence marks a transition for boys and girls from receiving more parental support to more friend support. For instance, a Dutch longitudinal study tracking the shifts in social support from early adolescence to emerging adulthood showed that girls reported a faster shift with a steeper increase of friend support in early adolescence between 12 and 16 years old (Helsen et al., 2000). Similarly, a study conducted in a USA sample also found that adolescent girls in middle and high school reported higher levels of friend support than boys (Malecki et al., 2002).

The role of social support for adolescents' depressive symptoms has been highlighted in recent longitudinal studies. For example, Scardera et al. (2020) found that social support in emerging adults (19 years) was associated with less depressive symptoms one year later, and that there was a dose-response with moderate and severe depression. However, this study did not examine whether social support may diminish depressive symptoms among individuals victimized by others. In the present study we found that a greater perception of friend support attenuated and closed the gap in depressive symptom levels between victims and non-victims. Moreover, friend support seemed to benefit boys as much as girls. This finding is in line with a study reporting a protective effect of friend support in boys and girls that were exposed to relational victimization in the US (Cooley et al., 2015). In contrast, one study using a sample of

adolescents from Hong Kong had reported a protective effect of friend support for boys, but not for girls (Cheng et al., 2008). However, in this study peer victimization was also more strongly associated to depressive symptoms in boys compared to girls (Cheng et al., 2008), which is opposite to what the present study reported as well as other studies. The literature on sex differences in the moderating effect of friend support is scarce and inconsistent. More studies using similar methodology and measures of peer victimization, friend support and depressive symptoms are needed to clarify the role of friend support – in western and non-western samples.

It is important to note that a wide range of social support scales have been used across studies. Some scales reflect more general peer support, while specific types of support such as emotional support from friends, which may have influenced the differential associations found with peer victimization and depressive symptoms. We noted that cross-sectional studies that found a main effect of social support for depressive symptoms were using a more general measure social support (Pouwelse et al., 2011; Yin et al., 2017). Whereas studies using friend or close friend support found that social support benefits more adolescents facing peer victimization (Cheng et al., 2008; Holt et al., 2007; Tanigawa et al., 2011). One hypothesis may be that friendships provide more valuable support in the context of adverse life experiences, such as peer victimization.

The study's many strengths include 1) a large representative sample of students attending middle school in South Korea; 2) the use of reliable scales to measure depressive symptoms, friend support and peer victimization; and 3) the inclusion of prior year mental health problems reports, including depressive symptoms, to account for reverse causality. However, our conclusions need to be interpreted in light of a number of limitations: 1) depressive symptoms were measured the same year as peer victimization and friend support, therefore we cannot

conclude on longitudinal associations. To our knowledge, there is no longitudinal study reporting the moderating effect of friend support in the association between peer victimization and depressive symptoms, however other longitudinal studies have reported that peer support was associated with lower depressive symptoms (Burke et al., 2017; Kendrick et al., 2012). Longitudinal studies would be useful in determining the protective effect of friend support while strengthening inference about the directionality of the association between peer victimization and depressive symptoms; 2) the measures of peer victimization and depressive symptoms were self-reported and may have been biased by common individual characteristics, including prior mental health status, which may also have induced shared method variance and inflated effect sizes. However, in this population-based survey, clinical interviews were not conducted, and adolescents were the only informants. It is important to note that parents may not be the best informants after childhood because they may not be aware of personal experiences including peer victimization and depressive symptoms (Bowes et al., 2016); 3) friends represent a key source of support for adolescents, but other sources of support such as; parental support may play a role and should be investigated; 4) peer victimization in this South Korean sample may differ from peer victimization in Western countries, by its unique characteristics; such as collective peer victimization or having multiple perpetrators (Lee, 2010). However, such information was not collected in the cohort, thus we were not able to assess how such cultural differences in peer victimization might affect mental health.

Conclusion

Peer victimization is a common experience, especially in adolescence, and the known consequential impacts on a range of mental health problems point towards the urgency in finding protective factors for the victims. In the current study, greater friend support protected peer

victimized adolescents against depressive symptoms, which could have implications for intervention purposes. As far as we are aware, most anti-bullying interventions in schools focused at reducing bullying perpetration and victimization with promising results (Gaffney et al., 2019). Our findings suggested that leveraging friend support may represent an additional economical and readily available option to further reduce the harms of peer victimization on depressive symptoms. However more studies are needed to confirm our conclusions.

Acknowledgements:

Mrs Perret received a doctoral award from Fonds de Recherche du Québec en Santé (FRQS). Dr Ki and Dr Chon were supported by Korea Health Industry Development Institute [grant number: HL19C0028] and Dr Ki was also supported by the NRF [grant number: NRF-2019S1A5C2A03081040]. Dr Fuhrer holds a Canada Research Chair (Tier I) in Psychosocial Epidemiology. Dr Gariépy is supported by a Quebec Health Research Fund (Fonds de recherche du Québec – santé) researcher salary award. Dr Ouellet-Morin has a Canada Research Chair in the Developmental Origins of Vulnerability and Resilience. Dr Geoffroy holds a Canada Research Chair (Tier 2) in Youth Suicide Prevention.

References

- Arango, C., Díaz-Caneja, C. M., McGorry, P. D., Rapoport, J., Sommer, I. E., Vorstman, J. A., McDaid, D., Marín, O., Serrano-Drozdzowskyj, E., & Freedman, R. (2018). Preventive strategies for mental health. *The Lancet Psychiatry*, 5(7), 591-604. [https://doi.org/10.1016/S2215-0366\(18\)30057-9](https://doi.org/10.1016/S2215-0366(18)30057-9)
- Armsden, G. C., & Greenberg, M. T. (1987). The inventory of parent and peer attachment: Individual differences and their relationship to psychological well-being in adolescence. *Journal of Youth and Adolescence*, 16(5), 427-454. <https://doi.org/10.1007/BF02202939>
- Auerbach, R. P., Bigda-Peyton, J. S., Eberhart, N. K., Webb, C. A., & Ho, M.-H. R. (2011). Conceptualizing the prospective relationship between social support, stress, and depressive symptoms among adolescents. *Journal of Abnormal Child Psychology*, 39(4), 475-487. <https://doi.org/10.1007/s10802-010-9479-x>
- Bhang, S.-Y., Yoo, H.-I. K., Kim, J.-H., Kim, B.-S., Lee, Y.-S., Ahn, D.-H., Suh, D.-S., Cho, S.-C., Hwang, J.-W., & Bahn, G.-H. (2012). Victims of bullying among Korean adolescents: prevalence and association with psychopathology evaluated using the adolescent mental health and problem behavior screening questionnaire-II standardization study data. *Journal of the Korean Academy of Child and Adolescent Psychiatry*, 23(1), 23-30. <https://doi.org/10.5765/jkacap.2012.23.1.23>
- Bond, L., Carlin, J. B., Thomas, L., Rubin, K., & Patton, G. (2001). Does bullying cause emotional problems? A prospective study of young teenagers. *British Medical Journal*, 323(7311), 480-484. <https://doi.org/10.1136/bmj.323.7311.480>
- Bowes, L., Joinson, C., Wolke, D., & Lewis, G. (2016). Peer victimisation during adolescence and its impact on depression in early adulthood: prospective cohort study in the United Kingdom. *British Medical Journal*, 50(3), 176-183. <https://doi.org/10.1136/bmj.h2469>
- Burke, T., Sticca, F., & Perren, S. (2017). Everything's gonna be alright! The longitudinal interplay among social support, peer victimization, and depressive symptoms. *Journal of Youth and Adolescence*, 46(9), 1999-2014. <https://doi.org/10.1007/s10964-017-0653-0>
- Cassels, R. (1962). *The Child Behavior Rating Scale manual*: Western Psychological Services.
- Cheng, S. T., Cheung, K. C., & Cheung, C. k. (2008). Peer victimization and depression among Hong Kong adolescents. *Journal of Clinical Psychology*, 64(6), 766-776. <https://doi.org/10.1002/jclp.20489>
- Cho, B., & Lim, K. (2003). Development and validation of emotional or behavioral problems scale. *The Korean Journal of Counseling and Psychotherapy*, 15(4), 729-746.
- Cooley, J. L., Fite, P. J., Rubens, S. L., & Tunno, A. M. (2015). Peer victimization, depressive symptoms, and rule-breaking behavior in adolescence: The moderating role of peer social support. *Journal of Psychopathology and Behavioral Assessment*, 37(3), 512-522. <https://doi.org/10.1007/s10862-014-9473-7>

- Copeland, W. E., Wolke, D., Angold, A., & Costello, E. J. (2013). Adult psychiatric outcomes of bullying and being bullied by peers in childhood and adolescence. *JAMA Psychiatry*, 70(4), 419-426. <https://doi.org/10.1001/jamapsychiatry.2013.504>
- Craig, W. (1998). The relationship among bullying, victimization, depression, anxiety, and aggression in elementary school children. *Personality and Individual Differences*, 24(1), 123-130. [https://doi.org/10.1016/S0191-8869\(97\)00145-1](https://doi.org/10.1016/S0191-8869(97)00145-1)
- Craig, W., Harel-Fisch, Y., Fogel-Grinvald, H., Dostaler, S., Hetland, J., Simons-Morton, B., Molcho, M., de Mato, M. G., Overpeck, M., & Due, P. (2009). A cross-national profile of bullying and victimization among adolescents in 40 countries. *International Journal of Public Health*, 54(2), 216-224. <https://doi.org/10.1007/s00038-009-5413-9>
- Derogatis, L. R., Lipman, R. S., Rickels, K., Uhlenhuth, E. H., & Covi, L. (1974). The Hopkins Symptom Checklist (HSCL): A self-report symptom inventory. *Behavioral Science*, 19(1), 1-15. <https://doi.org/10.1002/bs.3830190102>
- Espelage, D. L., Mebane, S. E., & Swearer, S. M. (2004). Gender differences in bullying: Moving beyond mean level differences. In *Bullying in American schools* (pp. 37-58): Routledge.
- Finkelhor, D., Turner, H. A., & Hamby, S. (2012). Let's prevent peer victimization, not just bullying. *Child Abuse & Neglect*, 36(4), 271-274. <https://doi.org/10.1016/j.chiabu.2011.12.001>
- Gaffney, H., Farrington, D. P., & Ttofi, M. M. (2019). Examining the effectiveness of school-bullying intervention programs globally: a meta-analysis. *International Journal of Bullying Prevention*, 1(1), 14-31. <https://doi.org/10.1007/s42380-019-0007-4>
- Gariepy, G., Honkaniemi, H., & Quesnel-Vallee, A. (2016). Social support and protection from depression: systematic review of current findings in Western countries. *The British Journal of Psychiatry*, 209(4), 284-293. <https://doi.org/10.1192/bjp.bp.115.169094>
- Geoffroy, M.-C., Boivin, M., Arseneault, L., Renaud, J., Perret, L. C., Turecki, G., Michel, G., Salla, J., Vitaro, F., & Brendgen, M. (2018). Childhood trajectories of peer victimization and prediction of mental health outcomes in midadolescence: a longitudinal population-based study. *Canadian Medical Association Journal*, 190(2), E37-E43. <https://doi.org/10.1503/cmaj.170219>
- Hall-Lande, J. A., Eisenberg, M. E., Christenson, S. L., & Neumark-Sztainer, D. (2007). Social isolation, psychological health, and protective factors in adolescence. *Adolescence*, 42(166).
- Helsen, M., Vollebergh, W., & Meeus, W. (2000). Social support from parents and friends and emotional problems in adolescence. *Journal of Youth and Adolescence*, 29(3), 319-335. <https://doi.org/10.1023/A:1005147708827>
- Holt, M. K., & Espelage, D. L. (2007). Perceived social support among bullies, victims, and bully-victims. *Journal of Youth and Adolescence*, 36(8), 984-994. <https://doi.org/10.1007/s10964-006-9153-3>
- Hong, H. C., & Min, A. (2018). Peer victimization, supportive parenting, and depression among adolescents in South Korea: A longitudinal study. *Journal of Pediatric Nursing*, 43, e100-e105. <https://doi.org/10.1016/j.pedn.2018.08.002>
- Hong, J. S., Kim, D. H., & Piquero, A. R. (2017). Assessing the links between punitive parenting, peer deviance, social isolation and bullying perpetration and victimization in South Korean adolescents. *Child Abuse & Neglect*, 73, 63-70. <https://doi.org/10.1016/j.chiabu.2017.09.017>

- Huh, M. Y. (2000). *The study for the development and validation of parenting behavior inventory perceived by adolescent*. (Unpublished doctoral dissertation), Ewha Womans University, Seoul, Korea.
- Hwang, M.-K. (2010). *The relationship between parent-peer attachment of multi-culture children and social anxiety*. (Unpublished master's thesis), Pukyong National University, Busan, Korea.
- Jung, D., Park, H., Kim, H., Kim, J., & Kwon, S. (2017). *Research on the elementary school violence condition and plan for countermeasures*.
<https://www.kedi.re.kr/khome/main/research/selectPubForm.do?plNum0=11609>
- Kendrick, K., Jutengren, G., & Stattin, H. (2012). The protective role of supportive friends against bullying perpetration and victimization. *Journal of Adolescence*, 35(4), 1069-1080. <https://doi.org/10.1016/j.adolescence.2012.02.014>
- Kim, J.-H., Kim, J. Y., & Kim, S.-S. (2016). School violence, depressive symptoms, and help-seeking behavior: a gender-stratified analysis of biethnic adolescents in South Korea. *Journal of Preventive Medicine and Public Health*, 49(1), 61.
<https://doi.org/10.3961/jpmp.15.060>
- Kim, J., Kim, G., & Won, H. (1983). Symptom checklist-90-revision (SCL-90-R) in psychiatric outpatients. *Mental Health Research*, 1(1), 150-168.
- Kim, J., Yeon, B., & Chung, E. (2018). *Report on the 2018 Korea Youth Media Use and Harmful Environment Survey*.
http://www.mogef.go.kr/mp/pcd/mp_pcd_s001d.do?mid=plc502&bbtSn=704766
- Kim, J. Y., Sung, S. M., & Kim, J. B. (2015). Bully-victims and their depression, aggression: Self-control and experience of domestic violence. *Journal of School Social Work*, 31, 83-109.
- Kim, K., Won, H., Lee, J., & Kim, K. (1978). Standardization study of symptom check list-90 in Korea I: characteristics of normal responses. *Journal of the Korean Neuropsychiatric Association*, 17(4), 449-458.
- Kim, Y. S., Koh, Y.-J., & Leventhal, B. L. (2004). Prevalence of school bullying in Korean middle school students. *Archives of Pediatrics & Adolescent Medicine*, 158(8), 737-741.
<https://doi.org/10.1001/archpedi.158.8.737>
- Klomek, A. B., Marrocco, F., Kleinman, M., Schonfeld, I. S., & Gould, M. S. (2007). Bullying, depression, and suicidality in adolescents. *Journal of the American Academy of Child & Adolescent Psychiatry*, 46(1), 40-49.
<https://doi.org/10.1097/01.chi.0000242237.84925.18>
- Klomek, A. B., Sourander, A., & Elonheimo, H. (2015). Bullying by peers in childhood and effects on psychopathology, suicidality, and criminality in adulthood. *The Lancet Psychiatry*, 2(10), 930-941. [https://doi.org/10.1016/S2215-0366\(15\)00223-0](https://doi.org/10.1016/S2215-0366(15)00223-0)
- Koo, H., Kwak, K., & Smith, P. K. (2008). Victimization in Korean schools: The nature, incidence, and distinctive features of Korean bullying or wang-ta. *Journal of School Violence*, 7(4), 119-139. <https://doi.org/10.1080/15388220801974084>
- Koyanagi, A., Oh, H., Carvalho, A. F., Smith, L., Haro, J. M., Vancampfort, D., Stubbs, B., & DeVylder, J. E. (2019). Bullying victimization and suicide attempt among adolescents aged 12–15 years from 48 countries. *Journal of the American Academy of Child & Adolescent Psychiatry*, 58(9), 907-918. e904. <https://doi.org/10.1016/j.jaac.2018.10.018>

- La Greca, A. M., & Harrison, H. M. (2005). Adolescent peer relations, friendships, and romantic relationships: Do they predict social anxiety and depression? *Journal of Clinical Child and Adolescent Psychology*, 34(1), 49-61. https://doi.org/10.1207/s15374424jccp3401_5
- Lee, C.-H. (2010). Personal and interpersonal correlates of bullying behaviors among Korean middle school students. *Journal of Interpersonal Violence*, 25(1), 152-176. <https://doi.org/10.1177/0886260508329124>
- Lee, E. J., Kim, J. B., Im Hee Shin, K. H. L., Lee, S. H., Cho, G. A., Sung, H. M., Jung, S. W., Zimmerman, M., & Lee, Y. (2010). Current use of depression rating scales in mental health setting. *Psychiatry Investigation*, 7(3), 170. <https://doi.org/10.4306/pi.2010.7.3.170>
- Lee, J. Y., & Park, S. H. (2017). Interplay between attachment to peers and parents in Korean adolescents' behavior problems. *Journal of Child and Family Studies*, 26(1), 57-66. <https://doi.org/10.1007/s10826-016-0552-0>
- Lee, S., Oh, I., & Lee, J. (2014). Psychosocial characteristics of bullies, victims, bully-victims among elementary school students. *Korean Journal of Youth Studies*, 21, 391-416.
- Malecki, C. K., & Demaray, M. K. (2002). Measuring perceived social support: Development of the child and adolescent social support scale (CASSS). *Psychology in the Schools*, 39(1), 1-18. <https://doi.org/10.1002/pits.10004>
- Martin-Storey, A., Temcheff, C., Dery, M., Poirier, M., Verlaan, P., & Lemelin, J.-P. (2018). Trajectories of internalizing problems during the transition to adolescence in children with and without conduct problems. *International Journal of Behavioral Development*, 42(5), 464-473. <https://doi.org/10.1177/0165025417730681>
- Minkkinen, J. (2014). Associations between school-related factors and depressive symptoms among children: A comparative study, Finland and Norway. *School Psychology International*, 35(5), 463-474. <https://doi.org/10.1177/0143034313511008>
- Moore, S. E., Norman, R. E., Suetani, S., Thomas, H. J., Sly, P. D., & Scott, J. G. (2017). Consequences of bullying victimization in childhood and adolescence: A systematic review and meta-analysis. *World Journal of Psychiatry*, 7(1), 60. <https://doi.org/10.5498/wjp.v7.i1.60>
- NYPI. (2010). *The 2010 Korean children and youth panel survey I project report*. National Youth Policy Institute. <http://archive.nypi.re.kr>
- NYPI. (2014). NYPI Survey Panel. https://www.nypi.re.kr/archive/brdartcl/boardarticleList.do?brd_id=BDIDX_3A94C7B4Y1bY00jGQSP1xB&menu_nix=tli3O5c4&srch_mu_lang=ENG
- Olweus, D. (1993). *Bullying at school: What we know and what we can do*: Blackwell Publishing.
- Oncioiu, S. I., Orri, M., Boivin, M., Geoffroy, M.-C., Arseneault, L., Brendgen, M., Vitaro, F., Navarro, M. C., Galéra, C., & Tremblay, R. E. (2020). Early childhood factors associated with peer victimization trajectories from 6 to 17 years of age. *Pediatrics*, 145(5). <https://doi.org/10.1542/peds.2019-2654>
- Park, S.-C., Kim, D., & Jang, E. Y. (2016). Prevalence and symptomatic correlates of interpersonal trauma in South Korean outpatients with major depressive disorder. *Comprehensive Psychiatry*, 66, 46-52. <https://doi.org/10.4306/pi.2015.12.1.29>
- Park, S., Kim, J.-W., Kim, B.-N., Bae, J.-H., Shin, M.-S., Yoo, H.-J., & Cho, S.-C. (2015). Clinical characteristics and precipitating factors of adolescent suicide attempters admitted for psychiatric inpatient care in South Korea. *Psychiatry Investigation*, 12(1), 29. <https://doi.org/10.1016/j.comppsy.2015.12.006>

- Patel, V., & Goodman, A. (2007). Researching protective and promotive factors in mental health. In. Oxford University Press.
- Pouwelse, M., Bolman, C., Lodewijkx, H., & Spaa, M. (2011). Gender differences and social support: Mediators or moderators between peer victimization and depressive feelings? *Psychology in the Schools, 48*(8), 800-814. <https://doi.org/10.1002/pits.20589>
- Reijntjes, A., Kamphuis, J. H., Prinzie, P., & Telch, M. J. (2010). Peer victimization and internalizing problems in children: A meta-analysis of longitudinal studies. *Child Abuse & Neglect, 34*(4), 244-252. <https://doi.org/10.1016/j.chiabu.2009.07.009>
- Rueger, S. Y., Malecki, C. K., & Demaray, M. K. (2010). Relationship between multiple sources of perceived social support and psychological and academic adjustment in early adolescence: Comparisons across gender. *Journal of Youth and Adolescence, 39*(1), 47. <https://doi.org/10.1007/s10964-008-9368-6>
- Rueger, S. Y., Malecki, C. K., Pyun, Y., Aycocock, C., & Coyle, S. (2016). A meta-analytic review of the association between perceived social support and depression in childhood and adolescence. *Psychological Bulletin, 142*(10), 1017. <https://doi.org/10.1037/bul0000058>
- Saluja, G., Iachan, R., Scheidt, P. C., Overpeck, M. D., Sun, W., & Giedd, J. N. (2004). Prevalence of and risk factors for depressive symptoms among young adolescents. *Archives of Pediatrics & Adolescent Medicine, 158*(8), 760-765. <https://doi.org/10.1001/archpedi.158.8.760>
- Scardera, S., Perret, L. C., Ouellet-Morin, I., Gariépy, G., Juster, R.-P., Boivin, M., Turecki, G., Tremblay, R. E., Côté, S., & Geoffroy, M.-C. (2020). Association of social support during adolescence with depression, anxiety, and suicidal ideation in young adults. *JAMA Network Open, 3*(12), e2027491-e2027491. <https://doi.org/10.1001/jamanetworkopen.2020.27491>
- Takizawa, R., Maughan, B., & Arseneault, L. (2014). Adult health outcomes of childhood bullying victimization: evidence from a five-decade longitudinal British birth cohort. *American Journal of Psychiatry, 171*(7), 777-784. <https://doi.org/10.1176/appi.ajp.2014.13101401>
- Tanigawa, D., Furlong, M. J., Felix, E. D., & Sharkey, J. D. (2011). The protective role of perceived social support against the manifestation of depressive symptoms in peer victims. *Journal of School Violence, 10*(4), 393-412. <https://doi.org/10.1080/15388220.2011.602614>
- Turner, H. A., Finkelhor, D., & Ormrod, R. (2010). Child mental health problems as risk factors for victimization. *Child Maltreatment, 15*(2), 132-143. <https://doi.org/10.1177/1077559509349450>
- Turner, M. G., Exum, M. L., Brame, R., & Holt, T. J. (2013). Bullying victimization and adolescent mental health: General and typological effects across sex. *Journal of Criminal Justice, 41*(1), 53-59. <https://doi.org/10.1016/j.jcrimjus.2012.12.005>
- Walker, H. M. (1983). *Walker problem behavior identification checklist: Manual*: Western Psychological Services.
- Williams, S. G., Langhinrichsen-Rohling, J., Wornell, C., & Finnegan, H. (2017). Adolescents transitioning to high school: Sex differences in bullying victimization associated with depressive symptoms, suicide ideation, and suicide attempts. *The Journal of School Nursing, 33*(6), 467-479. <https://doi.org/10.1177/1059840516686840>
- Yang, S.-J., Kim, J.-M., Kim, S.-W., Shin, I.-S., & Yoon, J.-S. (2006). Bullying and victimization behaviors in boys and girls at South Korean primary schools. *Journal of the*

- American Academy of Child & Adolescent Psychiatry*, 45(1), 69-77.
<https://doi.org/10.1097/01.chi.0000186401.05465.2c>
- Yang, S.-J., Stewart, R., Kim, J.-M., Kim, S.-W., Shin, I.-S., Dewey, M. E., Maskey, S., & Yoon, J.-S. (2013). Differences in predictors of traditional and cyber-bullying: a 2-year longitudinal study in Korean school children. *European Child & Adolescent Psychiatry*, 22(5), 309-318. <https://doi.org/10.1007/s00787-012-0374-6>
- Yin, X.-Q., Wang, L.-H., Zhang, G.-D., Liang, X.-B., Li, J., Zimmerman, M. A., & Wang, J.-L. (2017). The promotive effects of peer support and active coping on the relationship between bullying victimization and depression among Chinese boarding students. *Psychiatry Research*, 256, 59-65. <https://doi.org/10.1016/j.psychres.2017.06.037>