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ORIGINAL PAPER

Adolescent Peer Victimization and Internalizing Symptoms During Emerging Adulthood: The Role of Online and Offline Social Support

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Abstract

There is a dearth of research examining the relation between adolescent peer victimization and internalizing symptoms during emerging adulthood. This retrospective study examined relations among offline and online peer victimization, internalizing symptoms, as well as offline and online social support. A sample of 416 participants aged 18–24 was recruited and self-report data on adolescent victimization, support, and internalizing symptoms were collected. The results showed that retrospective reports of peer victimization and social support predicted current internalizing symptomology. However, this varied as a function of online/offline context and symptomology. Specifically peer victimization was more predictive of depressive symptoms than social anxiety symptoms. Offline social support predicted fewer internalizing symptoms, but online support did not. Social support diminished the association between peer victimization and social anxiety.

Keywords Bullying · Social anxiety · Depression · Mental health · Digital media

There are numerous studies in the peer relations literature linking peer victimization with a range of deleterious outcomes including internalizing symptoms (Hawker and Boulton 2000; Reijntjes et al. 2010; Ttofi et al. 2011). Epkins and Heckler (2011) illustrated that interpersonal factors like peer victimization predict depression and social anxiety. Peer victimization has traditionally occurred offline, but digital media have become an important social context where peer relations develop (Subrahmanyam and Šmahel 2012), peer victimization occurs (Ybarra et al. 2012), and peer support unfolds (Frison and Eggermont 2015). Prevailing reports also suggest that factors such as social context (e.g., school climate, digital media), personal attributes and developmental processes (e.g., resilience), and relationships (e.g., social support) moderate the pathways between peer victimization and maladjustment (McDougall and Vaillancourt 2015). Additionally, social support has been shown to ameliorate the poor outcomes associated with peer victimization (Bonanno and Hymel 2010; Leff 2007).

Extant research on peer victimization has largely been conducted with children as well as adolescents and has mostly focused on its more immediate associated outcomes (McDougall and Vaillancourt 2015). Equally important are longer term outcomes, in particular the relation between victimization during adolescence and later well-being in emerging adulthood (McDougall and Vaillancourt 2015; Smithyman et al. 2014). Studies examining the longer-term consequences of peer victimization are limited and are especially lacking with regard to ethnic minority youth.

Peer victimization has been defined as an act of aggression from similar-aged peers that is not from parents, other adults, or siblings (Finkelhor and Dziuba-Leatherman 1994). It is distinct from bullying in that the behavior does not require a power imbalance nor is it necessarily intentional or reoccurring. The exact prevalence of peer victimization and bullying is hard to determine as definitions, measurements, and contexts vary (Espelage and Swearer 2003). Nevertheless, studies have found that peer aggression is surprisingly common among youth (Espelage et al. 2000). One study surveyed 113,200 students aged 11.5–15.5 years across 25 western countries and found that 9–54% of youth reported experiencing bullying (Nansel

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et al. 2004). Another more recent cross-sectional study completed in Europe with a large sample of youth ($N = 16,210$) aged 8–18 years found that the prevalence was roughly 20% (Analitis et al. 2009). These rates are concerning given that peer victimization and bullying is related to a variety of mental health issues including depression, social anxiety, and suicidality (Espelage and Swearer 2003; Olweus 1993a; Schwartz et al. 2015).

The link between peer victimization and internalizing symptoms is well established (Haltigan and Vaillancourt 2014). In a meta-analysis of 18 longitudinal studies with 13,978 children and adolescents, researchers found that peer victimization was frequently, albeit moderately, positively associated with depression and anxiety (Reijntjes et al. 2010). Another meta-analysis of studies that examined peer victimization and psychosocial maladjustment found the largest effect sizes for peer victimization and depression (Hawker and Boulton 2000). Additionally, a systematic review and meta-analysis of 29 longitudinal studies, involving youth aged 8 to 16 years, further supported a connection between early victimization and depression later in life (Ttofi et al. 2011). Anxiety and social withdrawal appear to linger up to one year following victimization (Bond et al. 2001; Goldbaum et al. 2007) and affective dysregulation emerges and remains constant over longer periods of time (McLaughlin et al. 2009). Moreover, youth often presented with depression for a few years after being victimized by peers (Gladstone et al. 2006; Isaacs et al. 2009). These findings demonstrated that peer victimization and bullying are associated with both short-term and long-term consequences.

Although there is considerable evidence about the short-term outcomes associated with peer victimization, there has been less work on the question of long-term consequences (i.e., into emerging and young adulthood) associated with peer victimization. Using evidence from research in neuroscience, neuroendocrinology, and genetics, Vaillancourt et al. (2013) articulated how and why peer victimization may lead to long-term poor outcomes. They argued that peer victimization can become biologically entrenched in the physiology of developing youth via dysregulation of the stress response system, therefore leaving them at risk for life-long mental health issues. Evidence for longer term associations comes from work by Olweus (1993b), who found that boys who were victimized in grades 6 and 9 presented with increased depressive symptoms and poorer self-esteem during emerging adulthood. Similarly, early victimization was found to be predictive of depression (Vassallo et al. 2014) and social anxiety during late adolescence and early adulthood (Copeland et al. 2013; Stapinski et al. 2014). At the same time, some prior work has found no evidence for longer term associations between early victimization and later mental health (Desjardins and Leadbeater 2011; Gibb et al. 2011; Klomek et al. 2010). Extant theories and studies suggest an association between adolescent peer victimization and internalizing symptoms in adulthood. However, there is a clear dearth of research examining these relations among diverse populations.

As digital communication has become commonplace among adolescents (Pew Research Center 2012), so have reports about online aggression and victimization. Electronic peer victimization is an act of aggression delivered via digital media (e.g., social media, text messaging) by a peer. This is distinct from some definitions of cyberbullying that offer additional specifiers concerning repetition, power, and intention (Tokunaga 2010). Electronic peer victimization is common among youth today, and rates range from 9 to 72%, depending on how electronic peer victimization was defined and measured (Ybarra et al. 2012). Similar to offline peer victimization, electronic peer victimization is also associated with mental health issues such as internalizing symptoms (Landoll et al. 2015; Mitchell et al. 2007). One meta-analysis that incorporated 34 cross-sectional studies with a total of 284,375 participants aged 9–21 years, examined offline and online peer victimization and found that both were predictive of suicidal ideation (Gini and Espelage 2014). This meta-analysis also found that electronic victimization was more strongly related to suicide risk, even when controlling for age and sex.

Electronic peer victimization has some characteristics in common with face-to-face peer victimization, but also has some unique aspects. Both are acts of aggression that can manifest in varying fashions (i.e., overt versus covert) and are positively associated with poor outcomes. However, there are elements of online communication environments such as the lack of emotional or facial reactivity, perceived uncontrollability, relative permanence of content, lack of adult supervision, perceived anonymity, and continuous accessibility that may make electronic victimization more distressing (Kowalski et al. 2012). In addition, it appears that youth who are victimized, are often harassed online as well as offline, and research indicated that being victimized via both contexts may be particularly deleterious (Glüer and Lohaus 2015; Kowalski et al. 2012). Most research has examined either offline peer victimization or electronic peer victimization, and very few studies have examined both sources of victimization concurrently (Tennant et al. 2015; Ybarra et al. 2015). The impact of victimization is generally believed to be additive in that more victimization predicts worse outcomes (Raskauskas 2010), and individuals who experience both kinds of victimization may also be at greater risk (Glüer and Lohaus 2015; Sumter and Baumgartner 2017). Thus, it is important to assess both online and offline victimization simultaneously and examine their separate and combined relation to well-being.

Research suggests that there are protective factors that may alter the well-documented link between peer victimization and mental health. The nature of social support as a protective factor has been inconclusive in the extant literature. Some variations in findings among the extant literature are associated with the source of support (i.e., general, peers, and parents) as well as the effects (i.e., main or interactive effects). Ttofi et al. (2014) found that social skills, social support, and family relationships were protective factors for both at-risk and all youth in general. Pouwelse et al. (2011) completed a cross-sectional study on 606 children and found that social support from adults did not moderate the relation between peer victimization and depressive symptoms, but did predict variation in depressive symptoms such that children who reported depressive symptoms also reported less support. Others who measured general support have reported similar results (Rigby 2000; Rigby and Slee 1999; Tennant et al. 2015). Alternatively, one longitudinal study on 393 school-aged children found that the association between peer victimization and internalizing symptoms was mitigated by peer support (Hodges et al. 1999). Other scholars have also found moderating effects of various sources of social support on the relation between victimization and mental health outcomes (Davidson and Demaray 2007; Flouri and Buchanan 2002; Holt and Espelage 2007). Scholars have encouraged continued examination of protective factors in a way that could offer insight into the nature of outcomes as well as a multiplicity of pathways (Hanish and Guerra 2002; Juvonen et al. 2000; McDougall and Vaillancourt 2015).

To understand the role of social support in the lives of victimized youths, it is helpful to review the complex conceptualization of resilience. Luthar et al. (2000) suggested that resilience is broadly defined by the achievement of positive adaptation in the face of adversity. More specifically, they explain that there have been significant discrepancies in understanding whether resiliency is a personal trait or instead a dynamic developmental process. They argue that the conceptualization of resiliency as a trait is lacking since exposure to adversity is not a requirement and that it does not offer useful insight concerning intervention. Furthermore, researchers vary in how they use constructs of interest within models of resiliency. Some use the term protective factors only to illustrate interaction effects whereas others use the term to demonstrate main effects. They conclude that protective should be used more simply to define main effects and interactive processes would benefit from having more specific labels (i.e., protective-stabilizing, enhancing) depending on the nature of the effect (Luthar et al. 2000).

Cohen and Wills (1985) explained that the perception of social support alone is often predictive of well-being when one is distressed. Perceived social support has been found to play a powerful role in ameliorating the poor outcomes associated with peer victimization (Claes et al. 2015; Davidson and Demaray 2007; Holt and Espelage 2007; Leff 2007; Levitt et al. 1994; Williams et al. 2005). Since victims are often isolated or excluded, their social influence is reduced, which then makes their need for support paramount (Cook et al. 2010; Goossens et al. 2006). Victimization tends to undermine and disrupt the social network while diminishing a victim's ability to rebuild and develop relationships from which they can receive much needed support. Consequently, some studies have found that adolescents who are victimized the most tend to gain the greatest benefits from social support (Flouri and Buchanan 2002). This highlights the need to investigate social support as an interactive process as opposed to just a direct protective factor. Other research has found that parental support can also allay mental health issues associated with peer victimization (Bonanno and Hymel 2010; Conners-Burrow et al. 2009). That is, peer-based and adult-based forms of support can all be helpful in the face of peer victimization.

Digital tools have enabled youth to discreetly access support from friends and family at any time, but findings about the quality and protective role of online social support in the face of peer victimization have been mixed. Valkenburg and Peter (2007) found that 88% of 794 Dutch youth reported that digital communication was more effective than face-to-face interactions when it came to sharing intimate or private information with peers. A cross-sectional study of 910 adolescents found that perceived online social support was associated with lower depressive symptomology (Frison and Eggermont 2015). Victimized youth who may lack offline support (Boulton and Underwood 1992) might find online support more valuable (Korchmaros et al. 2015; Peter et al. 2005; Ybarra et al. 2015). Another cross-sectional study of 5,542 U.S. youth examined whether the odds of peer victimization (both online and in-person) varied as a function of the source of social support (i.e., offline versus online); the study found that in-person social support reduced the odds of peer victimization, but online social support did not (Ybarra et al. 2015). They also found that perceived quality of online support did not necessarily reduce the odds of peer victimization occurring. These researchers speculated that online friends may be unaware of the difficulties happening offline, and may therefore not be able to intervene or offer much needed support. Although online support has become commonplace, very little research has examined whether the medium where support is provided or perceived (i.e., offline versus online) may moderate the relation between peer victimization and internalizing symptoms (Ybarra et al. 2015).

Although there are concerns about the reliability and validity of retrospective reports of victimization,, these methods have been used successfully in prior work (e.g.,

Dempsey and Storch 2008; Rosen et al. 2012). For instance, researchers asked emerging adult college students to recollect one experience of peer victimization from middle school and found that the experience of maltreatment was related to maladjustment during emerging adulthood (Rosen et al. 2012). They justified the use of such retrospective reports noting that recollections of peer victimization may be especially memorable and salient because they were emotion inducing; additionally they pointed out that the consistency of such retrospective recollections has been demonstrated in prior work via repeated assessments. Along these lines, Smithyman et al. (2014) administered a retrospective measure of peer victimization in addition to other measures and found that past perception was a strong indicator of current maladjustment, whereas reports of actual past experiences had a more complex, and potentially less reliable, relation with adjustment. Moreover, it appears that a victim's perception of the aggression often predicts outcomes of the events better than others' perceptions (i.e., peers and teachers) of the events (Berscheid 1994; Rosen et al. 2012). Finally, findings have shown that there is little risk of recall bias specific to victimization as the memories tend to be salient throughout life (Friedman et al. 2006; Rivers 2010).

Although there has been no research on the saliency of memories about social support, given that social support can buffer from stress and distress associated with peer victimization (Davidson and Demaray 2007; Holt and Espelage 2007), we also assessed participants' recollection of social support surrounding these emotionally salient events. As with peer victimization, ones' perception of social support is likely a sound indicator of the impact of social support (Cohen and Wills 1985). Thus, simply believing that one was supported likely offers an effect, whether or not it was true or support was received.

Although research has documented the association between peer victimization and internalizing symptoms, less is known about the longer-term relation between victimization during adolescence and adjustment during emerging adulthood. Findings also suggest that social support is associated with better mental health generally (i.e., main effect) and may also help to buffer against the negative outcomes of peer victimization (i.e., interaction effect). Most research on victimization has examined either offline or online victimization in isolation, and few studies have included both kinds of victimization in the same study. Similarly, most of the research has examined offline and online support in isolation and there is insufficient evidence to determine whether the source (i.e., offline or online) of social support may moderate the longer-term associations between adolescent victimization and adjustment in emerging adulthood. The research question and hypotheses are as follows: (H1) Higher levels of online and offline peer victimization will be positively associated with depressive symptoms and social anxiety. (H2) Higher levels of online and offline social support will be negatively associated with depressive symptoms and social anxiety. (RQ) Does the interaction of offline and online social support and peer victimization predict depressive symptoms and social anxiety?

Method

Participants

The study sample consisted of emerging adults ($n = 416$; Female = 59.9%), ranging in age from from 18 to 24 ($M = 20.69$, $SD = 1.59$) years. The sample was ethnically diverse: (Asian/Asian American = 22.8%, Black/African American = 3.8%, Latino/Hispanic = 63.2%, Mixed/Other = 1.4%, Native American/Pacific Islander = 2.2%, White = 6.6%).

Procedures

Data were collected in the spring of 2015. Participants were recruited from the Psychology subject pool at a large State University in the west coast of the U.S. Data were collected using a one-time questionnaire that could be completed remotely from any computer. All data were collected via self-report inventories. Informed consent was omitted to protect the participants' identity and was replaced by an informational cover sheet. Participants reported exposure to peer victimization as well as perceived social support in their middle school and high school years (time 1). They also reported current internalizing symptoms (time 2). Compensation was offered in the form of participation credit. Approval for the study was obtained via the Institutional Review Board of the University.

Measures

Peer victimization

This 12 item self-report measure was designed to retrospectively assess experiences of victimization via a 4-point scale from 1 (*never*) to 4 (*very frequently*). Instructions explained that the questions were specific to events that may have occurred during one's adolescence (i.e. middle or high school). The scale measured both overt ("I was pushed, shoved, hit, or kicked by someone who wasn't just kidding around") and relational victimization ("I had mean rumors or lies spread about me"), and was adapted from a number of previously used measures designed to ascertain historical victimization (see Toomey et al. 2013) and Cronbach's α =

0.86. Higher scores indicated higher levels of peer victimization.

Electronic peer victimization

Similar to the peer victimization scale, this measure was designed to retrospectively assess victimization experiences that occurred through digital media (i.e. Twitter, Facebook, Tumblr, YouTube, Instagram, Email, and Text Messaging). Instructions explained that the questions were specific to events that may have occurred during the respondents' adolescence (i.e. middle or high school). The measure consisted of 12 items, and used a 4-point scale from 1 (*never*) to 4 (*very frequently*). For example, "Someone sent mean or threatening messages via social media or text messaging", "Someone spread rumors about me or revealed secrets I had told them using public posts via social media", and "Someone pretended to be me via social media and did things to make me look bad/damage my friendships". Due to the scarcity of such scales in the extant literature, this measure was developed for the current study after reviewing several other scales that were not measuring precisely electronic peer victimization (i.e., most other scales aimed to measure cyberbullying). The scale's Cronbach's $\alpha = .89$. The peer victimization and electronic victimization scales were combined to create a composite measure encompassing both offline and online constructs. Higher scores indicated higher levels of peer victimization. The Cronbach's $\alpha = 0.92$.

Social support–offline

The Multidimensional Scale of Perceived Social Support (MSPSS) consisted of 12 items that measured perceived social support from family, peers, and romantic partners via a 7-point scale from 1 (*very strongly disagree*) to 7 (*very strongly agree*) (Zimet et al. 1988). An example for social support found offline is, "There was a special person who was around offline when I was in need." Instructions explained that the perceived social support was specific to events that occurred during adolescence (i.e., middle or high school). All dimensions (i.e., from peers, family, and significant others) were combined as a sum score to indicate a comprehensive measure of offline social support, with a higher score indicating more perceived social support. The Cronbach's $\alpha = 0.93$.

Social support–online

The MSPSS was adapted to measure social support found online. This version was identical to the offline version except for the digital specifiers in the items. For example, "I could count on my online friends when things went wrong" and "I got the emotional support I needed from my family via text messaging or social media". Instructions explained that the perceived social support was specific to events that occurred during adolescence (i.e., middle or high school). As with offline support, the items were summed to create a composite scale of online social support with higher levels indicating more social support. The Cronbach's $\alpha = 0.94$.

Depressive symptoms

The Beck Depression Inventory–II assessed a 2-week prevalence of behavioral, cognitive, and affective depressive symptoms (Beck et al. 1996). The measure consists of 21 items assessed on a 4-point scale from 1 (*Not at all*) to 4 (*Severely*). Instructions note, "How would you rate the following, based on your experiences over the past two weeks." For example, "Sadness" or "Loss of interest". The Cronbach's $\alpha = 0.93$ and the scale has been found to be suitable for diverse populations (Carmody 2005) with higher score indicating more depressive symptomatology.

Social anxiety

The Social Interaction Anxiety Scale (SAIS) consists of 19 items assessed on a 5-point scale from 1 (*not at all*) to 5 (*Extremely*) (Mattick and Clarke 1998). For example, "I become tense if I have to talk about my feelings." The items were summed with higher scores indicating higher levels of social anxiety. The Cronbach's $\alpha = 0.93$.

Data Analysis

Standard and hierarchical multiple regression analyses were completed with IBM SPSS 24.0 to examine main effects and interaction effects. Six main regression models were analyzed, three with social anxiety as the dependent variable and three with depressive symptoms as the outcome. In the first models, the main effects of (a) online peer victimization and (b) offline peer victimization were entered in step 1 as predictors of participants' self-reported social anxiety and depressive symptom (after controlling for age, sex, and race). In the second models, the main effects of (a) online social support, (b) offline social support were added. In the third models, via step 2, the interaction effects between (a) online social support and online peer victimization, (b) online social support and offline peer victimization, (c) offline social support and offline peer victimization, and (d) offline social support and online peer victimization were entered. All independent variables and moderators were centered prior to computing interaction terms to avoid problems with multicollinearity (Tabachnick and Fidell 2007). Significant interaction terms were

decomposed by graphing the regression equation at relevant values of the moderator (i.e., social support).

The necessary statistical power needed to detect interaction effects can vary as a function of sample size, reliability of data, as well as effect sizes. Researchers have suggested that in order to detect interaction effects, a sample of 200–500 participants is sufficient if the data that are .80–100% reliable (Dawson and Richter 2006). This is within the scope of the current sample.

Missing Data

Overall, there was minimal missing data. There was only one missing case for the social support online and social anxiety variables and one missing case for the sex and race covariates. All other variables had no missing data.

Results

Means and standard deviation of all study variables can be found in Table 1. All study variables were within the limits for kurtosis and skewness (i.e., −2.0 through +2.0), indicating univariate normality. Bivariate correlations are shown in Table 2.

Table 1 Descriptive statistics for study variables

	Mean	SD	Range
Peer victimization offline	21.23	6.21	13–46
Peer victimization online	17.39	5.83	11–44
Depressive symptoms	40.98	12.59	20–83
Social anxiety	45.6	15.37	19–91
Social support offline	55.34	15.02	9–77
Social support online	47.57	16.19	9–77

Social Anxiety

Table 3 shows the unstandardized regression coefficients, standardized regression coefficients (β), and the semipartial correlations (sr^2), R^2, and adjusted R^2. As shown by the R^2 via the first model, 7% of the variance in social anxiety scores was predicted by peer victimization and covariates. The multiple R for regression was significantly different than zero, $F(5, 409) = 6.17$, $p < 0.001$, suggesting that the predictors reliably accounted for social anxiety. Two of predictors–offline peer victimization ($\beta = 0.12$, $p < 0.05$) and online peer victimization ($\beta = 0.16$, $p < 0.01$)–contributed significantly to the prediction of social anxiety. The second model indicated that 12% of the variance in social anxiety scores was predicted by the independent variables and covariates. In terms of the main effects, only online social support significantly predicted social anxiety ($\beta = -0.27$, $p < 0.001$). Peer victimization offline ($\beta = 0.11$, $p = 0.08$) and online ($\beta = 0.11$, $p = 0.07$) were trend level effects. In model 3, the only significant 2-way interaction was online peer victimization by offline social support (F_{change} (1, 406) = 6.10, $p < 0.01$; Change in $R^2 = 0.013$, $p < 0.01$; $\beta = -0.07$, $p < 0.05$). (Fig. 1). The adjusted R^2 demonstrates that 13% of the variance in social anxiety scores is attributable to the independent variables in the second model. No other interactions were significant.

Depressive symptoms

The first model demonstrated that 20% of the variance in depressive symptom scores was predicted by peer victimization and covariates. The multiple R for regression was significantly different than zero, $F(5, 410) = 20.63$, $p < 0.001$, suggesting that the predictors reliably accounted for depressive symptoms. Two of predictors–offline peer victimization ($\beta = 0.29$, $p < 0.001$) and online peer victimization ($\beta = 0.21$, $p < 0.001$)–contributed significantly to the prediction of depressive symptoms. The second model

Table 2 Correlations between study variables

	Peer victimization offline	Peer victimization online	Social support offline	Social support online	Depressive symptoms	Social anxiety
Peer victimization offline	--					
Peer victimization online	0.62**	--				
Social support offline	−018**	−0.22**	--			
Social support online	−0.14**	−0.11*	0.60**	--		
Depressive symptoms	0.41**	0.39**	−0.27**	−0.19**	--	
Social anxiety	0.21**	0.23**	−0.31**	−0.16**	0.48**	--

Note. Cronbach's alpha in diagonal

* $p < 0.05$, ** $p < 0.01$

Table 3 Standard and hierarchical multiple regression predicting social anxiety

	B (SE)	β	sr^2	
Model 1				
PV offline	0.30 (0.15)	0.12*	0.09	
PV online	0.41 (0.16)	0.16**	0.12	
Age	−0.39 (0.47)	−0.04	−0.02	
Sex	−0.01 (0.02)	−0.04	−0.04	
Hispanic vs other	−0.03 (0.02)	−0.09	−0.08	
				$R^2 = 0.07$
			Adjusted	$R^2 = 0.06$
				$R = 0.27$***
Model 2				
PV offline	0.26 (0.15)	0.11†	0.09	
PV online	0.28 (0.16)	0.11†	0.09	
SS offline	−0.28 (0.06)	−0.27**	−0.22	
SS online	0.02 (0.06)	0.02	0.02	
Age	−0.37 (0.46)	−0.04	−0.04	
Sex	−0.01 (0.02)	−0.04	−0.04	
Hispanic vs other	−0.02 (0.02)	−0.08	−0.08	
				$R^2 = 0.14$
			Adjusted	$R^2 = 0.12$
				$R = 0.37$***
Model 3				
PV offline* SS offline	−0.02 (.01)	−0.07*	−0.12	
PV offline* SS online	0.01 (.01)	0.06	0.04	
PV online * SS online	−0.01 (0.01)	0.05	−0.04	
PV online * SS offline	0.01 (0.01)	0.05	0.03	
				$R^2 = 0.15$
			Adjusted	$R^2 = 0.13$
				$R = 0.39$***

Note. All predictors were centered

PV peer victimization, *SS* social support, *SE* standard error

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$, † $p < 0.08$

Table 4 Standard and hierarchical multiple regression on depressive symptoms

	B (SE)	β	sr^2	
Model 1				
PV offline	0.58 (0.12)	0.29**	0.24	
PV online	0.45 (0.12)	0.21**	0.18	
Age	−0.46 (0.35)	−0.06	−0.06	
Sex	0.01 (0.01)	0.03	0.04	
Hispanic vs other	0.01 (0.01)	0.01	0.01	
				$R^2 = 0.20$
			Adjusted	$R^2 = 0.19$
				$R = 0.45$**
Model 2				
PV offline	0.55 (0.12)	0.27**	0.23	
PV online	0.39 (0.12)	0.18**	0.16	
SS offline	−0.13 (0.05)	−0.16**	−0.14	
SS online	−0.04 (0.04)	−0.05	−0.04	
Age	−0.50 (0.35)	−0.06	−0.07	
Sex	0.01 (0.01)	0.03	0.03	
Hispanic vs other	0.01 (0.01)	0.01	0.01	
				$R^2 = 0.24$
			Adjusted	$R^2 = 0.22$
				$R = 0.48$**
Model 3				
PV offline* SS offline	−0.01 (0.01)	−0.05	−0.03	
PV offline* SS online	−0.01 (0.01)	−0.04	−0.03	
PV online * SS online	0.01 (0.01)	0.01	0.01	
PV online * SS offline	0.01 (0.01)	0.01	0.01	
				$R^2 = 0.24$
			Adjusted	$R^2 = 0.22$
				$R = 0.49$**

Note. All predictors were centered

PV peer victimization, *SS* social support, *SE* standard error

* $p < 0.01$, ** $p < 0.001$

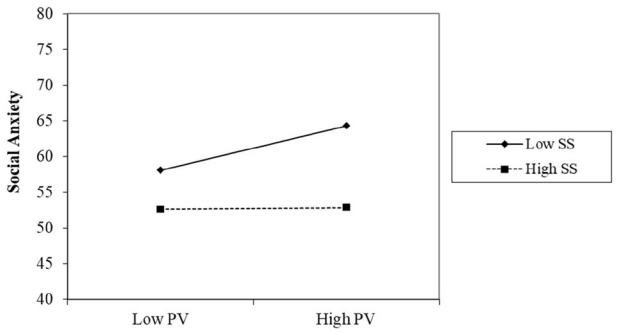

Fig. 1 Interaction effect of offline peer victimization × offline social support on social anxiety

suggested that 24% of the variance in depressive symptom scores is attributable to the independent variables and covariates. There were significant main effects of peer victimization offline ($\beta = 0.27$, $p < 0.001$), peer victimization online ($\beta = 0.18$, $p < 0.001$), and social support offline ($\beta = -0.16$, $p < 0.01$) on depressive symptoms. No 2-way interactions were found. Table 4 provides additional information on the analysis.

Discussion

The present study examined the internalizing symptoms of ethnically diverse emerging adults who retrospectively reported their experiences with peer victimization and social support. In line with our first hypothesis, findings support the notion that the effects of adolescent peer victimization on internalizing symptoms persist into early adulthood. This appeared to be especially true for depressive symptoms. These findings are expected since the relationship between victimization and poor mental health is well established (Haltigan and Vaillancourt 2014) and emerging neuroscience has demonstrated possible underlying mechanisms linking a history of peer victimization with future distress (Valliancourt et al. 2013). There was variability attributable to form of victimization (i.e., online vs offline)

and internalizing symptoms (i.e., depression vs anxiety). It is not unusual to find that victimization was more predictive of depressive symptoms than social anxiety given Hawker and Boulton's (2000) meta-analysis. Also, in line with previous research, electronic peer victimization predicted internalizing symptoms (Gini and Espelage 2014; Landoll et al. 2015; Mitchell et al. 2007).

Concerning our second hypothesis, offline social support was predictive of fewer internalizing symptoms. These general protective effects align well with both theoretical frameworks and previous findings (Luthar et al. 2000; Pouwelse et al. 2011; Rigby 2000; Rigby and Slee 1999; Tennant et al. 2015). Online social support did not have a protective effect on internalizing symptoms. This finding was surprising given the other reports demonstrating the protective nature of online support for youth (Frison and Eggermont 2015; Valkenburg and Peter 2007). Yet, some have speculated that online social experiences can be somewhat lacking for youth's mental health due to a low quality of interpersonal connectedness or the possibility for negative social comparison (Pantic et al. 2012; Chou and Edge 2012). Research suggests that youths' online and offline social contexts are often psychologically connected (Subrahmanyam and Šmahel 2012), and those who do not have access to offline support may use digital contexts such as social media to meet new friends and to search for much needed support (Ybarra et al. 2015; Korchmaros et al. 2015). However, it is possible that social support obtained in online contexts might not be as protective as offline support, and future research should examine whether it is the online venue or the nature of the relationship that may make online support less effective.

Another reason for the discrepancies between online and offline social support may be that compared to offline support, the benefits of online support are more immediate and fleeting, and our retrospective design was not sensitive enough to detect this. Evidence suggesting that online interactions may be more fleeting comes from a daily diary study, which found that although both digital and face-to-face interactions positively predicted same-day self-esteem, only face-to-face interactions on a given day predicted next day increases in college students' self-esteem (Frison and Subrahmanyam 2017). Thus, it may be that online support is most helpful immediately after victimization, but only face-to-face offline support provides longer lasting benefits. Our finding that online and offline support were not equally effective highlights the importance of measuring support obtained in both contexts to obtain a full picture of the resources a youth may have access to. Digital communication has become even more ubiquitous since the participants in the present study were adolescents, and it is important for future research to determine when and under what circumstances, online and offline support may be most beneficial for at risk youth.

With regards to our research question, there were few interaction effects found. The only effect was the combination of offline peer victimization and offline social support on social anxiety. Social support diminished the association between peer victimization and social anxiety (i.e., protective stabilizing effect). These findings support previous work that also found a buffering effect for social support in the face of peer victimization (Davidson and Demaray 2007; Hodges et al. 1999; Flouri and Buchanan 2002; Holt and Espelage 2007), but also contribute to the web of mixed findings on the nature of effects offered by support. That said, it is intuitive that offline social support is likely more beneficial for offline victimization, especially if it is peer-based support. In line with previous reasoning, those offering in-person support are better situated to intervene with problems like peer victimization (Ybarra et al. 2015). Findings have demonstrated that being exposed to both forms of victimization–online and offline–leave youth at greater risk (Glüer and Lohaus 2015; Sumter and Baumgartner 2017). Our findings showed that the combination of offline and online victimization led to greater negative outcomes due to an additive effect.

Limitations and Future Research Directions

This study has many limitations. Although the best sampling methods available were used to collect the data, a large portion of the sample was Latinx and all of the participants lived in California; however our sample mirrored the ethnic distribution of the larger University. Also, to establish temporal order, the reports of peer victimization and social support were retrospective which could induce recall bias. Findings have shown that memories of peer victimization are salient and stable (Rivers 2010). However, no data could be found on the stability of memories specific to perceived social support. Additionally, only self-report measures were used, and thus shared method variance is a limitation of the present study. Next, the order in which the measures were administered could have led to a measurement bias or a priming effect. Specifically, participants were asked to recall historical victimization first which could leave them feeling more distressed before reporting their internalizing symptoms. Another limitation is that participants were asked to recall victimization from both middle and high school, both of which are fairly distinct developmental periods when youth could have had very different experiences. Future studies should have separate questions assessing recollections from middle and high school. The measurement of social support was not ideal as participants were asked to report support from someone they knew online, but it is probable they also knew this person offline

as well. It was not possible to discern how supported they felt from people they knew exclusively online which could help us better understand the nature of social support in youth's lives. Additionally, our study did not distinguish between the persons offering support (i.e., parents versus peers). Future studies could enrich the literature by differentiating the person, medium, and origination (i.e., whether the relationship began online) of support. The cross-sectional nature of this study was another limitation. Although using a retrospective design offered some degree of temporal order, there was no ability to discern causality. Even though the measures on depression and social anxiety were reported for a time period that was distinctly after the exposure to victimization and perceived support, it is possible that the mental health issues preceded the victimization and were stable over time. Although our findings strengthen the idea that social support found offline moderates the link between offline peer victimization and social anxiety symptoms later in life, it does not account for other possible paths or extraneous variables.

Despite these limitations, an important contribution of our paper is that we separately assessed online and offline victimization as well as online and offline support. Given the increasing importance of online peer contexts in the lives of young people (Subrahmanyam et al. 2012), it is important for studies on victimization to assess and measure victimization and support in both contexts.

Author Contributions T.H. designed the study, completed data collection, and authored various sections. K.S. offered direction, authored sections, and finalized editing. S.Y. conceptualized and completed the analyses.

Compliance with Ethical Standards

Conflict of Interest The authors declare that they have no conflict of interest.

Ethical Approval Our research complies with all ethical standards. The research has been approved by California State University, Los Angeles Institutional Review Board. The manuscript details the informed consent process.

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