Legacies of Childhood Victimization: Indirect Effects on Adult Mental Health Through Re-Victimization

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Abstract The objective of the current study was to evaluate the direct and indirect effects of childhood victimization on adult mental health, focusing on adult re-victimization as a mediator. Participants ($n = 279$) were recruited via Amazon Mechanical Turk reported on childhood victimization, adulthood victimization, and current mental health. Sixty percent of the sample reported at least one incident of re-victimization in adulthood. Three regressions were conducted in SPSS using the PROCESS macro for mediation, and the indirect effect was tested through bootstrapping (10,000) confidence intervals. Total childhood victimization was a significant predictor of current anxiety, depression, and posttraumatic stress. For all models, adulthood re-victimization was a significant mediator of the relationship between childhood victimization and current mental health. The effects of childhood victimization on mental health are at least in part explained by the high risk of chronic re-victimization into adulthood.

Keywords Poly-victimization · Childhood violence exposure · Mental health · Re-victimization

A substantial percentage of children experience at least one adverse event (e.g.: abuse, maltreatment, the witnessing of

domestic violence), prior to their 18th birthday, and many experience multiple instances and forms of adversity. In the Adverse Childhood Experiences (ACE) study, 27–30% of adult participants reported experiencing physical abuse in childhood, 16–25% reported experiencing childhood sexual abuse, and 14% reported witnessing maternal-directed violence (Edwards et al. 2003; Center for Disease Control 2014). Among those who reported experiencing at least one adverse event, 34.6% reported more than one instance of maltreatment, with 20.8% of women and 14% of men reporting experiencing three or more different adverse events (Chapman et al. 2004; Edwards et al. 2003). Other studies have reported similar prevalence rates within North America (Afifi et al. 2014; Messman-Moore and Long 2000), with 58.3% of adolescent respondents to a national survey in the U.S. reporting the experience of at least one adverse event in childhood (McLaughlin et al. 2012).

Research in recent decades has established a basic connection between the experience of victimization (including maltreatment, adversity, and exposure to intimate partner violence (IPV)) in childhood and increased risk for re-victimization in late adolescence and adulthood (Messman-Moore and Long 2000; Widom et al. 2008). However, little research to date has been conducted that disentangles the relationships between initial childhood victimization, re-victimization in adulthood, and adult health and mental health outcomes. The current study aims to evaluate the extent to which the lasting negative mental health consequences of childhood victimization are explained by the mediating role of re-victimization in adulthood.

The experience of adverse events in childhood can result in a host of negative health and mental health outcomes in adolescence or adulthood, many of which are long-term and insidious. These health and mental health problems include: ischemic heart disease, cancer, and chronic lung disease,

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among other physical health outcomes (Felitti et al. 1998), suicidal ideation and suicide attempts (Afifi et al. 2014; Chen et al. 2010; Fry et al. 2012; Norman et al. 2012), conduct and behavioral disorders (Anda et al. 2006; Kaplan et al. 1998; McLaughlin et al. 2012); post-traumatic stress disorder (Afifi et al. 2014; Cater et al. 2014; Chen et al. 2010), substance abuse or dependence (Afifi et al. 2014; Fang et al. 2015; Kaplan et al. 1998; Norman et al. 2012), criminality (Cater et al. 2014), and risky sexual behavior (Anda et al. 2006; Fargo 2009; Fry et al. 2012; Norman et al. 2012). However, it is somewhat less clear whether different types of childhood adverse events carry different levels of risk, as well as how childhood exposure or victimization results in risk for re-victimization and in long-term risks lasting into adulthood.

The increase in risk for psychopathology appears to hold across exposure to multiple types of childhood adverse events, yet research has often focused on childhood maltreatment or on exposure that is likely to have occurred within the home, such as physical, sexual, and emotional/psychological abuse (Afifi et al. 2014; Chapman et al. 2004), neglect (Fang et al. 2015), and witnessing of IPV (Afifi et al. 2014; Fry et al. 2012). This focus may be justified and important, considering that childhood victimization may, in part, occur as a function of children's dependency, and because victimization by family members may add another layer of interpersonal complexity to the experience of and recovery from the incident trauma (Finkelhor et al. 2007). The focus on single types of victimization, however, has been to the detriment of understanding children's broader experiences of victimization, which may better explain consequent patterns of risk and resilience. To address this gap in the literature, there has been a rapidly increasing wave of theory and research that conceptualizes children's experiences of adversity within a poly-victimization framework (Hamby and Grych 2013), which encourages the examination of multiple types of childhood experiences and risk pathways.

When examining multiple types of victimization experiences in tandem, several studies suggest support for a dose-response relationship between exposure to adverse events in childhood and risk for detrimental health and mental health outcomes later in life (Afifi et al. 2014; Cater et al. 2014; Chapman et al. 2004; Edwards et al. 2003). There is also strong evidence to suggest that poly-victimization – the experience of multiple *types* of adverse events – increases risk for detrimental outcomes to an even greater degree than repeated experiences of the same type of victimization (Finkelhor et al. 2007). For example, in Chapman et al.'s (2004) study, those who had reported five or more adverse childhood experiences were at a five-fold increase for a lifetime experience of depressive disorders. It remains somewhat unclear why multiple types of victimization increase risk more than repeated exposure to the same type of victimization; however, the presence of poly-victimization may indicate that more individuals in a

victim's family circle and social environment are actors in the victimization process (Finkelhor et al. 2007). Furthermore, the multiplicity of types of events may represent an even greater strain on an individual's processing and adaptive capabilities (Benight and Gold 2012). Multiple experiences of a single type of victimization may be processed in the same way as a single event, particularly if perpetrated by the same actor, while multiple types of victimization may each represent a separate strain that must be processed (and adapted to) as a new, additional trauma or threat. Altogether, this wide base of literature provides strong support for the serious, lasting impact of childhood exposure to adverse events with polyvictims being at greatest risk for poor long-term outcomes.

What is not entirely clear, however, is whether the risk for childhood polyvictims is a function of the disproportionate negative effect of childhood trauma compared to other life events (Cloitre et al. 2002) or whether negative long-term effects are explained – at least in part – by continued victimization experiences across the lifespan. There is strong support for the link between childhood and adulthood victimization; childhood exposure to adverse events has been linked to a greater likelihood of experiencing adverse events in adulthood, including IPV and other direct violence (Chen et al. 2010; Fargo 2009; Pereda and Gallardo-Pujol 2014; West et al. 2000). In a prospective study following children into young adulthood, Widom et al. (2008) found that all types of childhood victimization included in the study – physical abuse, emotional abuse, and neglect – were associated with a greater risk for lifetime victimization. Childhood sexual abuse alone has been linked to multiple forms of physical and sexual victimization in adulthood (Messman and Long 1996; Messman-Moore and Long 2000), with a review of literature on sexual re-victimization suggesting that roughly one-third of child sexual abuse victims report repeated victimization, and that women who experienced childhood sexual victimizations were two to three times more likely than women who did not to be victimized in adulthood (Arata 2002). Little research has examined whether child polyvictims are re-victimized in adulthood across multiple domains, such that poly-victimization continues into adulthood.

Re-victimization in adulthood, like the experience of adverse events in childhood, can also lead to an increased risk for further negative outcomes. For example, Messman and Long (1996) found that women who had experienced both childhood sexual abuse and adult assault were at increased risk for depression and anxiety. Several studies have also explicitly compared individuals who have been victimized only in childhood to those who have been re-victimized, and have found higher levels of psychological distress and other negative health and mental health outcomes in the re-victimization group, as compared to both the childhood victimization only and the non-victimized group (Arata 2002; West et al. 2000). Lilly et al. (2014) found that childhood maltreatment

indirectly affected posttraumatic stress symptoms (PTSS) through adult IPV victimization in a sample of adult women. Although their study highlights the potency of adult victimization, more research on the indirect effect of childhood victimization on adult mental health through a broader range of adult re-victimizations is needed. These findings suggest that re-victimization has some impact on mental health outcomes beyond that of initial childhood victimization, yet the majority of these studies have evaluated the effects of childhood and adulthood additively (i.e., as independent main effects) rather than explicitly examining the extent to which childhood victimization directly affects long-term outcomes or indirectly affects them through adulthood re-victimization. As such, there is a need for research to consider the potential mediating role of adulthood poly-victimization in the link between childhood victimization and mental health in adulthood.

The Current Study

The current study aims to examine the associations between childhood victimization, adulthood re-victimization and current mental health (i.e., depressed mood, general anxiety, and posttraumatic stress symptoms (PTSS)). Specifically, the analyses will examine the direct effects of childhood poly-victimization on mental health in adulthood and the indirect effects of childhood poly-victimization through adulthood re-victimization. By evaluating these distinct pathways, the current study contributes meaningfully to the underlying mechanisms of the lasting effects of childhood adversity.

The model will control for sex, age, past year stress, and treatment. Sex and age differences in major depression, anxiety, and PTSS, are robustly supported in the literature, with women at greater risk than men for internalizing disorders (Hyde et al. 2008) and risk of depression diagnosis decreasing with age across adulthood (Strine et al. 2008). Lifetime stress is a well-established contributor to the development of internalizing symptoms, with potential gender differences in those events experienced as stressful (Kendler and Gardner 2014; Hyde et al. 2008). In examining the effect of specific types of adverse events (i.e. victimization), it is sensible to account for other recent stressful experiences. Finally, the model controlled for mental health treatment, for theoretically it may be hoped that victimized adults who sought treatment experienced improvements in mental health. Controlling for sex, age, past year stress, and treatment, it is predicted that (1) childhood victimization will be associated with increased risk of re-victimization in adulthood, (2) childhood victimization will be directly associated with current adult mental health, specifically with depression, PTSS, and generalized anxiety, and (3) the relationship between childhood victimization

and current mental health will be mediated by adult re-victimization (See Fig. 1).

Methods

Participants

Participant age ranged from 19 to 62 years with an average age of 35 years ($SD = 9.56$). Sixty-two percent of participants were female. Respondents were primarily White (75.3%), and remaining participants identified as South East Asian (7.8%), East Asian (3%), Black or African American (4.9%), Hispanic/Latino/a (4.8%), and Bi-racial/Multi-racial (3%). Seventy-eight percent of participants were employed either part or full time, and participants reported a wide range of annual income. Thirty-five percent of participants made an annual income below 30,000 USD, 41.9% made between 30,000–60,000 USD, and 22.4% made above 60,000 USD.

Of the 382 participants who completed the study, 296 indicated at least one exposure to violence on a screening questionnaire, received the *Juvenile Victimization Questionnaire-Revised*, *Screening Sum Version*, *Adult Retrospective Form* (JVQ-2), and were included in the original study. Of these 296 participants who were screened into the violence-exposed condition, 17 did not appear to have violence-exposure on the JVQ-2 and were dropped from the current study. The remaining sample ($n = 279$) endorsed at least one exposure to childhood violence and were included in the current study.

Procedures

Participants were part of the Coping with Stressful Life Experiences (CSLE) study, which was approved by the university IRB. Recruitment took place through Amazon Mechanical Turk (MTurk), a public online survey platform that gathers data from a diverse sample of participants (Casler et al. 2013). The current study permitted access for “master worker” participation only, which makes the survey only available to those participants who reliably complete surveys, thereby enhancing the data quality and survey return rates. Those interested in participating based on a brief description of the survey were able to sign up through MTurk and were directed to an online Qualtrics survey. Upon following the link, participants viewed and completed an informed consent for the IRB approved protocol. At the end of the survey, participants received a random unique identifier code to enter into MTurk to confirm their participation and cue electronic reimbursement. Participants were compensated \$5. All participants entering a survey code were compensated, even if they did not respond to all study measures or appeared

Fig. 1 Mediation model. *
 $p < .05$. ** $p < .01$. *** $p < .001$.
 See Tables 2 and 3 for complete
 statistics

to give invalid response patterns. Average completion time for the study was 25 min.

Measures

Juvenile Victimization Questionnaire-Revised, Screener Sum Version, Adult Retrospective Form (JVQ-2) The JVQ-2 is a 34-item measure assessing victimization across five domains: community violence, peer violence, maltreatment, sexual assault, and witnessing violence (Hamby et al. 2004). For each item, participants could indicate whether they had ever experienced the event in childhood. Total childhood victimization was calculated by summing the total number of events endorsed. Participants were also able to indicate whether they had experienced each event in adulthood. Given that they were responding for the age of majority, the child maltreatment scale and certain items from the peer/sibling violence and sexual assault scales was removed, and the sum score was calculated based on endorsement of the remaining items. Six of the items removed assessed parental neglect or violence perpetrated by “kids.” A seventh item that asked whether the respondent, as a child, had engaged sexually with anyone 18 or older, was also removed; without knowing the context (e.g. lack of consent,) it is not considered victimization for an adult to interact sexually with another adult.

Center for Epidemiological Studies-Depression Scale (CES-D) The CES-D (Radloff 1977), is a 20-item, self-report measure of dysphoric mood. Respondents rate the severity of their experiences on a scale of 1 (“Rarely or none of the time”) to 4 (“All of the time”). The CES-D shows good internal consistency (Cronbach’s alpha of .85), moderate convergent validity with the Bradburn Negative Affect Scale ($r = .60$) and good discriminant validity with measures of social functioning and aggression (Radloff 1977). The CES-D showed good internal reliability in the current study with a Chronbach’s alpha of .77.

The Severity of Posttraumatic Stress Symptoms – Adult The *Severity of Posttraumatic Stress Symptoms – Adult* (Kilpatrick et al. 2013) was designed by the Posttraumatic Stress and Dissociative Disorders Sub-Work Group to evaluate posttraumatic stress disorder (PTSD) in accordance with the proposed shift to dimensional assessment in the *DSM-5*. The resultant nine-item self-report showed strong internal consistency ($\alpha = .91$) and good convergent validity with the PCL-4 ($r = .84$, $p < .001$; LeBeau et al. 2014). Chronbach’s alpha for the NSESSS-PTSD in the current study shows high internal reliability ($\alpha = .91$). A score of ≥ 2 on the NSESSS-PTSD indicates the presence of moderate PTSD (Kilpatrick et al. 2013).

The Severity Measure for Generalized Anxiety-Adult The *Severity Measure for Generalized Anxiety-Adult* (Craske et al. 2013) is a 10-item, self-report measure, was designed by the *DSM-5* workgroup for anxiety disorders to reflect the shift toward dimensional assessment. Reliability reports for this measure were not available at the time of this current study; however, the measure demonstrated high internal reliability in the current study ($\alpha = .93$).

The Holmes and Rahe Stress Scale The *Holmes and Rahe Stress Scale* is a 43-item, self-report measure assessing the quantity and quality of past year stressful events pertaining to areas of significance in American lives. The measure demonstrated good reliability in the current study ($\alpha = .87$).

Analytic Plan

All regressions were conducted in SPSS using the PROCESS macro for mediation analyses (Hayes 2013). To evaluate the first hypothesis, regression was conducted with childhood victimization as a predictor of adult re-victimization. To assess the second hypothesis, three mediation models (Hayes 2013) were conducted to evaluate the indirect effect of childhood

victimization on adult mental health via adulthood re-victimization. All models controlled for sex, age, past year stress and treatment and were bootstrapped (10,000). Income initially was controlled for in the model; however, as it did not significantly predict any of the outcome variables, it was dropped to strengthen the power of the analysis. Childhood and adulthood victimization were centered before the analysis. Because theoretically it may be expected that violence-exposed adults who sought treatment would have fewer health problems, an interaction term of treatment by adult re-victimization was created. Regression showed that the moderating effect of treatment on mental health was non-significant, and the moderation analysis was not included in the final results.

Traditionally, the Sobel test has been used to test the extent to which the mediator reduces the total effect of X on Y ($ab = c - c'$); problematically, the Sobel test assumes a normal distribution of ab under the null. Distributions of products are usually positively skewed, and confidence intervals based on the normality assumption will often produce underpowered tests of mediation. Bootstrapping offers a more robust test of the indirect effect because it does not assume normality (Preacher and Hayes 2004). Path “ a ” from childhood to adulthood victimization was first tested with bootstrapping, and the resultant 95% confidence interval (.1337, .2467) did not contain zero. The bootstrap procedure was then used to test path “ b ” from adulthood victimization to each of the mental health outcomes.

Results

On average, participants experienced seven violent events in childhood ($SD = 5.70$). More than half of participants (59.5%) experienced re-victimization in adulthood, with an average number of two re-victimizations ($SD = 2.93$). The most common types of violence in childhood were exposure to conventional crime (84.2%), followed by peer and sibling violence (79.6%), witnessing violence (63.1%), maltreatment (53.1%), and sexual violence (43.4%; see Table 1). In adulthood, the most common form of re-victimization was exposure to community crime (39.8%), followed by witnessing violence (24.7%), peer and sibling violence (16%.8) and sexual violence (10.7%). Of the sample, 44.0% met the CES-D cutoff for major depression. A majority of participants indicated at least one symptom of PTSD (83.2%) and generalized anxiety (90.7%); approximately 12% had a score of 2 or higher on the posttraumatic stress scale (indicating moderate levels of posttraumatic stress) and 12% had a score of 2 or higher on the anxiety severity scale (indicating moderate levels of anxiety). As expected, age was negatively associated with depression and anxiety, and past year stress was associated with adult re-victimization and PTSS.

The first hypothesis predicted that childhood victimization would be associated with higher rates of re-victimization in adulthood. The overall model explained a significant amount of variance in adulthood re-victimization ($F = 19.82, p < .001, R^2 = .27$; see Table 2). Childhood victimization significantly predicted adulthood re-victimization ($\beta = .19, p < .001$) when controlling for current mental health, age, sex, treatment, and past year stress. The second hypothesis postulated a direct association between childhood victimization and current mental health in adulthood. To evaluate this hypothesis, a multivariate regression analysis was conducted with depressed mood, posttraumatic stress, and anxiety as co-varying dependent variables. All models explained a significant amount of variance, with childhood victimization significantly associated with current depression ($\beta = .30, p = .02$), PTSD ($\beta = .03, p = .03$), and general anxiety ($\beta = .02, p = .04$) controlling for age, sex, past year stress, and treatment (See Table 2).

The third hypothesis sought to evaluate adulthood re-victimization as a mediating variable between childhood victimization and current mental health. Three PROCESS models were conducted through a bootstrapping (10,000) procedure. PROCESS first tested the association between child victimization and adult re-victimization in a regression, controlling for sex, age, past year stress and treatment. Child victimization and adult re-victimization were then entered as predictors into three subsequent PROCESS models, which separately evaluated depressed mood, PTSS, and anxiety as dependent variables, controlling for sex, age, past year stress and treatment. Once adult re-victimization was introduced into the model, the direct effect of child victimization on current adult mental health was nonsignificant (see Table 3).

In the PROCESS models, none of the confidence intervals describing the indirect effect of adult re-victimization contained zero, and all models were significant ($F = 6.06–6.30, p < .001, R^2 = .12$; see Table 3). The indirect effect of adult re-victimization on depressed mood was .198, ($SE = .073, 95\% CI: .080, .372$). Adult re-victimization’s indirect effect on anxiety was .009 ($SE = .004, 95\% CI: .004, .019$), and its indirect effect on PTSS was .013 ($SE = .005, 95\% CI: .004, .025$), both of which were significantly different from zero.

Discussion

The current study points to the serious risks posed by childhood victimization for mental health in adulthood and for poly-victimization across the lifespan. Of the participants who were victimized at least once in childhood, 59.5% reported re-victimization in adulthood. Descriptive statistics on childhood victimization revealed that the most common types of exposure included exposure to crimes, peer/sibling violence, and physical and emotional maltreatment (See Table 1).

Table 1 Occurrences of childhood and adulthood victimization

	Victimization (%)		Range of occurrences	
	Childhood	Adulthood	Childhood	Adulthood
Conventional crime	84.2%	39.8%	1–9	1–9
Personal theft	36.2%	8.9%		
Robbery	49.4%	20.0%		
Vandalism	43.0%	12.5%		
Assault with weapon	29.4%	8.6%		
Assault without weapon	48.7%	15.7%		
Attempted assault	17.6%	6.8%		
Threatened assault	42.3%	13.9%		
Kidnapping	5.3%	-----		
Bias assault	7.2%	2.5%		
Peer/Sibling violence	79.6%	16.8%	1–6	1–3
Gang or group assault	13.6%	1.8%		
Peer or sibling assault	54.0%	3.9%		
Nonsexual genital assault	16.5%	-----		
Peer or Sibling bullying	35.0%	-----		
Emotional bullying	50.8%	1.2%		
Dating violence	10.0%	10.4%		
Witnessing violence	63.1%	24.7%	1–8	1–5
Witness to domestic violence	23.1%	0.7%		
Witness to parent assault of a sibling	17.0%	0.3%		
Witness to assault with weapon	21.5%	9.3%		
Witness to assault without weapon	34.4%	10.7%		
Burglary of family household	26.5%	7.5%		
Murder of family member or friend	6.4%	5.7%		
Exposure to shootings or riots	5.7%	3.2%		
Exposure to war or ethnic conflict	1.0%	0.3%		
Maltreatment	53.1%	-----	1–4	-----
Physical assault by caregiver	38.4%			
Emotional/Psychological abuse	39.1%			
Neglect	17.2%			
Family abduction	11.5%			
Sexual assault	43.4%	10.7%	1–7	1–4
Sexual assault by known adult	12%	1.7%		
Nonspecific sexual assault	6.1%	1.7%		
Sexual assault by child/teen	12.9%	-----		
Rape: attempted or completed	13.3%	4.6%		
Flashing/Sexual exposure	16.1%	5.3%		
Verbal sexual harassment	13.6%	1.7%		
Statutory rape & sexual misconduct	18.3%	-----		
Total	100%	59.5%	1–32	1–15

As the first hypothesis predicted, childhood victimization was strongly associated with adulthood re-victimization in this sample, even after controlling for current adult mental health, age, sex, past year stress and treatment engagement. This result is consistent with the sexual assault re-victimization literature (Messman and Long 1996; Messman-Moore and Long 2000), as well as with Widom et al. (2008) finding that

childhood victimization, across types, increased the risk of lifetime victimization and exposure to traumatic events. The current study extends these findings by broadening the assessment of childhood poly-victimization and adulthood re-victimization to include community crime, peer and sibling violence, and witnessing violence, which have not been explicitly evaluated in past studies.

Table 2 Multivariate regressions examining the direct associations of childhood victimization, adulthood re-victimization and mental health

	AJVQ ¹		Depressed mood		PTSS		Anxiety	
	β (SE)	95% CI	β (SE)	95% CI	β (SE)	95% CI	β (SE)	95% CI
JVQ ²	.19(.03)***	.13, .24	.30(.14)*	.04, .58	.03(.01)*	.01, .04	.02(.01)*	.14, .25
Age	.05(.02)**	.01, .08	-.15(.08)	-.31, .01	-.01(.01)*	-.03, -.01	-.02(.01)**	.01, .08
Sex	-.11(.33)	-.76, .55	3.03(1.61)	-.15, 6.21	.23(.12)	-.01, .46	-.17(.12)	-.72, .55
PY stress ³	.16(.03)***	.09, .23	.31(.17)	-.02, .64	.03(.01)*	.01, .05	.03(.01)	.09, .22
Treatment	-.34(.32)	-.96, .29	-2.85(1.54)	-5.87, .18	-.06(.11)	-.29, .16	-.19(.10)	-.96, .25
Constant	-1.97(.92)*	-3.80, -.15	19.20(4.49)***	10.36, 28.04	.90(.33)	-.01, .46	1.32(.30)***	-3.68, -.14
Model fit statistics	F = 19.82(<.001)	R ² =.27	F = 4.55(<.001)	R ² =.08	F = 5.41(<.001)	R ² =.09	F = 6.09(<.001)	R ² =.10

JVQ Juvenile Victimization Questionnaire

* $p < .05$, ** $p < .01$, *** $p < .001$ ¹ Adult Re-victimization² Childhood Victimization³ Past Year Stress

Numerous studies have suggested a dose-response relationship between childhood adversity and detrimental mental health in adulthood (Afifi et al. 2014; Cater et al. 2014; Chapman et al. 2004; Edwards et al. 2003). Finkelhor et al. (2007) found that poly-victimization predicted detrimental outcomes during childhood and adolescence above and beyond re-victimization, suggesting that victimization across types of violence may have particularly potent health effects. In keeping with dose-response effects found in other literature (e.g. Afifi et al. 2014; Cater et al. 2014), the current study supported the hypothesis that increased childhood poly-victimization is associated with greater risk of depression, general anxiety, and posttraumatic stress in adulthood. Childhood victimization across numerous domains of

violence may represent a particularly high ‘dose’ of life stressors, increasing susceptibility to lifetime mental health problems.

Although the potency of childhood victimization on later re-victimization and mental health problems is well-supported in the literature, it is less clear whether the negative effects of childhood victimization on lifetime mental health are at least partly explained by repeated victimizations into adulthood. As hypothesized, the current study found that adulthood re-victimization mediated the links between childhood poly-victimization and current mental health. This finding highlights adulthood victimization’s direct effect on current mental health problems and furthermore indicates that the influence of childhood victimization on outcomes in adulthood may at

Table 3 Mediation models

	Adulthood re-victimization		Depressed mood		Posttraumatic stress		General anxiety	
	β (SE)	95% CI	β (SE)	95% CI	β (SE)	95% CI	β (SE)	95% CI
AJVQ ¹	-----	-----	1.04(.29)***	.46, 1.62	.07(.02)**	.02, .11	.05(.02)**	.01, .09
JVQ ²	.19(.03)***	.13, .24	.11(.14)	-.18, .40	.01(.01)	-.01, .11	.01(.01)	-.01, .03
Age	.05(.02)**	.01, .08	-.19(.08)*	-.35, -.04	-.02(.01)	-.03, -.01	-.02(.01)**	-.03, -.01
Sex	-.11(.33)	-.76, .55	3.14(1.58)*	.02, 6.25	.23(.12)	.00, .47	.17(.10)	-.03, .37
PY stress ³	.16(.03)***	.09, .23	.14(.17)	-.20, .47	.02(.01)	-.00, .05	.02(.01)	-.01, .04
Treatment	-.34(.32)	-.96, .29	-2.50(1.51)	-5.47, .47	-.04(.11)	-.26, .18	-.18(.10)	-.37, .02
Constant	-1.97(.92)*	-3.80, -.15	21.25(4.43)***	12.53, 29.98	1.02(.33)**	.37, 1.68	1.41(.30)***	.83, 1.10
Model fit statistics	F = 19.82(<.001)	R ² = .27	F = 6.06(<.001)	R ² = .12	F = 6.10(<.001)	R ² = .12	F = 6.30(<.001)	R ² = .12

* $p < .05$, ** $p < .01$, *** $p < .001$ ¹ Adult Re-victimization² Childhood Victimization³ Past Year Stress

least in part be accounted for by ongoing victimization in later life. In this finding, the current study contributes to the field in two ways. First, the JVQ provides a more comprehensive assessment of childhood victimization than the Adverse Childhood Experiences Scale (ACEs; Felitti et al. 1998), thus offering a more nuanced assessment of the connection between childhood and adult victimization than can be captured in studies using only ACEs. Secondly, the authors were unable to find previous studies examining poly-victimization among adults. The current finding extends previous poly-victimization research by extending poly-victimization from childhood into adulthood.

While the mediation model was significant, the indirect effect of childhood victimization on mental health via adult re-victimization was not large. One explanation for this relatively weak effect is that adult re-victimization represents one of numerous, complex pathways between childhood victimization and lifetime mental health. Environmental and family factors may play important roles in explaining the direct effect of childhood victimization on adult mental health (Horwitz et al. 2001; Edwards et al. 2003). Horwitz et al. (2001) suggest that disadvantaged social circumstances and cumulative life stressors contribute to higher rates of adult mental health problems. A majority of participants in the current study reported childhood exposure to conventional crime (84.2%) and witnessing violence (63.1%), and these high rates of exposure may reflect environments at-risk for stressful events. Similarly, Edwards et al. (2003) emphasized the role of emotionally abusive family environments in accenting dose-response relationships between childhood abuse and mental health. Approximately 23% of participants in the current study reported witnessing domestic violence and 53% reported some form of maltreatment. Finally, it is important to note the bi-directionality of mental health and re-victimization. In a longitudinal analysis of U.S. adolescents, Auslander et al. (2015) found that PTSD and depression fully mediated the relationships between both emotional and sexual abuse and re-victimization. Due to its cross-sectional study design, the current study was unable to establish the onset time of mental health problems relative to re-victimization, and it is possible that earlier experiences of depression in part explained adult victimization. Although more research is needed, the current study extends previous findings by documenting that adult re-victimization explains a significant portion of the association between early exposure and adult mental health.

Importantly, childhood poly-victimization seems to have potent implications for the development of *adult poly-victimization*, with 59.5% of respondents reporting victimization across multiple domains in adulthood. Although assessed separately, it may be meaningful to consider childhood and adulthood victimization as cumulative experiences within Finkelhor et al.'s (2007) poly-victimization framework, wherein childhood violence-exposure puts children at risk

for more exposure across multiple types of violence. For highly victimized participants, exposure may be considered a 'condition' rather than an 'event' (Finkelhor et al. 2007), and the condition of poly-victimization may not be confined to childhood but may persevere, via complex risk pathways, into adulthood. The presence of poly-victimization in childhood may indicate family and community-level risk factors that increase the risk of violence-exposure into adulthood. With respect to dose-response theory, the accumulation of childhood and adulthood poly-victimization may represent a particularly high risk for adult mental health problems.

Although this study contributes to the understanding of lifetime victimization risk, it has a few limitations that should be noted. First, the study asked adults to report on their lifetime exposure to violence retrospectively; retrospective reporting of victimization has been shown to lead to slight over-endorsement of exposure (Finkelhor et al. 2009). For this reason, the prevalence rates of victimization in this sample should not be viewed as accurate lifetime prevalence data – rather, they indicate general risk patterns. Further, the current study was a cross-sectional design, and as such, mediation analyses should be regarded as exploratory. Finally, the current study was conducted using MTurk. Although MTurk has been shown to represent a more socioeconomically and ethnically diverse sample than can be captured by other commonly used survey methods (Casler et al. 2013), it is less representative than national probability samples (Berinsky et al. 2012). In addition, the current sample was specifically screened to include only those with at least one childhood victimization. As such, the current sample should be considered an at-risk sample rather than a representative sample.

The findings and methods of this study can be used as a launching point for future steps in this field of study in a number of ways. One of these steps is to conduct a prospective, longitudinal study examining childhood victimization, adult re-victimization, poly-victimization, and mental health outcomes. A prospective design would be likely to produce more accurate reporting of exposure among participants (Finkelhor et al. 2009), allowing for a better ability to distinguish between the effect of level of exposure on mental health and any possible reverse influence of retrospective memory of exposure. Such a design would also allow researchers to capture the influence of experiences of victimization on risk mental health as such experiences happen. A prospective method might also allow for a closer examination of poly-victimization and provide additional clues as to mechanisms by which poly-victimization might be more detrimental to mental health outcomes than re-victimization. Although this finding is supported by the current study, the theories as to how or why poly-victimization has a more negative impact on mental health remain somewhat unclear (Benight and Gold 2012; Finkelhor et al. 2007).

Another important next step in this field is to include other variables in these longitudinal and prospective designs that could act as mechanisms for risk in the pathway between childhood victimization and adulthood re-victimization. Theories as to how child victimization connects to adult re-victimization and further risk for negative mental health outcomes are multiple and still unclear. Although some conceptualize this increased risk for re-victimization as attributable to behavior variables (e.g. Fargo 2009), others view the pathway as related to elements of family and social environment (Finkelhor et al. 2007) or to cycles of negative beliefs and cognitions about the self (Messman and Long 1996; Munroe 2014). Further research utilizing prospective, longitudinal designs that include variables to capture these possible mechanisms and pathways could greatly improve the state of theory concerning victimization and re-victimization.

In addition to highlighting needed future directions for the field, the current study has implications for clinical settings. Perhaps most importantly, the current study underscores the need for comprehensive assessment and demonstrates the importance of assessing for multiple types of exposure to both past and recent adverse experiences. Assessment of victimization is a critical piece for understanding current mental health, as well as pathways that could be maintaining current mental health and that could increase risk for victimization in the future. Whether depressive symptoms are linked to recent victimization, or to victimization in childhood that was exacerbated by recent adversity, could have implications for choice and length of treatment. Given that the current study could evaluate several types of victimization typically not captured in examinations of childhood victimization, and that those missed types of victimization could add substantially to understanding an individual's victimization experience, demonstrates that the 'comprehensive' side of 'comprehensive assessment' is also particularly important. Secondly, the current study corroborates previous findings linking childhood victimization to adult mental health and re-victimization. Treatment for violence-exposed children may mitigate later mental health problems and help prevent re-victimization.

In conclusion, the current study documents the high occurrence of adult re-victimization among persons with histories of childhood poly-victimization. Specifically, the current study documents the importance of re-victimization in adulthood as one explanatory path in the association between childhood victimization and adult mental health. Further research on explanatory pathways between childhood victimization and adult mental health is needed. Given the profound implications of poly-victimization across the lifespan, though, it is recommended that clinicians assess adult clients for

poly-victimization both in childhood and adulthood. Treatment geared toward addressing mechanisms that support the link between childhood adversity and adult mental health, such as re-victimization or environmental and family factors, may mitigate long-lasting effects of early victimization.

Compliance with Ethical Standards

Disclosure of Interest Authors declare no conflict of interest.

Ethical Standards and Informed Consent All procedures performed in the study involving human participants were in compliance with the ethical standards of university's institutional research board. The study's informed consent form was approved by the university's IRB, and informed consent was obtained from all individual participants in the study.

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