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Longitudinal Trajectory of Adolescent Exposure to Community Violence and Depressive Symptoms
among Adolescents and Young Adults: Understanding the Effect of Mental Health Service Usage

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Abstract

Research on the impact of exposure to community violence tends to define victimization as a single construct. This study differentiates between direct and indirect violence victimization in their association with mental health problems and mental health service use. This study includes 8947 individuals from four waves of the National Longitudinal Study of Adolescent to Adult Health and examines (1) whether sub-types of adolescent victimization are linked to depressive symptoms; (2) whether adolescent victimization is linked with mental health service use; and (3) the role of mental health service use in attenuating symptoms arising from victimizations. Adolescents witnessing community violence were more likely to experience depressive symptoms during adolescence but not during their young adulthood; direct exposure to violence during adolescence does not predict depressive symptoms in adolescence but does in adulthood. Use of mental health service mediates report of depressive symptoms for adolescent witnessing community violence.

Key words: direct community violence exposure, witnessing violence, use of mental health service, adolescent and adult depressive symptoms

More than two decades of research has shown that exposure to violence in the community could seriously disrupt the healthy progression of adolescents' development and result in many negative developmental outcomes. Exposure to community violence, either as a direct victim or a witness of violence, were linked to adolescents' multiple adverse health risk behaviors (Berenson et al. 2001). These include: juvenile delinquency (Eitle & Turner, 2002), elevated levels of violent behavior and weapon use, increased alcohol use (Taylor & Kliwer, 2006), substance abuse (Macdonald et. al. 2010), lowered self-esteem (Boney-McCoy & Finkelhor, 1995), social difficulties with peers (Schwartz & Proctor 2000), decrements in IQ, and poor academic performance (Schwartz & Gorman, 2003). There is ample evidence that victimization experiences could also lead to various deleterious psychological and mental health issues in the forms of post-traumatic stress disorder (PTSD) (Fowler, Tompsett, Braciszewski, Jacques-Tiura, & Baltes, 2009), increased depression and anxiety symptoms (Oscos-Sanchez et al., 2010; Turner, Finkelhor, & Ormrod, 2010; Chen, 2010), diminished expectation about future survival (Warner & Swisher, 2014), and suicidal ideation or attempt (Copeland, Wolke, Angold, & Costello, 2013). Moreover, these psychological effects experienced by victimized adolescents can last beyond a few weeks or months following the victimization experience and potentially extend well into their adulthood (Menard, 2002).

However, most existing analyses of the impact of exposure to violence in the community combined various types of victimization experiences such as personal violent victimization, witnessing violence, and learning about violent events in the community as one single global construct. Only a few studies such as that of Fowler et al (2009) have highlighted the need to differentiate the impact from sub-types of violence exposure, especially the proximity of the traumatic events relative to the individual, which could result in proportional levels of increased threat to individual's sense of survival. Their study revealed that exposure to violence in the community was predictive of adverse mental health outcomes. However, compared to indirect victimization--witnessing and hearing about community violence, direct victimization had a significantly greater effect for externalizing and internalizing behaviors. In a separate study that investigates the relation of various types of victimization experiences to PTSD, Macdonald and colleagues (2010), found that despite both direct and indirect victimization predicting joint occurrence of PTSD and mood disorder episodes, only indirect victimization predicted an additional comorbidity—substance use disorder among adolescents. Likewise, Klodnick, Guterman, Haj-Yahia, and Leshem (2014), in a cross-sectional international study had reported direct personal victimization, not witnessing violence, significantly predicted posttraumatic stress among Jewish and Arab adolescents. Therefore, differentiating between direct and

indirect victimization experiences is crucial when conducting investigations on the impact from community violence victimizations for adolescents since each experience could involve different responses, cognitive and neurological pathways, resilience responses and, consequently, may result in different outcomes.

Existing literature on the relationship of adolescent exposure to community violence and mental health problems predominately relies on cross-sectional, retrospective study designs. There is a lack of longitudinal studies to corroborate the enduring effects of exposure to community violence from adolescence to early adulthood. It is still unclear how such victimization experiences during adolescence would affect these individuals at various developmental stages. Furthermore, there is limited knowledge on whether direct versus indirect community violence victimization experiences are linked to short- and long-term depression and subsequent mental health service utilization at various life stages. Although various mental health treatments such as counseling and psychotherapy (Erford et. al., 2011), anti-depressant medication, and the combination of both (The TADs Team, 2007), have provided some evidences in helping individuals with mental health issues; there is currently no study that examines whether the use of mental health service could improve the psychological adjustments among adolescent community violence victims across various life stages.

The purpose of our research is to bridge these gaps in extant literature by investigating the potential association between direct and indirect community violence victimization experiences, mental health service use, and affected individual's report of mental health problems during adolescence and young adulthood. Specifically, this research aims to: (1) assess whether sub-types of adolescent victimization is linked to short- and long-term depressive symptoms; (2) assess whether adolescent victimization experience is linked with mental health service use during adolescence and later in life after controlling for important background information; and (3) examine the role of mental health service use in attenuating the short term and long term negative psychological influences from these early adverse life experiences during adolescence.

Victimized Adolescents and Mental Health Services Utilization

Although the violent crime rate in the nation had declined 5.1 percent in 2013 compared to the previous year, continuing an eleven consecutive years downward trend (Crime in the United States Report, 2013), adolescents still are at significantly high risk to be exposed to violence in the community. In a recent cross-sectional, nationwide telephone survey with 4,053 children and adolescents under the age of 18, Finkelhor, Turner, Shattuck, and Hamby (2013) reported that about 41% of children and adolescents had experienced at least one physical assault in the past

year, while close to 55% of those who were surveyed had at least one such experience in their lifetimes. Also, 22.4% of children and adolescents in this survey group have witnessed at least one assault in the community in the past year and their lifetime exposure rates stands at 39.2%. Unfortunately, adolescents who had been exposed to violence in the community were often under-recognized and rarely received timely mental health services (Guterman, Hahn & Cameron, 2002; Turner, Finkelhor & Ormrod, 2007). In a recent study, Green and colleagues (2014) examined the associations between mental health service use among high school students and adolescent exposure to four different forms of violence: family, sexual, peer, and witnessing. Only victimizations by family and sexual violence were predictors of service use, while peer violence victims were not associated with service contact, even at the bivariate analyses level. With such alarming high prevalence rates of exposure to violence in the community, the potential detrimental impact of these adverse life events on individuals' mental health could be further compounded by the lack of reaching out for professional mental health help. Consequently, it is imperative to understand the various critical pathways, in which the victims can receive the necessary professional help to address their mental health issues. It is hoped that results from our study will show a range of implications for timely and appropriate mental health screening and promotion campaigns of violence victimized adolescents.

One possible reason for the observed low service utilization statistics is that emotional distress or depression symptoms in adolescents, without the association with other externalizing behaviors or other obvious physical and behavioral changes, can be difficult to recognize and are probably underreported by parents and teachers (Zwaanswijk, 2003). Their experiences could easily be mistaken for fatigue, mood change, feeling down or simply a misperceived "normal" developmental adjustment during adolescence. Unfortunately, parents and teachers of depressed adolescents fail to recognize that depression is responsible for their children's withdrawal, emotional distresses, procrastination, and poor social abilities. Even if children or their parents had noticed some of these depressive symptoms, they may not feel the need to seek help or likely, refrain from communicating with others, as they are concerned with the stigma that is associated with seeking mental health services (Cheng, McDermott & Lopez, 2015).

In a nationwide lifetime disorder-specific service utilization study (Merikangas et. al. 2011), only 39.4% of adolescents who had suffered from either major depressive disorder or dysthymia between the age of 13 to 18 received help with some kind of mental health service. If left untreated, depression could have devastating life-

changing consequences that could lead to not only subsequent episodes of more serious depression and other negative outcomes, but also, possibly, suicidal ideation and attempts (Essau, 2005).

In poor, violence-ridden communities, many victimized adolescents and their parents lack awareness about mental health and have little knowledge about how and where to access these services. To worsen the situation, many of these are single-parent families, had low social economic status and little access to proper healthcare insurance, some even lacking reliable transportation to health clinics (Evans, 1999).

Sociodemographic Correlates of Victimization, Depressive Symptoms and Mental Health Service Use

Age, gender, race, and family socioeconomic status are related to not only the risks of exposure to community violence for adolescents, but also the level of mental health service utilizations during adolescence and young adulthood. Generally, adolescents being older (Macdonald et al, 2010), male (Schwab-Stone et al. 1999; Selner-O'Hagan et al. 1998), ethnic minority, living with single parent, and have low family socio-economic status (Turner et. al., 2006), were more likely to be directly and indirectly victimized in the community. Counterintuitively, as adolescents become older, it was found that there is a substantial decrease in the frequency of contact with mental health professions, to which might be attributed higher dropout rates from school as it is one of the primary mental health issues screening avenues for most adolescents (Baruch, 2001).

Adolescent girls, between the ages of 13 to 16, had reported significantly higher level of depressive symptoms than boys (Twenge & Nolen-Hoeksema, 2002). Exposure to violence was found to be more strongly associated with a variety of mental health symptoms in adolescent girls compared to boys (Chen, 2010), and girls who witnessed high levels of community violence reported more depressive and anxiety symptoms than boys (Foster et al. 2004; Singer, Anglin, Song, & Lunghofer, 1995).

Overall, adolescents with minority status, particularly African-American and Hispanic, had less access to mental health services (Garland et. al., 2005; Sabri, Coohy, & Campbell, 2012). Not only are Hispanic children and adolescents more likely to be victimized and suffer more depressive symptoms (Twenge & Nolen-Hoeksema, 2002) than Whites, but also, are less likely to receive mental health services (Merikangas, 2011). In 2011, there were about 2.6 million children between the ages of 5 to 17 who have limited English proficiency and among them about 77 percent of all native-born LEP children lived in Spanish-speaking households. In the research by Kim and colleagues (2011), limited English proficiency significantly decreased the probability of mental health service use

among Latino immigrants (Kim et. al., 2011). It is important to control for race and ethnicity in the study of both violence victimization and access to various mental health services.

Hypotheses

This study hypothesizes that: 1) individuals who experienced violence exposure during adolescence would be more likely to report higher levels of depressive symptoms during adolescence as well as young adulthood than those without such exposure; 2) there are differences in mental health service utilization during adolescence and young adulthood among those who experienced different forms of violence exposure in the community; and 3) use of mental health service would act as a mediator in the link between exposure to violence in community and individual's report of depressive symptoms during adolescence and young adulthood.

Methods

Sample and Data Source

This study used data from four waves of the National Longitudinal Study of Adolescent to Adult Health (Add Health), conducted in 1994-2009. The detailed data collection procedure can be found at the study website (<http://www.cpc.unc.edu/projects/addhealth>). The Add Health study was approved by the University of North Carolina School of Public Health Institutional Review Board and its study design was compliant to the Code of Federal Regulations on the Protection of Human Subjects 45CFR46. In addition, information for this present study from the Add Health data files does not contain respondent identifiers or any links to identifiers.

Individuals who participated in all four waves of the Add Health Study in home interviews, and who reported no victimization history (reference group) and those who experienced community violence during adolescence were included in the present study. Those who reported later victimization history during young adulthood were excluded from analysis. This criterion ensures no potential confounding influence from later victimization experience. The final sample size was 8,947. All analyses presented are weighted with Stata svy-commands to control for the stratified clustering sampling design in the Add Health Study. All authors certify responsibility for this present study, and have no known conflicts of interest.

Measures

Exposure to Community Violence. This measure combined information from Wave I and Wave II. Indirect violence exposure included individual's report of witnessing others being shot or stabbed. Direct violence exposure captured individual's report of having been shot, cut or stabbed, or had a gun or knife drawn on them. Combination

of direct and indirect exposure to violence recorded individuals reported having experiences from both direct and indirect victimization.

Depressive Symptoms. Adolescent Depressive Symptoms contains 19 items similar to the information being collected in the CDC Depression Scale for Children from Wave I and Wave II data. Information such as in the past week: felt lonely, felt depressed, felt sad, felt fearful, felt moody, could not stop crying, could not shake off blues, had poor appetite, had trouble falling asleep, had trouble relaxing were collected. All questions had 4-point response categories (0 = never or rarely to 3 = most of the time or all of the time). The higher the scores represent higher level of depressive symptoms. The scale reliability coefficient was .87. Adult Depressive Symptoms is a 9-item scale, with information similar to adolescent depressive symptoms from Wave III and Wave IV data. The scale reliability coefficient was .80.

Mental Health Service Use. This variable was measured by the question if individual “received professional psychological or emotional counseling in the past year”. Information about adolescent mental health service use was from Wave I and II. Adult mental health service use was from Wave III and Wave IV.

To gain greater clarity of how exposure to violence in the community may contribute to the development of depression, this study also controlled for known major risk factors in the study design. *Hard Drug Use* was measured by the use of cocaine, inhalants, or other illegal drugs, including using prescription pills without prescription. The scale reliability was .63. For adolescent hard drug use, information was from Wave I and II, for adult drug usage, information was from Wave III and Wave IV. *Binge Drinking* was measured by if the individual ever drank five or more drinks in a row. For adolescent binge drinking, Wave I and Wave II data was used to compile for this measure. For adult, Wave III and Wave IV data was utilized.

Given the important roles played by family relationships in adolescents’ use of mental health services (Burns, Costello, Angold, et al., 1995; Farmer, Stangl, Burns, et al., 1999; Angold, Messer, Stangl, et al., 1998) and report of depression (Sander & McCarty, 2005), *family connectedness* was included as a protective factor. This scale assessed the degree to which adolescents felt positive attachments to, and support from, their parents. Items such as, how much mother/father cares, mother/father is warm and loving, being satisfied with the way mother/father communicate with each other, being satisfied with the relationship with mother/father were included. All questions had 5-point response categories (1 = “strongly disagree” to 5 “strongly agree”). This scale reliability coefficient was .84.

Community connectedness assesses how well individuals perceived their neighborhood. Items such as know most people in neighborhood (yes = 1), past month-stop and talk to neighbor, neighbors look out for each other, feel safe in neighborhood, happy living in neighborhood (1= not at all, 5 = very much), unhappy to move (1 = very happy, 5 = very unhappy) were included. This scale reliability coefficient was .59.

School Connectedness assessed adolescent connection to the school environment. Items such as feeling close to people at school, feeling like being part of school, being happy to be at school, teachers treating students fairly, feeling safe in school were extracted from Wave I and Wave II data. All questions had 5-point response categories (0 = strongly disagree to 4 = agree.) The scale reliability coefficient was .83.

Several pieces of demographic information were treated as controlled variables in this study: age, gender (female = 1), race (White served as reference group), nativity (U.S. born = 1), parent's education (From Wave I & II), and individual education level (from Wave III and IV). Since family income information is limited, and a substantial portion of parent's occupational status was absent, this study used parent's highest education as a proxy measure for family socioeconomic status. This was coded according to a four-point ordinal scale, ranging from less than high school to advanced training beyond a college degree. Study respondents were assigned the higher educational status score of either parent (or the single score for respondents reporting information on only one parent.) A similar coding scheme was applied in measuring individual education level.

Data Analysis

All analyses were weighted to account for multi-stage complex survey sample design of the Add Health data using the `-svy-` set of commands in Stata 12 (StataCorp, 2011). Parallel regression analyses on adolescent and adult depressive symptoms were conducted. We followed the Baron and Kenny (1986) methods for mediation analyses to determine and verify the presence of a mediational relationship between use of mental health service (mediator) and individual's report of depressive symptoms (the outcome variable). The issues of multicollinearity among the predictor variables were examined. All models had a Variance Inflation Factor (VIF) between 1.04 to 1.54. The mean VIF was 1.33. All tolerance statistics were between .65 and .96. Both sets of information indicated that there is no concern for multicollinearity problem for the multivariate analysis models.

Results

Table 1 presents the descriptive statistics of the study sample. Whites were less likely to have experienced community violence as compared to African Americans and Hispanics during adolescence ($p < .0001$). There was

also a larger proportion of Whites who used mental health service both during adolescence and young adulthood ($p < .001$) although Whites reported to experience less depressive symptoms both during adolescence and young adulthood ($p < .0001$).

Table 2 summarizes the bivariate relationships of key study variables. Individuals who experienced a combination of direct and indirect victimization during adolescence had the highest levels of depressive symptoms followed by those who were indirectly exposed to community violence and then individuals who were directly victimized. Those who never exposed to violence in community had the lowest level of depressive symptoms ($p < .0001$). This pattern is consistent from adolescence through adulthood. In comparison to those who were never exposed to violence in community, adolescents who experienced violence, regardless of direct, indirect, or a combination of direct and indirect exposure to violence, reported greater proportion of mental health service use ($p < .0001$). There were no significant differences between those who were never victimized and those who were directly affected by violence in community or experienced a combination of direct and indirect violence exposure in terms of their mental health service usage during young adulthood.

To test the third hypothesis—mental health service use is a mediator of individual's depressive symptoms based on violence exposure during adolescence—3 regression models were tested following the recommendations of Baron and Kenny (1986) for adolescent and adult depressive symptoms respectively. Table 3 describes emergent models about adolescent exposure to violence in community, their mental health service use, and their report of depressive symptoms during adolescence. Adolescent violence exposure in community significantly elevated adolescents' report of depressive symptoms, regardless of their proximity to physical victimization—witnessing only, physically victimized, or a combination of witnessing and experiencing physical violence. Witnessing violence marginally predicted mental health service use ($p = .08$) and the combination of direct and indirect exposure to violence significantly predicted mental health service use during adolescence ($p < .001$). The mediating effect of mental health usage was identified by comparing coefficients between model 1 and model 3. Use of mental health services significantly mediated the impact from witnessing violence for adolescence ($\beta = .01, p < .05$ to $\beta = .007, p > .05$) but the mediation effect for the combination of direct and indirect violence exposure was marginal ($\beta = .01, p < .001$ to $\beta = .008, p < .01$).

Table 4 describes emergent models about adolescent exposure to violence in community and their subsequent report of mental health service use and depressive symptoms during young adulthood. Adolescent direct

victimization and the combination of adolescent direct and indirect victimization both significantly predicted elevated depressive symptoms during young adulthood ($p < .001$). Distal proximity to physical victimization via witnessing violence did not predict adult depressive symptoms. Additionally, direct violence exposure significantly predicted mental health service usage during adulthood ($p < .05$). For adults, use of mental health services did not appear to significantly mediate the impact from exposure to violence during adolescence. There was a very marginal reduction in the effect of adolescent direct violence exposure on adult depressive symptoms when adult use of mental health service was taken into consideration ($\beta = .007, p < .0001$ to $\beta = .006, p < .0001$).

Discussion

This longitudinal study delineates the impact on individual's mental health and mental service use across life stages from various types of violence exposure in the community during adolescence. It contributes to the scant literature on adolescent violence exposure and use of mental health service (Franzese, Covey, Tucker, McCoy, & Menard, 2014). Our findings provide some valuable insights into this area of research.

First, similar to many other studies in this area, our study confirms that exposure to violence in their community will have a negative impact on an individual's mental wellbeing. However, with additional specification, our study has further revealed that such impact varied by the individual's proximities to personal victimization experience in community during adolescence--through direct violence exposure, indirect exposure, or a combination of both direct and indirect exposure. Both the bivariate analyses and multivariate models reveal that adolescents who had only witnessed community violence (or were indirectly victimized) were significantly more likely to experience depressive symptoms during adolescence but not during their young adulthood. Clark and colleagues (2008) have also found that the experience of witnessing community violence in urban neighborhoods increases the likelihood that women experience clinically significant depressive symptoms, even among women who were not direct victims or participants in neighborhood conflicts.

A possible explanation may be provided by Perloff's (1983) argument on the drastic change to perceived vulnerability of future direct victimizations by these indirect victims before and after witnessing these traumatic violent events. Prior to witnessing or learning about the violent events, individuals perceive themselves as invulnerable to victimization. However, when they personally witnessed traumatic violent events in their communities, of which the victims were very often someone whom they knew (Bain & Brown, 1996), the actual traumatic experience could shatter their sense of invulnerability and instill in them an unfamiliar sense of

vulnerability of being harmed in the future (Perloff, 1983). As Howard, Feigelman, Li, Cross, and Rachuba (2002) reported, witnessing violence was associated with intrusive thoughts and feelings, difficulty concentrating, and vigilance. These experiences could lead to further psychological and emotional distress.

Furthermore, Bain and Brown (1996) had found some alarming concerns about the high prevalence rates of witnessing lethal violence. Among those who have witnessed violence in their community but not being physically harmed, 12% saw someone murdered, 37% witnessed assault without weapon, 25% saw assault with weapon, 28% saw someone shot, and 19% saw someone knifed. Similarly, the types of violence witnessed in this study were more severe in nature. Along the same line, most adolescents were familiar with the victims in the community. Lambert, Boyd, Cammack, and Ialongo (2012) discovered a significant relationship between the proximity of victims to community violence episodes and the level of psychological symptoms the witness would experience. The closer the relationship of the witness to the victim, such as family members and close friends, the more the person was likely to develop anxious symptoms, depressive symptoms, and aggressive behavior.

In addition, our study found that the use of a mental health service mediates report of depressive symptoms for adolescent-witnessed violence in their community. This mediating effect on depressive symptoms seemed to be having a lasting positive effect and could probably contribute to why indirect victimization during adolescence does not predict adulthood's depressive symptoms. This finding is very encouraging and reinforces the need to conduct further research to investigate the type, frequencies and method of service delivery that could optimally provide mental health care to these indirect violence victims

However, direct exposure to violence in their community during adolescence does not predict adolescent depressive symptoms but does for adult depressive symptoms. At a first glance, this finding seemed counterintuitive. One possible reason for this may be that they are likely to be active members participating in violence or being violence perpetrators themselves (Malik, Sorenson, & Aneshensel, 1997). Similarly, Ali, Swahn and Sterling (2011) reported when adolescents endorse hitting other adolescents of same gender, such attitudes were significantly connected to peer violence victimization for adolescents. This led us to suspect that direct violence exposure victims do not undergo the drastic and immediate emotional distress because of experiencing the sense of vulnerability of being physically hurt, therefore, less likely to develop depressive symptoms during adolescence. As Ford, Gagnon, Connor, and Pearson (2011) found that directly-experienced violence elevated the chance of externalizing problems but witnessed violence increased the chance of internalizing problems among youth.

On the other hand, their experiences of depressive symptoms during young adulthood may be attributed to a cascade effect. This group of victims may respond to direct violence victimization with maladaptive behaviors such as substance abuse (Duncan et al., 1996; Kilpatrick et. al. 2000), excessive drinking (Cisler et al., 2012), risky sexual behaviors (Berenson, 2001; Brady, 2006) and self-injurious behaviors, which could lead to long term depression (Cisler et al., 2012).

Another possible explanation for their experiences can be related to the individual's various stages of psychological reactions after physical victimization. Frieze, Hymer, and Greenberg (1987) reported that individual reactions to criminal victimization follow a predictable sequence: immediate reactions, short term reactions, and long term reactions. They concluded that although many crime victims were thought to resolve the trauma of victimization within 6 months to 1 year; other crime victims experience chronic stress. In this case, for adolescents who were directly victimized by violence in their community, their attitude toward violence could initially shield them away from sensing their own vulnerability or mortality. When they matured into adults, their sense of immortality no longer dominates their cognition. It is possible that the recollection of direct victimization experience could interact with other challenging life events and subsequently contribute to the resurfacing of emotional stress from direct victimization during adolescence. Among those adolescent direct violence victims, use of mental health services during their young adulthood were found to be marginally mediating the effect from direct victimization on adult depressive symptoms. Further study will be needed to fully understand help seeking behaviors and improvement from treatment.

Our findings about the association between depressive symptoms and the combination of direct and witnessed violence are consistent with the literature (Goldstein, Walton, Cunningham, Trowbridge, & Maio, 2007; Haden, & Scarpa, 2008; Turner, Finkelhor, & Ormrod, 2006). More specifically, our study confirms the longitudinal connection between adolescent exposure to violence and adult depressive symptoms (Franzese, Covey, Tucker, McCoy, & Menard, 2014; Kimmel, 2014). For an adolescent who experienced a combination of direct and indirect violence exposure, it is possible that the accumulation or interaction of various types of violence exposure inhibits their emotional regulation capacity (McLaughlin & Hatzenbuehler, 2009) thus, resulting in a long term mental health impact. Howard, Feigelman, Li, Cross, and, Rachuba (2002) found that adolescent victims of violence victimization in combination with witnessing violence were more likely to report feelings of despondency about having either a happy or long life. Such pessimistic outlook for life could contribute to depressive symptoms during

adolescence, and without being appropriately addressed, could last into adulthood. In instances when the individual suffered from serious or repetitive physical victimizations, the victim could experience direct loss of physical functioning for an extended period of time or through adulthood. This may contribute to their emotional distress. It is also very likely that these adolescents who reside in the most dangerous environments encounter numerous risk factors that contribute to the development of depressive symptoms throughout the life course. In addition, use of mental health services during adolescence had a very small partial mediating effect on adolescent depressive symptoms for individuals who experienced the combination of direct and indirect violence victimization, which might not have a lasting impact through adulthood.

Implications for Practice

The results of this study have several implications. First, mental health professionals and researchers need to be aware of both the short- and long-term impact on an individual's mental health from exposure to violence. The finding about there is a higher proportion of mental health service utilization among adolescents who were exposed to violence in community, as compared to non-victims, can be viewed as an indication for their need for additional support. As Guterman, Hahm, and Cameron (2002) pointed out, most of the mental health professionals were not aware of their clients' victimization experience. This condition could result in the missed opportunity to appropriately address the psychological impact from exposure to violence, especially for adolescent victims who witnessed or experienced a combination of direct and indirect violence. Routine screening of adolescents who seek mental health treatment about victimization experience in their community appears to be an effective way to identify this issue so appropriate intervention could be provided. In particular, use of a mental health service for adolescents who witness violence significantly improved their report of depressive symptoms during adolescence. Additionally, another key finding from this study showed that there was a significantly lower percentage of individuals who utilized mental health services, and witnessing violence in their community did not predict depressive symptoms when they became adults. This suggests that if appropriate interventions were provided to those who witness violence in time, we can decrease their depressive symptoms, thus enhancing individual resiliency. Subsequently, the long term negative impact from witnessing community violence can be mitigated.

For mental health professionals, it is also important to have knowledge of the elevated need of individuals who were affected by the accumulation of direct and indirect violence exposure since it is most linked to the development of depressive symptoms for both adolescents and adults. Although our study found only a marginal

partial mediating effect from mental health service use on depressive symptoms, professional mental health services have demonstrated some promising outcomes in addressing the needs of individuals affected by violence in the community. For example, trauma-focused cognitive-behavioral therapy (TF-CBT) is effective for treating traumatic stress symptoms after exposure to community violence or similar trauma (Voisin & Berringer, 2015). Given there is not enough detailed information about types of mental health service utilization in the original data, we should interpret the marginal mediating effect with caution and relate to literature which presents promising treatment outcomes. Moreover, we can use this finding as a starting point for further investigation in the future.

It is noticeable that although a higher proportion of individuals with adolescent violence exposure experience received mental health service during younger age than later in adulthood, the overall service utilization rates among individuals affected by community violence remains low. Gladstein, Rusonis, and Heald (1992) reported that between 0% to 50% of adolescents received mental health services after serious victimization. Referral by a parent or other concerned adult, such as a teacher or a guidance counselor, appeared to be the pathway for adolescents to receive treatment (Wu et al., 1999). Nevertheless, Wu and colleagues (2001) found under-treatment of depression among child and adolescents. Wilson, Rickwood, and Deane (2007) further reported a concerning finding about “help negation” among youths such that as their depressive symptoms increase, they were more likely to seek help from no one, including their parents. In fact, adolescents' recognition of mental health problems or intention to seek help for these are the major "filters" restricting treatment (Zachrisson, Rödje, & Mykletun, 2006), more than the parental perception of a child's mental health service need (Wu et al., 1999). Coupled with many mental health professional's under-recognition of the prevalence of violence exposure in the community among adolescents, parent's lack of knowledge regarding their children's victimization in the community (Ceballo, Dahl, Aretakis, & Ramirez, 2001), and adolescent's aversion to seek help to address their traumatic responses, it is not surprising that only a small portion of victims received mental help services in this study. In addition to routine screening of adolescent community victimization experience, it is also important for mental health professionals to consider reaching out to adolescents at risk of exposure to violence in their community and conduct health education about mental health topics. Moreover, mental health professionals can consider collaborating with primary care settings to identify and provide services for adolescents in need of treatment for depression (Stein, Zitner, & Jensen, 2006).

For adults, when assessing potential risk factors contributing to depressive symptoms, practitioners need to be aware that various kinds of childhood adversity, including being a direct victim of community violence, could influence adult mental health. Although our study results found only a marginal partial mediating effect of mental health service on individuals who were directly victimized by violence in community; sizable empirical evidence attests to various intervention modalities being effective in treating adults with depression (Erford et. al., 2011). Practitioners could also facilitate help-seeking behaviors in adults by sharing the knowledge about mental illness, and assist their access to care in the community (Rüsch, Evans-Lacko, Henderson, Flach, & Thornicroft, 2011).

Study Limitation

A primary limitation with this study involved the nature of secondary data analysis, no detailed information about mental health service usage such as type of service, frequency and duration of treatment received, or medications involved were available in the original data collection. Additionally, sexual victimization information was included in the original data set thus preventing further exploration of the impact from community violence. More research is needed to address possible challenges for individuals with these experiences. Our study findings should, therefore, be considered exploratory, and serve as a point of departure for future research that investigates the impact from community violence through life's course. Specifically, future studies can benefit from a longitudinal design to investigate how adolescent victimization interacts with other risk factors that contribute to adult emotional distress. Findings from this line of inquiry can assist to identify possible opportunities for intervention throughout life's course.

Conclusion

Our work describes the interplay among risk, psychosocial processes, and treatment utilization in the manifestation of depressive symptoms in persons exposed to violence in adolescence. Further, our finding that direct exposure to violence during adolescence does not predict adolescent depressive symptoms, but does for adult depressive symptoms points toward a more complex etiological process whereby a cascade of risk may be activated by violence exposure that is not measurable until adulthood. Given the personal and societal costs of depression and other psychological disorders which arise from childhood and adolescent exposure to violence and the subsequent underutilization of mental health services, it is clear that parents, teachers, physicians, and others must do a better job at identifying and responding to those children so exposed.

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Table 1.

Descriptives for Socio-Demographic Characteristics and Analytic Variables

Characteristics	White (<i>n</i> = 5115)		African American (<i>n</i> = 1874)		Asian American (<i>n</i> = 615)		Hispanic (<i>n</i> = 1344)	
	<i>Mean or</i>	<i>(SD)</i>	<i>Mean or</i>	<i>(SD) or</i>	<i>Mean or</i>	<i>(SD)</i>	<i>Mean or</i>	<i>(SD)</i>
	<i>frequency</i>	<i>or %</i>	<i>frequency</i>	<i>%</i>	<i>frequency</i>	<i>or %</i>	<i>frequency</i>	<i>or %</i>
Age (at Wave 2, ADOL)	15.92	(.13)	16.18	(.20)	16.24	(.30)	16.12	(.21)
(at Wave 4, ADO)	27.81	(.13)	28.07	(.19)	28.19	(.29)	28.04	(.22)
Gender (Female)	2766	50.28	1106	51.20	300	46.11	704	48.71
Immigrant Status (Yes) ****a	55	1.11	33	1.08	240	42.48	294	22.98
Parental Education ****b								
Less than High School	378	.08	220	16.43	66	14.65	473	36.58
High School/GED	1450	30.01	527	39.53	103	21.66	346	28.52
Some College Education	1005	22.66	330	18.53	85	12.60	218	15.87
College and Beyond	1954	38.89	681	25.50	321	51.10	227	19.03
Education Attainment ****c								
Less than High School	327	.05	167	12.89	19	2.49	142	14.18
High School/GED	1223	24.75	487	31.79	119	19.87	384	30.07
Some College Education	2862	55.55	967	46.08	366	61.93	703	48.22
College and Beyond	703	12.55	252	9.23	111	15.70	115	7.54

Family Support	21.55	(.07)	21.91	(.14)	21.13	(.18)	21.43	(.14)
School Connectedness	24.86	(.11)	24.28	(.19)	25.44	(.22)	24.79	(.21)
Community Connectedness ****d	11.10	(.06)	10.50	(.08)	10.10	(.20)	10.42	(.09)
Drug Use								
Yes (ADOL)****e	895	17.69	105	5.71	60	8.09	245	18.67
Yes (AD)****f	19565	39.99	189	10.62	154	29.90	410	32.20
Ever Binge Drinking								
Yes (ADOL)****g	2801	53.90	659	36.47	261	36.12	712	53.64
Yes (AD)****h	3724	73.66	772	39.76	365	58.44	834	63.99
Ever Exposed to Community	1650	35.55	1014	59.83	226	29.39	714	54.03
Violence in Adolescence ****i								
Mental Health Service Use								
Yes (ADOL)**j	943	18.52	213	12.51	56	11.66	199	15.97
Yes (AD)**k	885	17.13	190	11.43	61	10.67	155	12.88
Adolescent Depressive Symptoms ****l	10.21	(.16)	12.12	(.26)	12.54	(.59)	12.53	(.34)
Adult Depressive Symptoms ****m	4.58	(.06)	5.58	(.16)	5.58	(.23)	5.32	(.13)

Note: Raw frequencies shown. Population weights are applied to estimate the proportion in the population.

Due to missing data, not all frequencies add up to the total sample size.

- $X^2(3) = 1867.38$, Design-based $F(2.80, 354) = 173.05$, $p < .00001$
- $X^2(9) = 746.20$, Design-based $F(6.13, 784.45) = 25.94$, $p < .00001$
- $X^2(9) = 188.90$, Design-based $F(6.42, 821.81) = 8.01$, $p < .00001$
- Design-based $F(1, 128) = 56.54$, $p < .00001$
- $X^2(3) = 147.12$, Design-based $F(2.84, 363.70) = 29.59$, $p < .00001$
- $X^2(3) = 443.40$, Design-based $F(2.77, 354.14) = 68.69$, $p < .00001$
- $X^2(3) = 170.70$, Design-based $F(2.74, 350) = 16.16$, $p < .00001$

- h. $X^2(3) = 170.70$, Design-based $F(2.74, 350) = 16.16, p < .00001$
- i. $X^2(3) = 603.36$, Design-based $F(2.68, 343.52) = 99.22, p < .00001$
- j. $X^2(3) = 37.76$, Design-based $F(2.93, 374.76) = 5.16, p < .01$
- k. $X^2(3) = 41.69$, Design-based $F(2.27, 290.87) = 6.39, p < .01$
- l. Design-based $F(1, 128) = 57.52, p < .00001$
- m. Design-based $F(1, 128) = 46.70, p < .00001$

Table 2

Bivariate Analyses of Key Study Variables

	No violence exposure during adolescence	Indirect violence exposure during adolescence	Direct violence exposure during adolescence	Combination of indirect and direct violence exposure during adolescence
Depressive Symptoms (<i>Mean, SD</i>)				
Adolescence ^{**** a.}	9.92 (.17)	12.32 (.46)	11.86 (.31)	14.28 (.47)
Young Adulthood ^{**** b.}	4.46 (.06)	5.19 (.30)	5.00 (.15)	5.75 (.22)
Mental Health Service Use (%)				
Adolescence ^{*** c.}	13.78	20.56	20.51	26.43
Young Adulthood ^{†d.}	15.13	14.35	15.16	16.14

a. Design based $F(1, 128) = 114.38, p < .00001$

b. Design based $F(1, 128) = 134.56, p < .00001$

c. Design based $F(2.80, 367.68) = 13.89, p < .00001$

d. Design based $F(2.80, 358.77) = 0.08, p < .10$

Table 3

Predicting Adolescent Depressive Symptoms from Exposure to Violence in Community during Adolescence

	<u>Model 1</u> ¹			<u>Model 2</u> ²			<u>Model 3</u> ³					
	<i>Coef.</i>	<i>Std. Err.</i>	[95% Conf. Interval]	<i>Coef.</i>	<i>Std. Err.</i>	[95% Conf. Interval]	<i>Coef.</i>	<i>Std. Err.</i>	[95% Conf. Interval]			
Sociodemographic Variables												
Black	1.40****	0.23	0.95	1.87	-0.06**	0.02	-0.10	-0.02	1.51****	0.23	1.05	1.97
Asian	2.43****	0.55	1.33	3.53	-0.08*	0.04	-0.15	-0.01	2.57****	0.55	1.48	3.65
Hispanic	1.14****	0.30	0.55	1.73	-0.05 [†]	0.03	-0.10	0.00	1.22****	0.29	0.63	1.80
Us born	-0.77 [†]	0.44	-1.65	0.10	-0.03	0.03	-0.09	0.03	-0.73	0.45	-1.62	0.16
Gender	1.62****	0.17	1.29	1.95	0.03*	0.02	0.00	0.06	1.56****	0.17	1.23	1.89
Parent Education	-0.78****	0.08	-0.95	-0.61	0.00	0.01	-0.01	0.02	-0.79****	0.08	-0.95	-0.62
Age	0.29****	0.06	0.18	0.40	-0.02****	0.01	-0.03	-0.01	0.33****	0.06	0.22	0.44
Protective Factors												
Family												
Connectedness	-0.51****	0.03	-0.58	-0.45	-0.03****	0.00	-0.03	-0.02	-0.47****	0.03	-0.54	-0.40
School												
Connectedness	-0.50****	0.03	-0.56	-0.45	-0.01****	0.00	-0.02	-0.01	-0.48****	0.03	-0.54	-0.42
Community												
Connectedness	-0.12**	0.04	-0.20	-0.04	0.01	0.00	0.00	0.01	-0.13**	0.04	-0.21	-0.05
Risk Factors												
Drug use	0.60****	0.13	0.33	0.86	0.09****	0.02	0.06	0.12	0.45****	0.13	0.19	0.71
Binge Drinking	0.31**	0.11	0.09	0.53	0.04***	0.01	0.01	0.06	0.25*	0.11	0.03	0.46
Witnessing Violence	0.01*	0.00	0.00	0.02	0.00 [†]	0.00	0.00	0.00	0.01 [†]	0.00	0.00	0.02
Direct Victimization	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
Combined												
Victimization	0.01***	0.00	0.00	0.02	0.00***	0.00	0.00	0.00	0.008**	0.00	0.00	0.01
Service Use												
Mental Health Service												
Use									1.73****	0.19	1.35	2.11
Constant	32.11****	1.44	29.26	34.95	1.31****	0.16	0.99	1.62	29.84****	1.45	26.96	32.72

1. Dependent Variable: adolescent depressive symptoms, R-squared = .33, $F(15, 114) = 134.70$, $p < .00001$

2. Dependent Variable: adolescent mental health service use, R-squared = .33, $F(15, 114) = .10$, $p < .00001$
 3. Dependent Variable: adolescent depressive symptoms, R-squared = .34, $F(16, 113) = 145.10$, $p < .00001$
- * $p < .05$, ** $p < .01$, *** $p < .001$, **** $p < .0001$, † $p < .10$*

Table 4

Predicting Adult Depressive Symptoms from Exposure to Violence in Community during Adolescence

	<u>Model 1</u> ¹				<u>Model 2</u> ²				<u>Model 3</u> ³			
	<i>Coef.</i>	<i>Std. Err.</i>	[95% Conf. Interval]		<i>Coef.</i>	<i>Std. Err.</i>	[95% Conf. Interval]		<i>Coef.</i>	<i>Std. Err.</i>	[95% Conf. Interval]	
Sociodemographic Variables												
Black	0.44**	0.15	0.14	0.74	-0.05**	0.02	-0.09	-0.02	0.52***	0.15	0.23	0.81
Asian	0.57**	0.21	0.17	0.98	-0.10***	0.03	-0.16	-0.04	0.72***	0.21	0.31	1.13
Hispanic	0.16	0.13	-0.09	0.42	-0.04*	0.02	-0.07	0.00	0.22 [†]	0.13	-0.03	0.47
Us born	-0.16	0.20	-0.57	0.24	0.00	0.03	-0.06	0.06	-0.16	0.20	-0.56	0.24
Gender	0.61****	0.08	0.45	0.77	0.08****	0.01	0.05	0.10	0.50****	0.08	0.34	0.65
Parent Education	-0.06	0.05	-0.15	0.03	0.01 [†]	0.01	0.00	0.03	-0.08 [†]	0.04	-0.16	0.01
Education Attainment	-0.33****	0.06	-0.46	-0.21	0.03**	0.01	0.01	0.05	-0.38****	0.06	-0.50	-0.26
Age	-0.10****	0.03	-0.16	-0.05	0.00	0.00	-0.01	0.01	-0.10****	0.03	-0.16	-0.05
Protective Factors												
Family												
Connectedness	-0.03 [†]	0.02	-0.06	0.00	0.00	0.00	0.00	0.01	-0.03 [†]	0.02	-0.06	0.00
School												
Connectedness	-0.01	0.01	-0.03	0.02	0.00	0.00	-0.01	0.00	-0.01	0.01	-0.03	0.02
Community												
Connectedness	-0.05*	0.02	-0.10	0.00	0.00	0.00	-0.01	0.00	-0.05 [†]	0.02	-0.10	0.00
Risk Factors												
Drug use	0.15****	0.04	0.08	0.22	0.03****	0.01	0.02	0.04	0.10*	0.04	0.02	0.17
Binge Drinking	-0.02	0.03	-0.09	0.04	-0.01	0.01	-0.02	0.00	-0.01	0.03	-0.07	0.06
Adol. Depression	0.22****	0.01	0.20	0.23	0.00****	0.00	0.00	0.01	0.21****	0.01	0.19	0.23
Witnessing Violence	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
Direct Victimization	0.01****	0.00	0.00	0.01	0.00*	0.00	0.00	0.00	0.01****	0.00	0.00	0.01
Combined												
Victimization	0.01**	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.01**	0.00	0.00	0.01
Service Use												
Mental Health												
Service Use									1.51****	0.11	1.29	1.73
Constant	7.29****	1.05	5.20	9.38	0.00	0.15	-0.30	0.30	7.29****	1.04	5.23	9.35

1. Dependent Variable: adult depressive symptoms, R-squared = .26, $F(17, 112) = 87.73, p < .00001$
 2. Dependent Variable: adult mental health service use, R-squared = .04, $F(17, 112) = 11.05, p < .00001$
 3. Dependent Variable: adult depressive symptoms R-squared = .30, $F(18, 111) = 90.26, p < .00001$
- * $p < .05$, ** $p < .01$, *** $p < .001$, **** $p < .0001$, † $p < .10$*