Sonya Negriff *Editor*

Child Maltreatment Research, Policy, and Practice

Contributions of Penelope K. Trickett

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Editor
Sonya Negriff
University of Southern California
Los Angeles, CA, USA

This volume is dedicated to the life and work of Penelope (Penny) Trickett (1943–2016). Without her pioneering efforts in child maltreatment research, this collection of work would not exist.

For the past 27 years, Penny was the David Lawrence Stein/Violet Goldberg Sachs Professor of Mental Health in the School of Social Work at the University of Southern California. Her career was illustrious and she was among the first to conduct research on the consequences of child abuse and/or neglect. Penny was highly regarded for her groundbreaking research monitoring the developmental trajectories of girls who experienced sexual abuse. A unique aspect of her work was the combination of biomarkers of stress, specifically cortisol, with dimensions of psychological development, which earned Penny and her team the 2012 Excellence in Research Award from the Society for Social Work and Research. Penny was also the principal investigator of a second longitudinal study focused on explicating the effects of child maltreatment on adolescent development. Many of the mechanisms and consequences learned from

her 30-year study are being explicated with greater precision including; the effect of different types of maltreatment on the stress-system, predicting mental health over time, the impact of early puberty on risk behavior, and the characteristics of caregivers, such as custody arrangements and depression, that impact victim well-being.

The impact of Penny's work is far-reaching and is used to influence child welfare policy decisions, research funding priorities, and prevention and treatment appropriations. She served as president of the American Psychological Association's Committee on Children, Youth and Families Section on Child Maltreatment. Among her many accolades were several federally funded research grants including the Independent Scientist Award from the National Institute of Mental Health for her work "The Developmental Consequences of Child Abuse and Violence" and the Sterling C. Franklin Faculty Award for Research and Scholarship from the School of Social Work.

Penny was not only a brilliant scholar, but a magnificent colleague, mentor, friend, mother, and advocate to maltreated children throughout the world.

Executive Summary: Policy and Practice Recommendations for Protecting Children from the Effects of Maltreatment

This edited volume contains a collection of studies that have been directly influenced by the work of Penelope K. Trickett whose efforts to advance the science of child maltreatment research directly impacted policy, programs, and practice. Findings from the studies presented in this volume have important implications that may help to bridge the research to policy and practice divide across multiple areas: (1) assessment and evaluation of maltreatment; (2) maltreatment and violence prevention; and (3) physical and mental health treatment and services.

1. Findings from Peckins et al., Stevens & Mennen, and and Kim et al. all demonstrate the importance of accurate assessment of maltreatment experiences for prevention and treatment.
   - Peckins et al. found that reporting a maltreatment experience as the most upsetting trauma in their lives was associated with deleterious outcomes.
   - Stevens and Mennen showed that for physically abused youth early aggression predicted community violence exposure, but not vice versa, whereas for other maltreatment types aggression and community violence predicted each other.
   - Kim et al. found that service utilization differed depending on the abuse characteristics. Specifically, the familial sexual abuse group received more services than non-penetrative contact.
   - Each of these studies highlight the need to accurately assess maltreatment experiences in order to be most effective at preventing or treating maltreatment.
   - These findings underscore the need for multidisciplinary assessments of child maltreatment. One method of achieving this level of services for victimized youth is the expansion of the Child Advocacy Center (CAC) model.
2. All the studies in the volume advocate for continued prevention efforts due to consistent deleterious outcomes associated with child maltreatment.
   - Reauthorization of legislation such as the Family First Prevention Services Act of 2017 (H.R.253) and the Maternal Infant and Early Childhood Home

Visiting (MIECHV) Program are integral for protecting children from the negative effects of early maltreatment.

- Stevens and Mennen's findings suggest that future studies should consider interventions that reduce aggression in maltreated youth, and that may reduce community violence.

3. In terms of physical and mental health treatment, the findings from Li et al., Peckins, et al., and Stevens and Mennen underscore the need for tailored assessments and multi-systemic treatment.

- Li et al. found among a sample of females with childhood sexual abuse that subthreshold symptom counts for eating disorders were stronger predictors of subsequent health as opposed to full diagnoses suggesting that eating disorder treatments should be made available to patients with subthreshold eating disorder symptoms, and treatment services should include monitoring and interventions for eating disorder symptoms.

- Broad implications of the findings of all four studies in this volume support long-standing recommendations for assessment and treatment of maltreated children to include biological health and mental health measures.

- Physical health is often overlooked when designing treatment plans for victims of maltreatment. Proposed cuts to Medicaid could result in less access to healthcare, resulting in missed opportunities to discover important predictive symptoms, leading to increased long-term health problems for victims of abuse.

Contents

About the Editor

Sonya Negriff, Ph.D is an expert in the effects of child maltreatment on physical and mental health. Dr. Negriff received her Ph.D. in developmental psychology from the University of Southern California (USC). She then completed a post-doctoral fellowship in Adolescent Medicine at Cincinnati Children's Hospital Medical Center, after which she returned to USC as a Research Assistant Professor. In her research Dr. Negriff uses a biopsychosocial approach to understand the pathways from child maltreatment to mental health and risk behavior, including depression, trauma symptoms, substance use and sexual risk behaviors. The bulk of her research has focused on explicating biological (e.g., pubertal timing, epigenetics, neuroimaging) and social mechanisms (e.g., social support, social media use) that increase vulnerability to mental health problems for children and adolescents with trauma experiences. Dr. Negriff recently took a position as a Research Scientist in the Department of Research & Evaluation at Kaiser Permanente Southern California with the goal of translating her research to directly improve the mental and physical health of vulnerable youth.

Contributors

Heather E. Bensman Behavioral Medicine and Clinical Psychology, Department of Pediatrics, Cincinnati Children's Hospital Medical Center, Cincinnati, OH, USA

Karen Appleyard Carmody Duke University, Durham, NC, USA

Jungtae Choi Sungkyunkwan University, Department of Social Welfare, Seoul, South Korea

Kihyun Kim Sungkyunkwan University, Department of Social Welfare, Seoul, South Korea

Jae-Won Kim Seoul National University Hospital, Department of Psychiatry & Behavioral Sciences, Seoul National University College of Medicine, Seoul, South Korea

Jacinda C. Li College of Health and Human Development, Department of Human Development and Family Studies, The Pennsylvania State University, University Park, PA, USA

Ferol E. Mennen Dworak-Peck School of Social Work, University of Southern California, Los Angeles, CA, USA

Sonya Negriff University of Southern California, Dworak-Peck School of Social Work, Los Angeles, CA, USA

Jennie G. Noll College of Health and Human Development, Department of Human Development and Family Studies, The Pennsylvania State University, University Park, PA, USA

Melissa K. Peckins Department of Psychology, University of Michigan, Ann Arbor, MI, USA

Frank W. Putnam Department of Psychiatry, University of North Carolina School of Medicine, Chapel Hill, NC, USA

Jonathan M. Reader Department of Human Development and Family Studies, The Pennsylvania State University, University Park, PA, USA

Bee Ryou Sungkyunkwan University, Department of Social Welfare, Seoul, South Korea

Kristopher I. Stevens Outcomes and Evaluation Department, Pacific Clinics, Arcadia, CA, USA

Elizabeth J. Susman Department of Biobehavioral Health, The Pennsylvania State University, University Park, PA, USA

Chapter 1
The Contribution of Penelope K. Trickett to the Study of Child Maltreatment

Elizabeth J. Susman, Jennie G. Noll, and Karen Appleyard Carmody

Science progresses in slow and deliberate ways. This accepted principle has exceptions as evidenced by the rapid rise in number and scope/type of empirical studies on child maltreatment. Beginning in the 1970s, these studies have expanded from multiple single and interdisciplinary approaches, single level of analyses and weak methodology to solid advanced methodological studies with important implications for science and society. These advances are due in large part to the science of Dr. Penelope Trickett. Dr. Trickett enjoyed a long history of working with child welfare professionals to gain access to large protective-service samples for her NIH-funded research. Her innovative work introduced logical and empirically-based definitions of maltreatment, longitudinal designs, comparison groups, intergenerational findings and large batteries or measures encompassing biological, psychological, cognitive, and social domains and sex differences. Similarly, she widened the examination of the negative concurrent and long-term processes and outcomes, studying the health, cognitive, emotional, and behavioral short- and long-term effects of maltreatment. The studies also assessed outcomes that range from micro to macro processes as they impact health and development for abuse survivors. The research has been instrumental in illuminating the toll that early abuse has on physiological and psychological outcomes. As a testament to the impact of her work, several aspects of Dr. Trickett's large-cohort and long-term, prospective work were cited in the 2014 Institute of Medicine (IOM) *New Directions in Child Abuse and Neglect Research* report and other publications. For instance, a publication by Trickett, Noll, and Putnam (2011) reiterated past and new findings showing that females who were

E. J. Susman · J. G. Noll (✉)
The Pennsylvania State University, University Park, PA, USA
e-mail: jgn3@psu.edu

K. A. Carmody
Duke University, Durham, NC, USA

1

sexually abused reported greater health and gynecological problems, more persistent problems with sleep, and higher rates of preterm delivery than in a comparison group. These findings showed the pressing need for stronger policy for the prevention of child maltreatment so as to avoid these dire consequences.

1.1   The Impact of Sexual Abuse on Female Development

In 1987, together with Dr. Frank Putnam, Dr. Trickett initiated a landmark longitudinal study of the impact of sexual abuse on female development, coined the Female Growth and Development Study (FGDS). Drs. Trickett and Putnam designed this study to incorporate the highest levels of methodological rigor with full knowledge that, to fundamentally change the way academics, practitioners policy makers, and the lay public understand the impact of sexual abuse, the science has to be impeccable. No longer would retrospective research of adults reporting past abuse be "good enough" to impact policy and practice changes. Nor would cross-sectional, correlational research engender the strong causal inference needed to move the needle in sexual abuse prevention and treatment efforts. The field needed something different. As such, the FGDS employed outstanding methodological rigor including: (1) a comparison sample matched on race, age, family constellation, socioeconomic status (SES), zip codes and non-sexual trauma histories; (2) a multi-level assessment strategy (psychological, social, biological, cognitive) with multiple informants (self, parents, teachers, caseworkers) and multiple modalities (questionnaires, interviews, computerized assessments, home observations, and physiologic assessments); (3) a cross-sequential design with 6 assessments at key points in development including three times in childhood/early adolescence (T1-T3), twice in mid to late adolescence (T4 & T5), and once in emerging adulthood (T6); (4) high retention rates of 87%, 86%, and 88% at T4, T5, and T6 respectively with 96% of the sample attending at least one of the most recent follow-up sessions; (5) 91% of offspring born to the sample assessed at T6. The T7 and T8 assessments are currently underway bringing this sample into its 30th year and includes the assessment of several grandchildren of the original participants. These participants are now in their 40's with 89% recently located and expressing a willingness to continue participation.

The original conceptual model included a novel conceptualization of how psychological distress coupled with physiological stress would interact to forge unique developmental trajectories for sexual abuse survivors. Also central to the model was the notion that type of abuse, duration, frequency, relationship to abuser, existence of physical threats co-occurring with abuse, and age of onset would constitute the perceived severity of maltreatment trauma and would impact normal development in complex ways. Prior to this conceptualization, no specific theory or logic linked adverse early life experiences to psychosocial functioning. The field of early life adversity has now burgeoned and the impact of adversity on development has become a very popular area of interest that spans multiple areas of research (Dube et al., 2001; Felitti et al., 1998; Gilbert et al., 2015; Shonkoff et al., 2012). In no

small way, Dr. Trickett's work has pointed to the very real possibility that child maltreatment might be a unique form of child adversity deserving of differential resources and political attention. Her work also influenced thought and discourse across a wide array of disciplines including clinical psychology, health psychology, developmental psychopathology, medicine, social work, biobehavioral health, and social policy.

While the sample size is relatively small ($N = 173$), the cohort has been large enough to detect important effect sizes contributing substantially to knowledge about the impact of sexual abuse. Moreover, the abused sample is highly representative of national statistics in terms of the number of perpetrators, the age of onset, and the duration of abuse (Sedlak, 1988; Sedlak et al., 2010; Trickett, Noll, Reiffman, & Putnam, 2001). The comparison group is representative of the larger United States population on several key outcomes. For example, the comparison women followed the Centers for Disease Control (CDC) growth trajectory at the 50th percentile throughout development (Noll, Zeller, Trickett, & Putnam, 2007), had obesity rates of 28% by early adulthood and showed teen pregnancy rates of 10% (Noll, Trickett, & Putnam, 2003). The comparison offspring sample is also representative of the larger population in terms of protective service involvement (Noll, Trickett, Harris, & Putnam, 2009) and cognitive abilities (Kwako, 2008). A 25-year retrospective of this study was published in 2011 (Trickett et al., 2011), but several updated findings have since been published including findings demonstrating that sexual abuse survivors enter puberty earlier (Noll et al., 2017) and thus are at increased risk for the development of reproductive cancers later in life due to prolonged exposure to sex hormones during pubertal development.

1.2   The Impact of Maltreatment on Adolescent Development

The other major longitudinal study that Dr. Trickett spearheaded is the Young Adolescent Project (YAP). Building on the design and methodological rigor of the FGDS, the YAP study began in 2002 with 454 adolescents aged 9–13 and their caregivers. The maltreated participants ($n = 303$) were recruited from the Department of Children and Family Services (DCFS) and the 151 participants in the comparison group were recruited based on similarity to the maltreated group on neighborhood and demographic variables. The conceptual model on which the study was based highlighted adolescence and the pubertal transition, in particular, as a key trigger of developmental vulnerability. As such, the sample was interviewed at four timepoints across 10 years (2002–2012) at mean ages of 11, 12, 13, and 18 years old. The study's comprehensive assessments allowed for complex analyses between biological, social, and psychological functioning across adolescence.

A number of pivotal findings have emerged from these data. The first came from the analyses of the child welfare case records (Mennen, Kim, Sang, & Trickett, 2010; Stevens, Schneiderman, Negriff, Brinkmann, & Trickett, 2015; Trickett, Mennen, Kim, & Sang, 2009). Whereas many prior studies relied on self-report or

single designations of maltreatment type from child welfare, Dr. Trickett sought to understand the complexity of maltreatment experienced in this sample using the full range of available data. Using the Maltreatment Case Record Abstraction Instrument (MCRAI), all available case records for the maltreated participants were entered into a database for determination of maltreatment. Based on these data, it was determined that only using the single maltreatment type identified by DCFS on the intake referral significantly underestimated the incidence of each maltreatment type; the MCRAI found that 71% of the sample experienced neglect, almost 50% experienced emotional abuse, more than 50% experienced physical abuse, and almost 20% experienced sexual abuse. A second key finding was that co-occurrence may also be underestimated when using the single DCFS designation because the data showed 76% of the youth experiences multiple types of maltreatment, which underscores both the extensive trauma these youths have endured as well as the need for methods to disentangle the effects of particular types of maltreatment.

Second, results from this study demonstrated the profound impact that maltreatment has on physiological functioning, specifically on the stress-response system. Comparing stress reactivity (via cortisol) across six saliva samples, the maltreated youth showed attenuated or blunted reactivity compared to the non-maltreated youth, supporting maltreatment as a causal mechanism in altered Hypothalamic-Pituitary-Adrenal (HPA) functioning (Trickett, Gordis, Peckins, & Susman, 2014). Additionally, physical or sexual abuse (but not emotional abuse or neglect) predicted this attenuated stress reactivity. However, analyses at Time 4 showed that maltreated youth were not more likely than comparison youth to belong to the bunted profile, providing evidence that this trajectory may be altered and has the potential to return to normative functioning (Peckins, Susman, Negriff, Noll, & Trickett, 2015). However, we still need to determine what processes predict this improvement in HPA functioning as such information will provide the best information for service providers to target for treatment.

In all, over 35 publications (and counting) have resulted from the YAP study, and while we cannot review all the findings here it should be noted that the evidence produced on topics such as mental health (Mennen, Brensilver, & Trickett, 2010), physical health (Schneiderman, Kools, Negriff, Smith, & Trickett, 2015), obesity (Schneiderman, Negriff, Peckins, Mennen, & Trickett, 2015), pubertal development (Negriff, Blankson, & Trickett, 2015; Negriff, Saxbe, & Trickett, 2015), community violence (Aisenberg, Garcia, Ayón, Trickett, & Mennen, 2008), and parenting characteristics (Mennen & Trickett, 2011) have contributed significantly to our knowledge on the effects of maltreatment on adolescent development.

1.3   Impact on Policy and Practice

Through the rigor of her work, Dr. Trickett contributed critical knowledge that will help those interested in the development of programs to prevent maltreatment, formulate strong policy statements, and improve intervention programs. As a result of

Dr. Trickett's work, the literature also is better positioned to support causal inferences about the impact of sexual abuse on physical and psychological health, including HPA dysregulation, obesity, cognitive challenges, HIV risk, teen pregnancy, preterm delivery, and early puberty. Many of these problems arguably constitute the major public health concerns of the twenty-first century.

The Trickett and colleagues (Trickett et al., 2011) article is one of the most comprehensive papers on sexual abuse to discuss the types of treatment and when they should occur, public policy needs, and translational issues. This paper showcases that when the FGDS began in the late 1980s, there was little empirical research on effective (i.e., evidence-based) therapy for survivors of childhood sexual abuse (CSA). As Dr. Trickett and colleagues (2011) report, 93.8% of the FGDS sample were referred to treatment after the disclosure of abuse. Although the majority of survivors received some therapeutic intervention, the mean number of treatment sessions attended was well below the recommended amount by Horowtiz (1995). Further, when treatment was acquired, these women did not receive an adequate amount, thus curtailing the effectiveness of the intervention and costing resources. Racial minority individuals and those who did not experience the most severe abuse or present with psychopathology in childhood were less likely to report receiving services. It is also important to note that the therapies received by survivors were not necessarily evidence-based treatments at the time. Despite advances since the 1980s in evidence-based treatment, deleterious symptomatology is not always present immediately after abuse and individuals may not manifest symptoms until much later in life (i.e., sleeper effects). Given this complexity, it is likely that no single treatment model is effective and component-based treatment models that provide an array of techniques for therapists to use is recommended.

Knowledge gleaned from the FGDS also suggests public policy implications. Specifically, those policies regarding when prevention (which is often seen as more cost effective than intervention) should occur. Although the majority of funding priorities are focused on primary prevention of child maltreatment (i.e., before maltreatment occurs), the majority of cases of maltreatment are never brought to the attention of authorities. This study highlighted compelling evidence that increased child sexual abuse prevention efforts be characterized as "selective primary prevention efforts" (Teutsch & Harris, 2003) and target those who experienced sexual abuse to prevent the various sequelae of childhood abuse. These efforts will also impact future generations.

Consistent with basic tenets of translational research, practice-based research is an essential interim step in the process of extending "bedside" observational research into actual clinical practice (Westfall, Mold, & Fagnan, 2007). Practice-based research provides a laboratory for studying the process of bringing new treatments to the populations for whom they were developed. It considers how treatments are initiated within communities of consumers, monitors how treatments are managed, measures effectiveness for various population factions, addresses barriers to access and utilization, accommodates new clinical questions that arise, and integrates patient knowledge and preferences." (p. 26) "Practice-based research which is designed to address the practical issues involved in bringing treatment and inter-

vention programs to abuse victims and their families is scant and should be upheld as a priority within the NIH Roadmap initiative." (Trickett et al., 2011, p.471). Finally, partially based on this work, the 2014 IOM report put forth guidelines for future research that is high quality, longitudinal, and focused on the pathways to long-term developmental and physical health problems for victims and thus a treatise for better science that will lend itself to more convincing arguments for spending early to save costs later.

1.4   Overview of Studies in This Volume

Results from both of Dr. Trickett's longitudinal studies denote striking consistency in the number of atypical and maladaptive consequences of maltreatment that occur both in the short- and long-term. This volume was designed to illustrate the scope of Dr. Trickett's influence and her legacy. First, the many and varied themes for research on maltreatment are exhibited in the reports that follow, examining the influence of maltreatment on health disorders, the importance of perception of the severity of maltreatment, the role of community violence in outcomes of maltreatment, and variations in experiences of child sexual abuse in Korea. These reports also demonstrate the varied methodological approaches to research on maltreatment. Cross–sectional designs were the norm in early research on maltreatment but Dr. Trickett's groundbreaking longitudinal studies are critical to influence clinical, legal, and policy decisions. The reports to follow are based on the two longitudinal studies discussed above. While the clinical and practical implementation of many of the findings published previously are beginning to be included in prevention or intervention trials, the policy implications of the vast amount of Dr. Trickett's work have yet to be fully realized and articulated. The reports included in this volume constitute advancements in that thinking.

   The first report focuses on eating disorders as a serious health problem for a large number of young women. The report links to Dr. Trickett's long-term interest in health consequences of sexual abuse. Li, Noll, Bensman, and Putnam consider the longitudinal connection between childhood sexual abuse and bulimia and anorexia symptoms in sexually abused youth in later life. The data were derived from the FGDS cohort study which includes data that allows for a causal connection to be made between anorexia or bulimia symptoms—assessed in adolescence—and cardiac, dental, gastrointestinal, mental health symptoms, bone disease, and other health problems assessed later in adulthood. To date, no other known study has so carefully documented the health and developmental life trajectories of sexually abused females in a manner that can speak to these causal connections.

   In the second paper, based on Dr. Trickett's second large longitudinal study, the Young Adolescent Project (YAP), Peckins, Negriff, Reader, and Susman advance the novel perspective that the sequelae of maltreatment are regulated partially by the perceived experience of maltreatment as their most upsetting life experience. Alterations in emotions and cognitions as a consequence of maltreatment was a core

interest in Dr. Trickett's program of research. The study assessed how perception of maltreatment as an adolescent's most upsetting experience was associated with the onset and development of mental health problems that manifest during adolescence. Based on the disclosure literature, the primary hypothesis was that maltreated girls and boys who reported a form of maltreatment as their most upsetting experience would report experiencing fewer internalizing problems and externalizing behavior problems, respectively, across adolescence than girls and boys reporting a nonmaltreatment as their most upsetting experience.

In the same sample of youth (YAP), Stevens & Mennen address a long-standing question regarding the links between maltreatment, community violence exposure, and aggression. The association between maltreatment and aggression has long been an important question spearheaded by clinical, legal, and community professionals who are charged with caring for youth. Dr. Trickett's work helped these professionals see how the wider contexts (i.e., home, schools, and communities) affect the disorders of development affected a history of maltreatment. Community violence is a serious problem with implications for both the victim of exposure and their families. The ethnically diverse sample of abused and neglected youth from an urban population allowed the team to consider maltreatment status as a moderator of the association between exposure to community violence and aggression. Of note, a burgeoning body of research demonstrates that the associations between exposure to violence and aggression are bidirectional in nature; exposure to community violence, can lead to the development of aggressive behaviors but aggressive behaviors can also place youth at risk for exposure to community violence. Hence, this report is an important contribution to this knowledge base.

Based on attention to the variability of abuse experiences in Trickett et al. (2001), the final report extends this knowledge by examining how different subgroups of child sexual abuse—defined by abuse characteristics—demonstrate qualitatively different impacts on normal development. Demonstrating the impact of Dr. Trickett's work globally and cross culturally, Kim and colleagues discuss the characteristics of child sexual abuse in Korea and explore different profiles or subgroups of Korean children using case record data of intervention centers serving sexually abused children and their families. The authors ask the question of whether there are subgroups or profiles, based on the specific characteristics of the abuse experienced that can be identified in a sample of children and adolescents sexually abused and having utilized intervention services in Korea. They hypothesize that different profile groups will be related to differential service utilization such as medical treatment, psychological counseling, and legal services.

Scientific knowledge from Dr. Trickett's studies has had a major impact on enhancing a basic understanding of patterns of child sexual abuse and later adjustments both nationally and internationally. The reports in this volume contribute to the understanding the sequelae of maltreatment and will foster the development and improvement of prevention programs and individualized services tailored to individuals and communities. Important policy implications of each report are articulated in the papers themselves and expanded upon in the discussion chapter.

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Chapter 2
Childhood Sexual Abuse Increases Risks for Eating Disorder Symptoms and Eating Disorder-Related Health Problems in Females

Jacinda C. Li, Jennie G. Noll, Heather E. Bensman, and Frank W. Putnam

Childhood sexual abuse (CSA) has gained considerable recognition as a potent risk factor for the development of eating disorders (ED) in females (Johnson, Cohen, Kasen, & Brook, 2002; Molendijk, Hoek, Brewerton, & Elzinga, 2017; Sanci et al., 2008; Smolak & Murnen, 2002; Wonderlich et al., 2001) as well as for numerous adverse health problems later in life (Chen et al., 2010; Felitti et al., 1998; Irish, Kobayashi, & Delahanty, 2010).

Research to date on the link between CSA and ED consists mostly of cross-sectional studies that have produced evidence to support the association between CSA and symptoms of anorexia nervosa (AN) and bulimia nervosa (BN). Histories of CSA tend to appear more frequently among cases of BN and binge-purge rather than anorexic restrictive types of ED (Brewerton, 2007; Carter, Bewell, Blackmore, & Woodside, 2006; Steiger & Zanko, 1990). A recent meta-analysis by Molendijk et al. (2017) reported a strong, consistent association of CSA with BN and AN binge-purge subtype, but a weak, inconsistent association with AN restrictive subtype. Only a few longitudinal studies of CSA and ED exist to confirm these associations. Johnson et al. (2002) found in a community sample of 782 mothers and their offspring an association between CSA assessed through child protection registry report and maternal interview with increased risks for ED and problems with eating

J. C. Li (✉) · J. G. Noll
College of Health and Human Development, Department of Human Development and Family Studies, The Pennsylvania State University, University Park, PA, USA
e-mail: jcl270@psu.edu

H. E. Bensman
Behavioral Medicine and Clinical Psychology, Department of Pediatrics, Cincinnati Children's Hospital Medical Center, Cincinnati, OH, USA

F. W. Putnam
Department of Psychiatry, University of North Carolina School of Medicine, Chapel Hill, NC, USA

or weight. Temporal overlap between CSA and ED assessments limited the ability to ascertain the correct temporal relationship, however. Sanci et al. (2008) found in a population sample of 999 female adolescents an association between self-reported CSA and elevated rates of incident partial bulimic syndrome, but unconfirmed retrospective accounts of abuse weakened validity. These methodological challenges and inconsistencies in the literature limit the ability to draw definitive conclusions about the relation between CSA and ED.

Although only a small percentage of female adolescents are diagnosed with ED (0.3% for AN, 1.3% for BN) (Swanson, Crow, Le Grange, Swendsen, & Merikangas, 2011), ED symptoms are widespread, reported in more than 50% of female adolescents (Neumark-Sztainer et al., 2006; Neumark-Sztainer, Wall, Larson, Eisenberg, & Loth, 2011). However, only a minority of adolescents (27.5% for AN, 21.5% for BN), receive treatment for their ED symptoms (Swanson et al., 2011). There is evidence to suggest that ED symptoms that fall short of diagnoses may still warrant clinical attention, as untreated symptoms may evolve into more severe ED (Kotler, Cohen, Davies, Pine, & Walsh, 2001) and place the individual at risk for experiencing severe ED-related physical health problems (Campbell & Peebles, 2014). Such problems may include muscle wasting and weakness, anemia, and cardiac damage for individuals exhibiting AN symptoms. Similarly, individuals exhibiting BN symptoms may experience damages to the teeth and gum, esophageal and respiratory tracts, and gastrointestinal and excretory system.

Furthermore, many of these ED-related health problems, including musculoskeletal pain, cardiopulmonary symptoms, and gastrointestinal problems, have been identified to be prevalent among CSA populations (Felitti et al., 1998; Irish et al., 2010). It is possible that untreated ED symptoms may contribute to the development of these health problems over time. Therefore, detecting early signs of ED may be critical for identifying high-risk individuals for whom timely interventions can be provided in order to prevent fully-developed EDs and related health problems.

Designing targeted intervention requires understanding about the precise relations among CSA, ED, and health problems. The literature to date on this information has been inconclusive, as much of the existing studies rely on correlational design and unconfirmed self-report of CSA (Irish et al., 2010) and do not account for potential confounds. For example, ED is highly comorbid with other psychiatric disorders, such as depression and anxiety (Swanson et al., 2011), which are also associated with health problems and CSA (Chen et al., 2010). This comorbidity renders the sequence of influence from CSA to ED to ED-related health problems unclear. Prospective studies with substantiated CSA and subsequent ED and related health problems can help to clarify these associations and inform clinical decision-making regarding which risk factors to target in interventions.

The present report utilized a prospective longitudinal design to investigate ED symptomatology in adolescence and ED-related health problems in adulthood across a 17-year period for two groups of female participants: (1) those who were referred by child protective services (CPS) for experiencing substantiated familial sexual abuse and (2) a demographically-similar group of nonabused comparisons. It was hypothesized that abused participants would report more AN and BN symptomatology in

adolescence and AN- and BN-related health problems in adulthood, relative to comparison participants. It was also hypothesized that AN and BN symptomatology in adolescence would account for the associations between CSA and AN- and BN-related health problems, respectively, in adulthood.
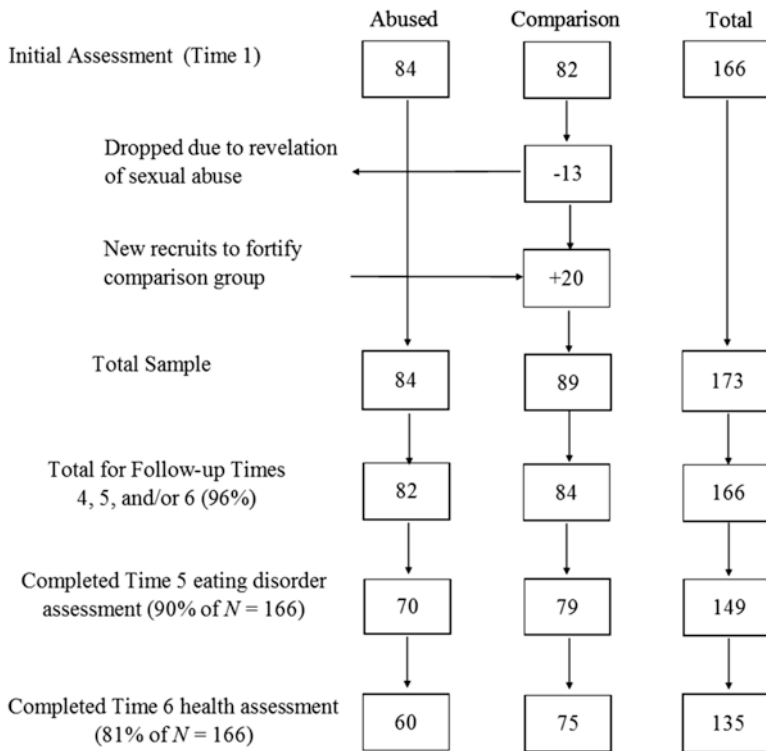
2.1 Methods

2.1.1 Participants

Originally begun by Drs. Penny Trickett and Frank Putnam in 1987, the Female Growth and Development Study (FGDS; R01 HD072468) is an on-going longitudinal study designed to prospectively examine the long-term developmental impacts of CSA in females. Sexually abused girls ($N = 84$) were referred by Child Protective Services (CPS) agencies in the Washington, DC area between the years of 1987 and 1989. Eligibility criteria for the overall sample included (1) age 6–16 years, (2) participation within 6 months of disclosure of the abuse, (3) substantiated sexual abuse, including genital contact and/or penetration, (4) perpetration by a family member (e.g. parent, grandparent, older sibling, uncle), and (5) participation of a nonabusing caregiver (usually the biological mother) in the study. Comparison girls ($N = 82$) were recruited through advertisements in newspapers and posters in welfare, child care, and community facilities in the same neighborhoods in which the abused girls lived. Comparison families contacted study personnel and were screened for eligibility, which included having no previous contact with CPS agencies (assessed via the Comprehensive Trauma Interview [CTI; Barnes, Noll, Putnam, & Trickett, 2009]) and being demographically similar with one or more same-aged abused participant. Abused and comparison participants were recruited to be matched on residing zip codes, race/ethnicity, age, predisclosure socioeconomic status (SES), family constellation (1- or 2-parent households), and other nonsexual traumatic events as assessed using the CTI.

Subsequent to study enrollment, 13 comparison participants disclosed some form of sexual abuse and were excluded from current analyses to maintain the integrity of the groups. Twenty new comparison girls were recruited utilizing the original recruitment method to fortify the sample for longitudinal follow-up, resulting in a comparison sample of 89. Participants completed five additional assessments across development with a 96% retention rate ($N = 166$ returned for times 4, 5, and/or 6; see Fig. 2.1).

The study received approval from the affiliated institutional review board and was awarded a federal certificate of confidentiality. At each assessment, caregivers provided informed consent and participants provided assent. The sample was 54% White, 43% Black, 2% Hispanic, and 1% Asian. Households ranged from low- to mid-socioeconomic status, with mean Hollingshead (Hollingshead, 1976) scores of approximately 36. No statistical differences in mean SES or percentage of minority

	Abused	Comparison	Total
Initial Assessment (Time 1)	84	82	166
Dropped due to revelation of sexual abuse		-13	
New recruits to fortify comparison group		+20	
Total Sample	84	89	173
Total for Follow-up Times 4, 5, and/or 6 (96%)	82	84	166
Completed Time 5 eating disorder assessment (90% of N = 166)	70	79	149
Completed Time 6 health assessment (81% of N = 166)	60	75	135

Fig. 2.1 The sample flow

(i.e., white versus all minority categories) existed across groups. The abused sample is highly representative of national statistics in number of perpetrators, age of onset, and duration of abuse (National Center of Child Abuse and Neglect, 1988; Trickett, Noll, Reiffman, & Putnam, 2001). Moreover, the comparison sample is representative of the larger US population on several key outcomes such as the rates of obesity and teenage pregnancy (Trickett, Noll, & Putnam, 2011).

Data for analyses were obtained from study enrollment (Time 1) when CSA status was determined and the total sample's mean age was 11 (standard deviation [SD] = 3), the adolescent assessment (Time 5) approximately 12 years after study enrollment when ED symptoms were assessed and mean age was 20 ($SD = 3$), and the adulthood assessment (Time 6) approximately 17 years after study enrollment when health status was most recently assessed and mean age was 24 ($SD = 3$). Ninety percent of the retained sample ($N = 149$) completed the ED assessment at Time 5. Eighty-one percent of the retained sample ($N = 135$) additionally completed the health assessment at Time 6 and were eligible for analyses (see Fig. 2.1). Participants with missing data at Times 5 and 6 did not differ significantly from participants with available data on any demographic factor (i.e., CSA status, minority status, socioeconomic status, or age).

2.1.2   Measures

Childhood Sexual Abuse   At Time 1, CSA was substantiated through CPS agency records. Median age at abuse onset was 7.8 years, median duration was 24 months, 70% experienced vaginal and/or anal penetration, and 60% of perpetrators were the primary father figure (biological fathers, stepfathers, or mothers' live-in boyfriends). For use as predictor to test the hypotheses, a dummy-coded variable was created to indicate CSA status ("1" = abused, "0" = comparison).

Eating Disorder Symptomatology   At Time 5, trained female clinical interviewers who were blinded to participants' CSA status administered an in-person interview to assess symptoms of AN and BN during the lifetime based on *Diagnostic and Statistical Manual of Mental Disorders,* 4th edition (DSM-IV) criteria (American Psychiatric Association, 1994). The interview was modeled based on the Structured Clinical Interviews for the DSM-IV (SCID-IV-TR; First, Spitzer, Gibbon, & Williams, 2002), but modified to explicitly inquire about each symptom. Fourteen AN symptoms were assessed, including extremely low body weight, refusal to maintain weight, intense fear of weight gain, distorted perception and significance of body weight, and amenorrhea. Sixteen BN symptoms were assessed, including recurrent binge eating episodes with a sense of lack of control and eating larger amounts of food than are normal, recurrent inappropriate compensatory behaviors (vomiting, fasting, excessive exercise, diuretics or laxatives), and minimum frequency of behaviors of at least twice weekly for the past 6 months. *Diagnoses* for AN and BN during the lifetime were made based on DSM-IV criteria (American Psychiatric Association, 1994) and recorded as dummy-coded variables ("0" = no diagnoses, "1" = diagnosis). *Symptom counts* for AN and for BN were calculated as the total numbers of symptoms endorsed for each category.

Eating Disorder-Related Health Problems   At Time 6, participants completed a set of self-report questionnaire about a series of health problems that they experienced during the past 2 years. The health problems selected for analyses were based on *a priori* hypotheses regarding health consequences of each type of ED (Herpertz-Dahlmann, 2015). AN-related health problems included *swollen or painful joints* to indicate injuries due to muscle wasting and weakness; *dizziness or fainting spells* to indicate symptoms of inadequate energy intake; *excessive bleeding or bruising* to indicate symptoms of anemia; and *chest pressures or pains*, *heart pounding or palpitation*, and *other heart problems* to indicate symptoms of cardiac damage. BN-related health problems included *severe tooth or gum trouble* to indicate symptoms of teeth and gum damages; *ear, nose, or throat trouble* to indicate symptoms of esophageal and respiratory tract damages; *frequent indigestion* to indicate symptoms of digestive and gastrointestinal distresses; and *kidney stone or hematuria* and *hemorrhoid or rectal diseases* to indicate symptoms of excretory system problems resulting from laxative and diuretic abuse. Participants endorsed on a binary scale ("0" = no, "1" = yes) whether they had experienced each health problem. The total

numbers of health problems endorsed for each of the AN- and BN-related health problems categories indicated *AN- or BN-related health problem counts*.

Covariates Given the potential role of age and psychiatric disorders in ED etiology (Fairburn & Harrison, 2003), initial *depressive symptoms score* measured via the Child Depression Inventory (CDI; Kovacs, 1981) score and *trait anxiety score* measured via the State-Trait Anxiety Inventory for Children (STAIC; Spielberger, 1973) at Time 1 and current *age* at Time 5 were included as covariates in the analyses.

2.1.3   Statistical Analysis

The first step in the analyses tested whether CSA would predict more ED symptomatology and related health problems. Logistic regression models estimated the likelihood of receiving a diagnosis for AN or for BN at Time 5 based on CSA group membership at Time 1. Odds ratios (OR) and 95% confidence intervals (95% CI) were estimated. Referent category for all analyses was the comparison group. AN and BN were tested in separate models.

Because both ED symptom count and ED-related health problem count variables showed high skewness with substantial weight on zero, zero-inflated Poisson (ZIP) regression models were estimated for AN and BN symptom counts (Time 5) and for AN- and BN-related health problems (Time 6) predicted by CSA. ZIP regression independently models count values from excess zeros via separate processes (Lambert, 1992) to estimate the number of ED symptoms and ED-related health problems based on CSA membership while including covariates in the models. The diagnosis rate, symptom count, and ED-related health problem count within the AN and the BN categories were tested in separate models and Bonferroni α corrections were applied accordingly (i.e., $\alpha/3$).

The second step in the analyses tested whether ED symptomatology in adolescence would explain the association between CSA and increased ED-related health problems in adulthood. Only the ED symptomatology and ED-related health problem count variables that showed significant associations with CSA in the first step of the analyses were retained for use in this set of analyses. The indirect effect of CSA for ED-related health problem count through ED symptomatology was estimated using the *a* path, representing CSA predicting ED symptomatology, obtained from the ZIP regression coefficient in the first step of the analyses. The *b* path, representing CSA and ED symptomology predicting ED-related health problem count, was obtained from the ZIP regression coefficients for ED-related health problem count predicted by ED symptomatology, controlling for CSA and covariates. RMediation package (Tofighi & MacKinnon, 2011) was used to obtain estimates of the indirect effect estimate (*ab* path) and the 95% confidence interval (CI) via the distribution-of-product method (MacKinnon, Lockwood, & Williams, 2004).

All models included the covariate variables depressive symptoms and trait anxiety level at Time 1 and age at Time 5. Covariates were mean-centered in order to facilitate the interpretation of parameter estimates as effects for individuals scoring at "average" values on the covariates.

2.2 Results

Table 2.1 presents the descriptive statistics for the sample and numbers for analyses. Abused participants had higher levels of depressive symptoms at Time 1 relative to the comparison participants (t (1, 145) = 2.56, p = 0.01). No other variables showed significant differences between abused and comparison participants.

The mean ages at onset of AN and BN symptoms were 15.94 (*SD* = 3.76) and 15.46 (*SD* = 3.46), respectively (not presented in table). For one comparison and one abused participant, the age at onset of AN and BN symptoms, respectively, occurred prior to their ages at study entry at Time 1 and were identified to have had pre-existing symptoms. These participants were excluded from analyses to strengthen causal inference about effects of CSA on ED through ensuring proper temporal ordering, resulting in final analysis samples of *N* = 134 (abused: 60, comparison: 74) for AN analyses and *N* = 134 (abused: 59, comparison: 75) for BN analyses.

Table 2.2 presents the descriptive statistics for the adolescent ED symptomatology, including diagnoses and symptom counts, for AN and BN by CSA status. No

Table 2.1 Summary statistics for the sample

Parameters	Total (N = 173)	Abused (n = 84)	Comparison (n = 89)
% Minority[a]	46	39	51
SES, *M* ± *SD* (range)[b]	36 ± 12 (11–44)	35 ± 14 (10–47)	37 ± 11 (12–43)
Age, *M* ± *SD* (range)			
Time 1 (years 1987–1989)	11 ± 3 (6–16)	11 ± 3 (6–16)	11 ± 3 (6–16)
Time 5 (years 1999–2001)	20 ± 3 (13–26)	21 ± 5 (13–26)	20 ± 3 (13–26)
Time 6 (years 2004–2006)	24 ± 3 (18–27)	25 ± 4 (18–27)	24 ± 3 (18–27)
Depressive symptoms score at Time 1,[c] *M* ± *SD*	10 ± 7	11 ± 8	8 ± 6
Trait anxiety score at Time 1,[d] *M* ± *SD*	35 ± 8	35 ± 8	34 ± 7

Note: SES socioeconomic status, *M* mean, *SD* standard deviation, *No.* number

[a]Minority status includes Black (90%), Hispanic (9%), or Asian (1%)

[b]SES was defined using Hollingshead ratings (Hollingshead, 1976)

[c]Depressive symptoms score at Time 1 was measured using the Child Depression Inventory (CDI; score: ≥25; Kovacs, 1981)

[d]Trait anxiety score at Time 1 was measured using the trait anxiety scale of the State-Trait Anxiety Inventory for Children (Spielberger, 1973)

Table 2.2 Time 5 adolescent eating disorder symptomatology and Time 6 adulthood eating disorder-related health problems for sexually-abused and nonabused comparison girls

Eating Disorder Category	Total ($N = 135$)	Abused ($n = 60$)	Comparison ($n = 75$)
Anorexia nervosa[a]			
Diagnosis,[b] frequency (%)	0 (0%)	0 (0%)	0 (0%)
Symptom count,[c] $M \pm SD$ (*range*)	5.71 ± 3.82 (1–14)	5.08 ± 3.48 (1–11)	6.56 ± 4.30 (2–14)
Related health problem count,[d] $M \pm SD$ (*range*)	1.33 ± 1.65 (0–5)	1.17 ± 1.59 (0–5)	1.56 ± 1.81 (0–5)
Bulimia nervosa[e]			
Diagnosis[b], frequency (%)	5 (3.73%)	3 (5.08%)	2 (2.67%)
Symptom count,[f] $M \pm SD$ (*range*)	7.31 ± 3.38 (2–14)	8.13 ± 3.64 (4–14)	6.00 ± 2.74 (2–9)
Related health problem count,[g] $M \pm SD$ (*range*)	1.07 ± 1.12 (0–4)	1.13 ± 1.36 (0–4)	1.00 ± 0.71 (0–2)

Note: M mean, *SD* standard deviation

[a]Analysis sample minus one comparison participant with pre-existing anorexia nervosa symptoms. $N = 134$, abused: 60, comparison: 74)

[b]Diagnoses for anorexia nervosa and bulimia nervosa as defined by the *Diagnostic and Statistical Manual of Mental Disorders*, 4th Edition (DSM-IV)

[c]Symptom counts for participants who reported at least one anorexia nervosa symptom: $N = 21$, abused: 12, $N = 9$ comparison

[d]Anorexia nervosa-related health problems included swollen or painful joints; dizziness or fainting spells; excessive bleeding or bruising; chest pressures or pains; heart pounding or palpitation; and other health problems. Health problems experienced during the past 2 years

[e]Analysis sample minus one abused participant with pre-existing bulimia nervosa symptoms. $N = 134$, abused: 59, comparison: 75

[f]Symptom counts for participants who reported at least one bulimia nervosa symptom: $N = 13$, abused: 9, comparison: 5

[g]Bulimia nervosa-related health problems included severe tooth or gum trouble; ear, nose, or throat trouble; frequent indigestion; kidney stone or hematuria; and hemorrhoid or rectal disease. Health problems experienced during the past 2 years

participant received a diagnosis for AN based on DSM-IV criteria and group differences could not be examined. Twenty-one participants (abused: 12, comparison: 9) reported at least one AN symptom. After adjusting for covariates, there were no statistically significant effect of CSA for AN symptom count ($\beta = 0.06$, *standard error* [*SE*] = 0.25, Wald $\chi^2 = 0.06$, $p = 0.81$) or AN-related health problem count ($\beta = 0.11$, *SE* = 0.33, Wald $\chi^2 = 0.77$, $p = 0.73$).

Five (3.73%; abused: 3 comparison: 2) participants received a diagnosis for BN based on DSM-IV criteria. After adjusting for covariates, CSA was not a significant predictor for the likelihood of receiving a BN diagnosis (OR: 0.43, 95% CI: 0.20–28.37). There was, however, a statistically significant effect of CSA for BN symptom count ($\beta = 0.78$, *SE* = 0.32, Wald $\chi^2 = 5.97$, $p = 0.01$), indicating that abused participants reported more BN symptoms in adolescence relative to comparison participants. There was also a statistically significant effect of CSA for BN-related

health problem count ($\beta = 0.74$, $SE = 0.28$, Wald $\chi^2 = 6.81$, $p = 0.009$), indicating that abused participants reported more BN-related health problems in adulthood relative to comparisons.

Based on results from the first set of analysis, the indirect effect analyses of CSA for health problems through ED symptomatology proceeded with BN symptom count only. After adjusting for covariates and CSA group membership, there was a statistically significant effect of BN symptom count in adolescence on BN-related health problem count in adulthood ($\beta = 0.08$, $SE = 0.03$, Wald $\chi^2 = 4.97$, $p = 0.03$). The indirect effect estimate of CSA for BN-related health problem count through BN symptom count was 0.061 ($SE = 0.04$) and the distribution of the product of coefficients method 95% CI was 0.002–0.16. Because the 95% CI did not include zero, the indirect effect was statistically significant at the $p < 0.05$ level, indicating that BN symptom count in adolescence accounted for a significant portion of the association between CSA and increased BN-related health problems in adulthood. Even after including BN symptom count in the model, the estimated CSA effect for BN-related health problem count remained statistically significant ($\beta = 0.61$, $SE = 0.27$, Wald $\chi^2 = 4.99$, $p = 0.03$), indicating that BN symptom count in adolescence did not completely explain the association between CSA and increased BN-related health problems in adulthood.

2.3   Discussion

The present report utilized prospective longitudinal data from the Female Growth and Development Study to investigate the relations among substantiated CSA, ED, and ED-related health problems. Results indicated that, despite not having received an official ED diagnosis at higher rates, sexually abused females reported having experienced a larger number of BN symptoms and BN-related health problems relative to their nonabused peers. Furthermore, BN symptoms in adolescence accounted for a significant portion of the association between CSA and increased BN-related health problems in adulthood. Findings from this study support the following recommendations for practice and policy, as outlined below.

2.3.1   Implications for Practice

1. **Resources and expertise should be made available for trauma-informed eating disorder screening and treatment.**

Current standards of care for treatment of ED for children and adolescents include individual- and family-based approaches that focus on increasing caloric intake and weight-restoration. Recovery success rates, however, continue to remain low (Campbell & Peebles, 2014). Consistent with previous studies that found stron-

ger associations between CSA and binge-purge, rather than restrictive forms of ED (Brewerton, 2007; Carter et al., 2006; Caslini et al., 2015; Fuemmeler, Dedert, McClernon, & Beckham, 2009; Johnson et al., 2002; Sanci et al., 2008; Steiger & Zanko, 1990), the present report found that CSA participants reported a greater number of BN symptoms relative to the comparison participants, indicating that adolescents who have a history of CSA may be at risk for BN symptomatology and its related health problems. The ED behaviors may be a manifestation of trauma symptoms or may serve as a coping strategy for distresses related to the abuse (Ross, 2009). Thus, clinicians who evaluate and treat ED should also include assessment for present and past abuse a part of routine practice. If an abuse history is known, clinicians should evaluate the patient for the presence of trauma-related symptoms.

The effectiveness of ED treatment efforts may be enhanced by the incorporation of, or referral to, psychotherapeutic treatments that directly address the abuse-related distresses in order to overcome potential barriers to recovery that stem from trauma sequelae. For example, Trauma-Focused Cognitive-Behavioral Therapy (TF-CBT) is an evidence-based trauma treatment that has demonstrated effectiveness in alleviating posttraumatic stress symptoms in youth who have experienced various types of trauma, including sexual abuse (Cohen, Deblinger, Mannarino, & Steer, 2004; Cohen, Mannarino, & Deblinger, 2016; Cohen, Mannarino, & Knudsen, 2005; Deblinger, Steer, & Lippmann, 1999; King et al., 2000). For ED patients with abuse history and posttraumatic symptoms, TF-CBT could accompany ED treatments to more effectively address all concerns. Training in TF-CBT or other evidence-based trauma treatments should also be made available to clinicians who treat ED. Additionally, pediatricians and other primary care clinicians who serve as gatekeepers for mental health treatments would benefit from having a basic understanding of trauma-informed treatments in order to provide education and decrease anxiety about seeking interventions for patients.

2. **Eating disorder treatments should be made available to patients with sub-threshold eating disorder symptoms.**

Despite the high prevalence of ED symptoms, ED tend to be underdiagnosed by clinicians, resulting in the failure of many patients to receive the necessary treatment (Campbell & Peebles, 2014). Consistent with literature that shows a link between ED and numerous subsequent health problems (Campbell & Peebles, 2014; Herpertz-Dahlmann, 2015), the present report found that an increased number of BN symptoms reported in adolescence was associated with an increased number of recent BN-related health problems in adulthood, such as gastrointestinal problems. These findings underscore the potential of ED symptoms, irrespective of the presence of an ED diagnosis, to prognosticate subsequent health problems. ED symptoms, therefore, should be considered as a part of a comprehensive health assessment and treatment plan.

Given that primary health providers often serve as gatekeepers to ED treatments, these clinicians should be vigilant about symptoms of ED and enact health education or treatment referrals as soon as symptoms emerge. The early detection of and

intervention for ED symptoms may benefit efforts to prevent the progression of ED and the debilitating and costly related health problems that may ensue.

3. **Treatment services provided to survivors of childhood sexual abuse should include monitoring and interventions for eating disorder symptoms.**

Standard treatments for youth who have a history of childhood maltreatment focus mainly on reducing trauma symptoms and acute internalizing and externalizing behavior problems (Silverman et al., 2008), but rarely address physical maladies. The present report's finding that BN symptoms explained some of the association between CSA and BN-related health problems may point to new areas of intervention, such as healthy lifestyle and ED prevention enhancements that can be embedded in standard trauma treatment programs in order to help to prevent these physical maladies and promote long-term health and well-being for CSA survivors. In child welfare, advocacy, and clinical settings, clinicians and caseworkers should carefully monitor sexually abused youth for symptoms of ED, particularly of BN, and provide prompt referrals for ED and evidence-based trauma treatments such as TF-CBT.

2.3.2 Implications for Policy

1. **More financial resources should be made available to child sexual abuse survivors in aid of accessing necessary treatment.**

Unfortunately, previous research has found that 31–35% of child sexual abuse survivors do not access treatment (Haskett, Nowlan, Hutcheson, & Whitworth, 1991). In one study, only about half of the children referred for mental health treatment during a Child Advocacy Center assessment for abuse had initiated treatment (McPherson, Scribano, & Stevens, 2012). The cost and availability of coordinated treatments play an important role in whether abuse survivors access treatment. Thus, resources, both financial and access to treatment, should be made more available to facilitate abuse survivors' attainment of the necessary treatments. Policy efforts such as the Child Abuse Prevention and Treatment Act (CAPTA; Administration for Children and Families, 2010), the Victims of Crime Act (VOCA; Office for Victims of Crime & Office of Justice Programs, 2001), and the National Child Traumatic Stress Network (NCTSN; Pynoos et al., 2008) should ensure the availability of such resources. If trauma treatments are made more available to abuse survivors, incidences of BN symptoms and related health problems might be greatly reduced, given that nearly 60,000 children are victims of sexual abuse each year in the United States (U.S. Department of Health, & Human Services, Administration for Children and Families, Administration on Children Youth and Families,, & Children's Bureau, 2017).

2.3.3   Implications for Research

1. **More research is needed to better understand the link between childhood sexual abuse, eating disorders, and related health problems.**

The strengths of the present report lie in its prospective design, stringent inclusion criteria of substantiated CSA, matched comparison group, and diagnostic assessment of ED symptoms, all of which constitute significant methodological improvements over past studies on this topic (Brewerton, 2007; Carter et al., 2006; Caslini et al., 2015; Fuemmeler et al., 2009; Johnson et al., 2002; Sanci et al., 2008; Steiger & Zanko, 1990). Results provide evidence to support the link between CSA and the symptomatology and related health problems of BN, but not of AN, suggesting that making distinctions between the two types of ED is important in the investigation of the long-term health consequences of CSA.

Despite the finding of a statistically significant indirect effect of CSA for BN-related health problems through BN symptoms, the indirect effect was relatively small and much of the effect of CSA remained unexplained. Since these health problems are complex and have multiple possible etiological underpinnings, BN symptoms may play only a small role in the development of these types of health problems. Also, because these health problems were assessed for occurrence over the "past two years," their occurrence at other times during the lifetime could not be captured in the analytical models. It is unknown whether BN symptoms might explain a greater portion of the association between CSA and BN-related health problems at different life stages. Future research should investigate additional potential mechanisms underlying the CSA population's increased risks for health problems across more time periods along the life course.

While the present report did not find a significant association between CSA and AN or BN diagnoses, the FGDS sample contained a higher rate of BN diagnoses than the national prevalence rate, at 3.73% compared to the national rate of 1.3% in girls (Swanson et al., 2011). The elevated rate may be due to the relatively high proportion in the present sample of African-American/Black and Hispanic/Latina individuals, for whom epidemiological reports indicate higher rates of BN compared to White/Caucasian individuals (Swanson et al., 2011). Thus, the FGDS sample may represent a relatively high-risk sample. Due to potential racial-ethnic differences in ED, racial-ethnic minority status was tested as a covariate in analytical models. Results did not change with the addition of this variable.

It is also possible that the true rates of ED are greater than previously identified. The DSM 5th edition (DSM-5) had been released in 2013 and relaxed the stringent criteria for AN and BN diagnoses, including eliminating the amenorrhea requirement and reducing the minimum frequency of binge/purge behaviors from twice to once weekly (American Psychiatric Association, 2013). Hence, the DSM-IV diagnoses used in the present study constitute a more conservative estimate of the presence of ED. For example, using the DSM-5 diagnostic criteria for AN would result in 11 participants (8 abused, 3 comparison) receiving the diagnosis. BN diagnosis rates under DSM-5 could not be ascertained due to the inability to obtain information

on whether binge/purge behaviors had occurred at least once weekly, but it is likely that the less stringent diagnostic criteria would result in higher rates of diagnoses. These individuals with ED symptoms who did not reach DSM-IV diagnostic threshold may have been underserved if ED treatments had been limited to only those with diagnoses.

As stated earlier, the ED-related health problems assessed in the present report have multiple etiologies, and definitive causal attributions of these health problems to ED symptoms cannot be made. Nonetheless, these health problems serve as useful proxies for the physical health problems that result from ED, and provide evidence to suggest that ED symptoms might contribute to, or affect other etiological processes involved in, subsequent health problems. Moreover, these health problems are commonly-assessed symptoms during medical visits. Monitoring these health problems as indicators of ED-related complications can help clinicians to identify adolescents who are at-risk for developing severe health conditions and to provide timely intervention.

Several limitations must be considered when interpreting these data. This sample included only intrafamilial CSA and these findings may not generalize to other sexual abuse experiences (e.g., extrafamilial perpetrators, non-contact). This sample included only females and these findings cannot be extrapolated to males. The strict inclusion criteria for CSA resulted in a sample size that may have limited power for detecting group differences in ED diagnoses. The DSM-IV likely underestimated the rates of ED diagnoses and future studies need to replicate findings using the less-stringent DSM-5 criteria. Given the low rate of treatment for AN- (four) and BN- (one) related symptoms, the potential impact of treatment on outcomes could not be examined in this sample. The health problems were assessed using self-report and were limited to those problems known to the participant. Information regarding the age at onset for the health problems was unavailable and it is unclear whether these problems existed prior to the onset of ED symptoms. Future studies using patient medical records could objectively confirm the presence and timing of participants' health problems.

Despite these limitations, the present report constitutes the first prospective evidence known to the authors for the relations among CSA, BN symptoms, and BN-related health problems. This report also demonstrated that BN symptoms may partially account for the association between CSA and increased BN-related health problems. The methodological strengths of this report allow for its substantial contribution to the literature and to policy and practice.

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Chapter 3
Perception of Maltreatment: Gender-Specific Mental Health Outcomes Associated with Maltreatment as Most Upsetting Experience

Melissa K. Peckins, Sonya Negriff, Jonathan M. Reader, and Elizabeth J. Susman

Child maltreatment is a serious public health concern and the consequences of maltreatment are pervasive, spanning multiple domains of functioning. Although the experience of child maltreatment has many known developmental consequences that can manifest across the lifespan (Trickett & McBride-Chang, 1995; Trickett, Negriff, Ji, & Peckins, 2011), not all children who experience maltreatment go on to develop mental health problems. Protective factors such as familial support and self-esteem are thought to impact a child's resilience in the face of adversity (Masten, 2001) yet few studies are able to longitudinally test for lasting positive or negative effects on development. Furthermore, less is known about how the perception of maltreatment experiences are associated with risk and resilience across development. Thus, the purpose of this study was to test whether the perception of maltreatment experiences as upsetting was associated with the development of internalizing and externalizing behavior problems during adolescence, a developmental period when internalizing symptoms and externalizing behaviors may increase in prevalence and severity (Moffitt, 1993; Petersen et al., 1993).

M. K. Peckins (✉)
Department of Psychology, University of Michigan, Ann Arbor, MI, USA
e-mail: mpeckins@umich.edu

S. Negriff
University of Southern California, Dworak-Peck School of Social Work,
Los Angeles, CA, USA

J. M. Reader
Department of Human Development and Family Studies, The Pennsylvania State University,
University Park, PA, USA

E. J. Susman
Department of Biobehavioral Health, The Pennsylvania State University,
University Park, PA, USA

3.1   Perception of Maltreatment

Perception of an experience is a multifaceted construct as it is influenced by numerous psychological and contextual circumstances, such as an individual's emotional or psychological state at the time of occurrence or recollection as well as all of the individual's previous experiences and memories (Wilson & Ross, 2003). As the time since the event in question increases, perception of the event may change based on new experiences (Wilson & Ross, 2003), making the assessment of perception of a childhood experience a difficult task. Few studies have considered maltreated children's perception of maltreatment experiences as a protective or risk factor for mental health processes, yet other studies of children and adults suggest perception of a traumatic event may be an important predictor of resilience (Boals & Schuettler, 2009). For instance, in a retrospective study of adults recalling their most traumatic experience, the perceived feeling of fear or helplessness during the event rather than characteristics of the event itself predicted the presence of PTSD symptoms (Boals & Schuettler, 2009). Similarly, one bereavement study of children and adolescents suggested the perception of loss is important for predicting outcomes, finding that adolescents' perceived impact of the loss was positively associated with symptoms of depression (Harrison & Harrington, 2001).

Studies of disclosure which capture a component of perception (i.e., maltreatment is wrong and should be reported) also lend support for the role of perception in predicting mental health problems. The decision to disclose and the mental health effects of disclosure for children and adults vary by characteristics of the child (e.g., age), maltreatment (e.g., type), and disclosure experience (e.g., social reaction) (Goodman-Brown, Edelstein, Goodman, Jones, & Gordon, 2003; Graham-Bermann, Kulkarni, & Kanukollu, 2011; Nagel, Putnam, Noll, & Trickett, 1997; Ullman, 2007). For example, in children exposed to physical threat in the home, disclosure was associated with greater improvement in internalizing problems and reductions in pro-violent cognitions (Graham-Bermann et al., 2011). However, studies of adult women survivors of child sexual abuse found voluntary disclosure to be associated with worse mental health outcomes (Nagel et al., 1997) and women who did not disclose and engaged in repressive coping reported fewer internalizing and externalizing behavior problems (Bonanno, Noll, Putnam, O'Neill, & Trickett, 2003). The findings from previous studies on disclosure suggest aspects of the maltreatment or disclosure experience such as threat (e.g., sexual abuse) and deprivation (e.g., lack of social support) may play a role in the emergence and progression of internalizing and externalizing behavior problems across adolescence (McLaughlin, Sheridan, & Lambert, 2014). Despite evidence from studies of perceived impact and disclosure suggesting perception of maltreatment is important for understanding the development of mental health problems, no studies have directly tested this hypothesis in maltreated youth. The present study aims to address this gap in the literature by testing whether adolescents' perception of maltreatment as their most upsetting experience is associated with the development of internalizing and externalizing behavior problems across adolescence and whether this association is conditional on maltreatment type.

3.2   Gender Differences

Boys and girls differ in a variety of biological and behavioral domains and in some situations, experience and respond to the environment differently. For example, boys and girls differ in their biological reactivity to different types of challenges (e.g., social stressor vs. cognitive stressor) (Stroud, Salovey, & Epel, 2002) and in response to psychological distress girls are more likely than boys to use emotion-focused coping strategies and seek comfort from a social support network (Brougham, Zail, Mendoza, & Miller, 2009; Eschenbeck, Kohlmann, & Lohaus, 2007). Gender differences in the biopsychosocial response to threat are considered to be adaptive from an evolutionary standpoint (Crick & Zahn–Waxler, 2003; Klein & Corwin, 2002; Taylor et al., 2000). Therefore, although studies suggest boys and girls experience similar rates of maltreatment (Finkelhor, Turner, Shattuck, & Hamby, 2015; Prevoo, Stoltenborgh, Alink, Bakermans-Kranenburg, & van Ijzendoorn, 2017), the mental health consequences of maltreatment are expected to differ. To account for gender differences in the response to maltreatment as well as mental health outcomes, the association between perception of maltreatment, internalizing and externalizing behavior problems, and maltreatment type was examined separately for boys and girls.

3.3   Present Study

The following study tested whether perception of maltreatment as the most upsetting experience was associated with internalizing and externalizing behavior problems in maltreated youth separately for boys and girls, and whether maltreatment type moderated these associations. We were not able to directly measure adolescents' perceptions of maltreatment. Instead, we asked adolescents to describe their most upsetting experience. The nature of these analyses were primarily exploratory due to the lack of research available on perception of maltreatment experiences in youth. The closest evidence that we can draw from to formulate hypotheses is the disclosure literature that suggests disclosure is associated with greater mental health problems in individuals with sexual abuse experiences (Bonanno et al., 2003; Nagel et al., 1997; Ullman, 2007). Therefore, we hypothesized that maltreated girls who perceived maltreatment as being their most upsetting experience would report experiencing greater internalizing problems than girls who did not perceive maltreatment as their most upsetting experience. Similarly, we hypothesized that maltreated boys who perceived maltreatment as being their most upsetting experience would report greater externalizing behavior problems than boys who did not perceive maltreatment as being their most upsetting experience. We also acknowledge that the association between perception of maltreatment as upsetting and mental health may differ by maltreatment type. Therefore, we also hypothesized maltreatment type would moderate these associations such that boys and girls with a history of

emotional abuse and/or neglect (without sexual or physical abuse experiences) would report fewer internalizing and externalizing behavior problems when identifying maltreatment as their most upsetting experience compared to those reporting a nonmaltreatment most upsetting experience.

3.4 Methods

3.4.1 Sample Characteristics

Data were from four waves of an ongoing longitudinal study examining the effects of maltreatment on adolescent development. At Time 1 (T1), the sample was composed of 454 adolescents aged 9–13 years (n = 241 boys, n = 213 girls). Time 2 (T2), Time 3 (T3), and Time 4 (T4) occurred on average 1, 2.7, and 7.2 years after baseline. The present study only used data from the maltreated sample of 303 maltreated (n = 151 girls) youth (T1 M age = 10.87 years, SD = 1.13). The maltreated sample was diverse, consisting of youth identifying as Black or African American (n = 123, 41%), Latino (n = 106, 35%), White/non-Latino (n = 35, 12%), or Biracial (n = 39, 13%). Descriptive characteristics of the sample can be found in Table 3.1. Percentages for ethnicity, maltreatment type, and maltreatment type grouping are calculated by gender and most upsetting experience.

3.4.2 Sample Recruitment

Maltreated youth were recruited from active cases in the Children and Family Services (CFS) of a large west coast city. The inclusion criteria were: (1) a new substantiated referral to CFS in the preceding month for any type of maltreatment (e.g., neglect, physical abuse, sexual abuse, emotional abuse); (2) child age of 9–12 years; (3) child identified as Latino, African-American, or White (non-Latino); and (4) child residing in one of 10 zip codes in a designated county at the time of referral to CFS. With the approval of CFS and the Institutional Review Board (IRB) of the affiliated university, potential participants were contacted via postcard and asked to indicate their willingness to participate. Contact via mail was followed by a phone call. A Certificate of Confidentiality was obtained from the Federal Government to protect each participant's confidentiality. Disclosures of maltreatment that were not already reported to a CFS agency were not protected under this agreement. Retention strategies (e.g., contact through back-up contact information and social media) were effective as 81%, 64%, and 73% of the maltreated sample was retained at waves 2, 3, and 4, respectively. Information on recruitment and retention for the comparison sample not included in the present study is available in an earlier publication (Negriff, Saxbe, & Trickett, 2015).

Table 3.1 Sample characteristics

	Boys			Girls		
Demographic Variable	Overall	Maltreatment MUE	Nonmaltreatment MUE	Overall	Maltreatment MUE	Nonmaltreatment MUE
Ethnicity (%)						
Black/African American	43	38	52	38	34	51
Latino	31	38	23	39	44	27
White (non-Latino)	13	10	12	10	7	11
Mixed Biracial	13	15	13	13	15	11
Maltreatment Type (%)						
Neglect	80	73	81	74	78	67
Emotional Abuse	48	55	44	55	56	55
Physical Abuse	59	63	55	44	49	38
Sexual Abuse	13	20	9	27	30	26
Maltreatment Type Grouping (%)						
Sexual and/or Physical abuse with/without emotional abuse and/or neglect	67	68	64	61	64	60
Emotional abuse and/or neglect without sexual or physical abuse	33	32	36	39	36	40

Note. *MUE* Most upsetting experience; Percentages calculated within each group (e.g., boys who reported a maltreatment most upsetting experience); Percentages within each group may not add up to 100% due to rounding; Total percentages for each maltreatment type add up to more than 100% due to youth experiencing more than one form of maltreatment

3.4.3   Procedure

Assessments were conducted at an urban research university and all procedures were reviewed and approved by the IRB of the affiliated university. Following assent and consent from the adolescent and parent/guardian, the adolescent completed an array of questionnaires and tasks during a four-hour protocol, including hormonal, cognitive, behavioral, and health measures. Only a subset of the measures were used in the following analyses. Child and parent/guardian participants were compensated according to the National Institutes of Health Normal Volunteer Program guidelines.

3.4.4   Measures

Perception of Maltreatment as Most Upsetting Experience Adolescents completed the Comprehensive Trauma Interview (CTI) (Horowitz, 1999; Noll, Horowitz, Bonanno, Trickett, & Putnam, 2003) at T3 and T4. The CTI includes a screen for 34 potentially traumatic experiences and a follow-up portion to capture relevant information regarding each event (e.g., age at occurrence, identity of perpetrator). During the follow-up, adolescents were asked to describe their most upsetting experience. Responses were coded according to whether or not the experience was a form of child maltreatment as defined by the Centers for Disease Control and Prevention (CDC) (Leeb, Paulozzzi, Melanson, Simon, & Arias, 2008). Examples of nonmaltreatment most upsetting experiences included the death of a relative or friend, witnessing or knowing the victim of neighborhood violence, and having a sick relative or friend. Coded responses were used to categorize adolescents into one of two groups: adolescents who perceived maltreatment to be their most upsetting experience (34% boys, 57% girls) and adolescents who did not perceive maltreatment to be their most upsetting experience (66% boys, 43% girls).

Internalizing Problems Symptoms of depression were assessed at all four waves of measurement by self-report using the Child Depression Inventory (CDI) (Kovacs, 1981, 1992). Adolescents rated symptoms of depression ($k = 27$) on a scale of 0–2 with higher scores indicating more severe symptoms ($\alpha = .86–.89$). Responses were summed to create a composite score of depressive symptoms. Symptoms of anxiety were assessed at all four waves of measurement by self-report with the Multidimensional Anxiety Scale for Children (MASC) (March, Parker, Sullivan, Stallings, & Conners, 1997). The MASC consists of 30 items on a scale from 0 to 3 with higher scores representing greater symptom severity. Only MASC items administered at all four waves ($k = 21$) were summed to create a composite score of anxiety symptoms ($\alpha = .87–.90$). MASC items not administered at T4 ($k = 9$) due to the age appropriateness of the questions were not included in the anxiety sum scores at T1-T3.

Externalizing Behavior Problems Subscales from the Youth Self Report (YSR) (Achenbach & Rescorla, 2001) assessed aggressive behavior ($k = 14$ items) and rule breaking behavior ($k = 10$ items) at all four waves of measurement by self-report. For each item, adolescents reported whether the statement was "never true," "sometimes true," or "always true." Items that were not administered at T3 and T4 for aggressive behavior ($k = 3$ items) and rule breaking behavior ($k = 1$ item) due to the age inappropriateness of the questions, and rule breaking behavior items that improved Cronbach's α when deleted ($k = 1$ item) were not included in the aggressive behavior and rule breaking behavior sum scores (aggressive behavior α = .80– .84; rule breaking behavior α = .75–.79).

Maltreatment Type Records from the CFS agency were carefully reviewed and documented at T1 for each child's history and type of maltreatment using the Maltreatment Case Record Abstraction Instrument (MCRAI) (Barnett, Manly, & Cicchetti, 1993; Mennen, Kim, Sang, & Trickett, 2010). In this sample, 232 youth (74% girls, 80% boys) experienced neglect, 156 youth (55% girls, 48% boys) experienced emotional abuse, 156 youth (44% girls, 59% boys) experienced physical abuse, and 60 youth (27% girls, 13% boys) experienced sexual abuse. In order to more meaningfully test for effects of maltreatment type, maltreated youth were classified into two mutually exclusive groups according to their sexual and physical abuse history. One group consisted of sexually and/or physically abused adolescents who may have also experienced emotional abuse and/or neglect (61% girls, 67% boys). Sexually and physically abused adolescents were grouped together because victims of sexual and/or physical abuse are more likely to have experienced polyvictimization (U.S. Department of Health and Human Services, 2012) and psychological trauma (Leeb et al., 2008) compared to victims of emotional abuse and neglect. A second group consisted of adolescents who experienced emotional abuse and/or neglect *without* a history of sexual or physical abuse (39% girls, 33% boys).

Covariates The time-varying covariate *age* was included as a covariate to account for the increase in prevalence and severity of internalizing and externalizing behavior problems that occurs during adolescence (Petersen et al., 1993). Age was also considered to be a proxy for pubertal development as the two are highly correlated and the majority of adolescents age out of pubertal staging (i.e., Tanner Stage 5) by age 15 (Slyper, 2006). The time-invariant covariate *ethnicity* was reported by the adolescent's parent or guardian at T1 as being Black/African-American (35%, 52%), Latino (42%, 25%), White (non-Latino) (8%, 11%), or Biracial (15%, 12%) for adolescents reporting maltreatment and nonmaltreatment as their most upsetting experience, respectively. Ethnicity was included as a covariate to account for ethnic differences in risk for internalizing and externalizing behavior problems in adolescents (López et al., 2017). In the US, the largest percentage of victimized youth identified as being White/non-Latino (44%) (U.S. Department of Health and Human Services, 2012); therefore, in subsequent analyses adolescents' ethnicity was regrouped as either being White (non-Latino) or an ethnic minority (Black/African American, Latino, or Biracial).

3.4.5   Analytic Plan

Descriptive analyses were performed for all continuous variables by gender. Hypotheses were tested using linear and quadratic growth models in a multilevel model framework using SAS ® (Version 9.4) Proc Mixed. Missing data were accounted for with restricted maximum likelihood (REML) estimation. Growth models were fit separately for depressive symptoms, anxiety symptoms, rule breaking behaviors, and aggressive behaviors, stratified by gender. All model predictors were grand mean centered so that the intercept represents the average mental health outcome for the prototypical adolescent at T1. Models were built by fitting an unconditional (i.e., no growth) model, a linear growth model with intercept at T1, a quadratic growth model with intercept at T1, a linear or quadratic growth model with most upsetting experience as a time-invariant covariate, and then testing the moderating effect of maltreatment type on the association between the mental health outcome and most upsetting experience. For each of the outcomes, the best fitting model for depressive symptoms, aggressive behavior, and rule breaking behavior in boys and girls, and anxiety symptoms in boys included the linear term and covariates. The best fitting model for symptoms of anxiety in girls included the quadratic term and covariates. The results did not differ when covariates were removed from models.

3.5   Results

3.5.1   Descriptive Analyses

Descriptive statistics of study measures are presented in Table 3.2. Results from independent t-tests show mean differences in internalizing and externalizing behavior problems between boys and girls. On average, compared to boys, girls: reported more symptoms of depression at T4 ($t_{222} = -2.59, p < .05$); reported more symptoms of anxiety at T1 ($t_{299} = -2.03, p < .05$), T3($t_{191} = -2.88, p < .01$), and T4 ($t_{219} = -3.98$, $p < .01$); reported fewer aggressive behaviors at T1 ($t_{299} = 2.59, p < .05$); and reported fewer rule breaking behaviors at T1 ($t_{299} = 3.04, p < .01$).

In girls, those reporting maltreatment (vs. nonmaltreatment) as their most upsetting experience were older at T3 ($t_{102} = -2.30, p < .05$). In boys, those reporting maltreatment (vs. nonmaltreatment) as their most upsetting experience: were younger at T4 ($t_{101} = 2.19, p < .05$); reported fewer aggressive behaviors at T1 ($t_{108.36} = 2.07, p < .05$) and T2 ($t_{100} = 2.19, p < .05$); and reported fewer rule breaking behaviors at T1 ($t_{114.63} = 3.22, p < .01$).

Table 3.2 Descriptive statistics for boys and girls

| | Boys | | | | | | Girls | | | | | |
| | Overall | | Maltreatment MUE | | Nonmaltreatment MUE | | Overall | | Maltreatment MUE | | Nonmaltreatment MUE | |
Measure	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Age												
T1	10.91	1.17	10.72	1.02	11.05	1.26	10.83	1.10	10.96	1.12	10.79	1.05
T2	12.03	1.20	11.76	.99	12.14	1.33	11.98	1.11	12.07	1.12	11.92	1.04
T3	13.52	1.48	13.25	1.07	13.64	1.65	13.63	1.27	13.82[k]	1.31	13.25[k]	1.07
T4	18.25	1.54	17.88[g]	.98	18.46[g]	1.75	18.32	1.30	18.44	1.25	18.14	1.36
Depression												
T1	9.75	7.76	9.58	8.42	9.69	7.67	9.61	7.50	8.93	6.81	10.75	8.94
T2	8.13	5.97	6.53	4.75	8.68	6.45	8.74	7.19	8.43	7.02	9.02	6.55
T3	7.90	5.80	7.27	5.34	8.27	6.06	8.98	7.11	9.16	7.35	8.72	6.89
T4	7.93[a]	7.06	6.30	6.63	8.49	6.74	10.57[a]	8.08	11.13	8.93	9.80	6.73
Anxiety												
T1	38.17[b]	16.96	40.40	17.49	36.16	17.17	42.04[b]	16.13	40.81	15.64	42.24	17.38
T2	33.16	15.41	33.06	15.64	32.91	15.30	36.59	14.59	37.59	14.41	34.08	13.41
T3	28.61[c]	16.78	32.00	15.99	26.61	17.05	35.25[c]	15.30	35.39	15.27	35.23	15.69
T4	30.01[d]	11.58	30.84	12.36	29.68	11.23	37.50[d]	15.78	36.29	15.83	39.16	15.72
Aggressive Behavior												
T1	6.26[e]	4.89	5.18[h]	3.66	6.95[h]	5.54	4.89[e]	4.31	4.61	4.14	5.24	5.09
T2	5.74	4.46	4.36[i]	4.28	6.36[i]	4.60	5.16	4.67	5.32	4.69	5.45	4.96
T3	6.13	4.36	5.06	3.72	6.76	4.75	5.81	5.30	6.11	5.50	5.42	5.04
T4	4.45	4.32	3.84	3.15	4.66	3.65	4.81	4.55	4.69	4.58	4.98	4.54

(continued)

Table 3.2 (continued)

	Boys						Girls					
	Overall		Maltreatment MUE		Nonmaltreatment MUE		Overall		Maltreatment MUE		Nonmaltreatment MUE	
Measure	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Rule Breaking Behavior												
T1	2.18[f]	3.16	1.13[j]	1.77	2.74[j]	3.65	1.28[f]	1.80	1.10	1.58	1.56	2.17
T2	1.94	2.51	1.44	2.45	2.03	2.42	1.38	2.10	1.22	1.60	1.82	2.72
T3	2.89	2.99	2.24	2.40	3.27	3.25	2.33	2.89	2.60	3.23	1.92	2.22
T4	4.12	3.83	3.41	3.37	4.54	4.05	3.56	3.16	3.57	3.18	3.53	3.16

Note. Superscripts a-k indicate significant Independent T-tests ($p < .05$). MUE = Most Upsetting Experience. T = Time. Depression = symptom count from the Child Depression Inventory (Kovacs, 1981, 1992). Anxiety = symptom count from the MASC (March et al., 1997). Aggressive behavior = symptom count from the Youth Self Report (Achenbach & Rescorla, 2001). Rule breaking behavior = symptom count from the Youth Self Report (Achenbach & Rescorla, 2001)

3.5.2 Hypothesis Tests

Intraclass Correlation Coefficients (ICC) Unconditional, no-growth models (i.e., intercept only) were fit for both boys and girls for symptoms of depression, symptoms of anxiety, aggressive behavior, and rule breaking behavior. The ICC for boys and girls was .48 and .43 (symptoms of depression), .29 and .23 (symptoms of anxiety), .35 and .42 (aggressive behavior), and .30 and .24 (rule breaking behavior), respectively.

Internalizing and Externalizing Behavior Problems in Girls Model estimates for girls are presented in Table 3.3. In girls, the trajectory of depressive symptoms differed according to most upsetting experience; girls reporting maltreatment as their most upsetting experience increased in symptoms of depression across adolescence whereas girls reporting nonmaltreatment as their most upsetting experience decreased in symptoms of depression across adolescence (Fig. 3.1). Most upsetting experience was also associated with change in anxiety symptoms over time. Girls reporting a nonmaltreatment most upsetting experience decreased in symptoms of anxiety at a steeper rate from T1 to T2, and increased in anxiety symptoms at a steeper rate from T3 to T4 compared to girls reporting a maltreatment most upsetting experience (Fig. 3.2). Maltreatment type did not moderate the association between most upsetting experience and depressive or anxiety symptoms, or in the change in depressive or anxiety symptoms over time.

In girls, most upsetting experience was not associated with the trajectory of aggressive behavior. However, most upsetting experience was associated with rule breaking behavior at T1 of the study and this association was conditional on maltreatment type. Of girls who experienced emotional abuse and/or neglect (without sexual and/or physical abuse experiences), those reporting maltreatment as their most upsetting experience reported lower levels of rule breaking behavior than girls with a nonmaltreatment most upsetting experience (Fig. 3.3).

Internalizing and Externalizing Behavior Problems in Boys Model estimates for boys are presented in Table 3.4. In boys, most upsetting experience was not associated with the trajectories of depressive or anxiety symptoms, nor was there a moderating effect of maltreatment type on any of the associations. However, in boys, those reporting maltreatment as their most upsetting experience had lower levels of aggressive behavior and rule breaking behavior at T1 than boys reporting nonmaltreatment as their most upsetting experience.

Table 3.3 Growth models for internalizing and externalizing behavior problems in girls

	Depression		Anxiety		Aggressive Behavior		Rule Breaking Behavior	
Fixed Effects	b	SE	b	SE	b	SE	b	SE
Intercept	9.10**	.63	42.10**	1.40	5.14**	.40	.97**	.17
Time	.27	.26	−7.47**	1.92	.01	.16	.77**	.10
Time^2	---	---	2.05**	.61	---	---	---	---
Age	.29	.39	.09	.76	.35	.25	.27*	.12
Ethnicity	−1.66	1.98	−.51	3.55	−.44	1.27	−.18	.56
Most Upsetting Experience	−2.11	1.28	−2.64	2.83	−.59	.81	−.61	.34
Most Upsetting Experience*Time	1.25*	.54	8.13*	3.92	.30	.32	.32	.21
Most Upsetting Experience*Time^2	---	---	−2.79*	2.83	---	---	---	---
Maltreatment Type	.11	1.30	2.38	2.90	1.34	.83	−.06	.35
Maltreatment Type* Most Upsetting Experience	4.75	2.63	−.74	5.83	1.38	1.67	1.83*	.71
Maltreatment Type*Time	.30	.54	−8.82*	3.97	−.26	.33	.06	.21
Maltreatment Type*Time^2	---	---	2.79*	1.26	---	---	---	---
Most Upsetting Experience*Maltreatment Type*Time	−.37	1.10	5.35	8.03	−.25	.33	−.20	.43
Most Upsetting Experience*Maltreatment Type*Time^2	---	---	−1.96	2.54	---	---	---	---
Random Effects								
Variance, Intercept	28.01**	6.62	86.92**	28.48	10.22**	2.67	.65	.52
Covariance, Intercept, Slope	−2.31	2.27	−19.21	12.11	−.09	.88	.22	.24
Variance, Slope	2.49*	1.23	15.83*	7.12	.34	.46	.45**	.18
Residual Variance	27.67**	2.77	155.33**	15.53	12.48**	1.24	3.86**	.38
Indices of Fit								
-2 LL	2915.6		3583.8		2524.1		2002.8	
AIC	2923.6		3591.8		2532.1		2010.8	
BIC	2934.8		3603.1		2543.3		2022.0	

AIC Akaike Information Criterion, *BIC* Bayesian Information Criterion
Note. ** $p < .01$, * $p < .05$. -2 LL = -2 Residual Log Likelihood

3.6 Discussion

Our study found that girls' and boys' reports of most upsetting experience were associated with internalizing and externalizing behavior problems during adolescence. Regardless of maltreatment type, reporting maltreatment as their most upsetting experience was associated with increased depressive symptoms and less steep change in anxiety symptoms over time in girls, and lower levels of aggressive and rule breaking behavior in boys. Further, in girls with a history of emotional abuse
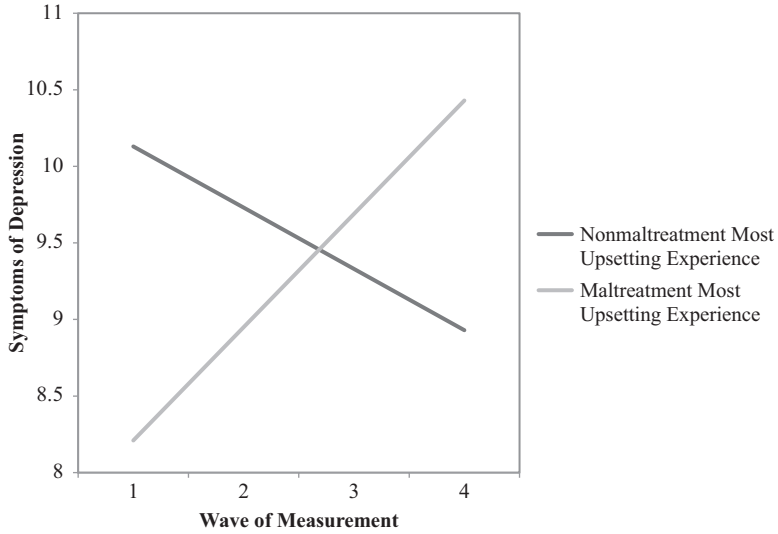
Fig. 3.1 Depression symptom trajectories differ according to most upsetting experience in girls
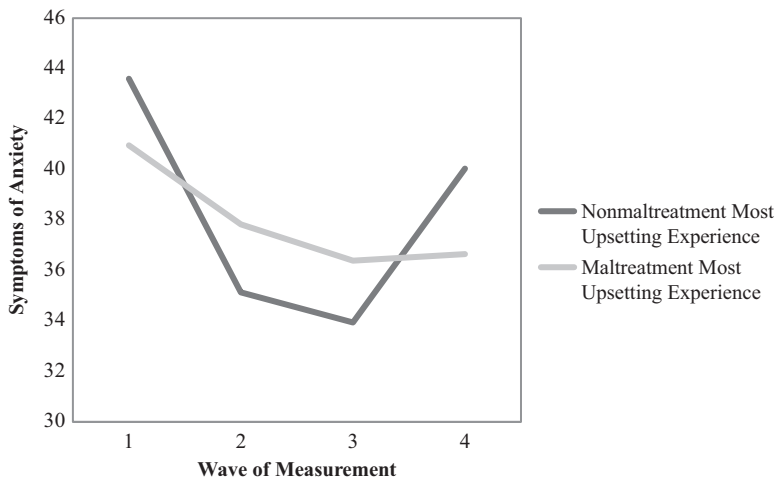
Fig. 3.2 Anxiety symptom trajectories differ according to most upsetting experience in girls

and/or neglect, rule breaking behavior was lower at study onset in girls reporting a maltreatment most upsetting experience. Our results for depression and rule breaking behavior in girls are consistent with the disclosure literature (Bonanno et al., 2003; Graham-Bermann et al., 2011; Nagel et al., 1997). For boys, the results are consistent with disclosure of non-sexual forms of maltreatment (Graham-Bermann et al., 2011) however the association was present for both emotionally abused/
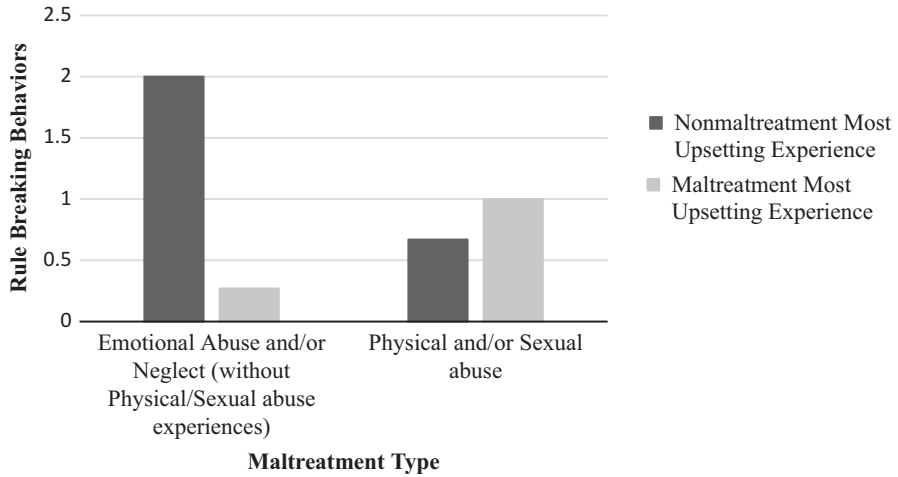
Fig. 3.3 Rule breaking behavior at Time 1 differs according to most upsetting experience and maltreatment type in girls

neglected and physically/sexually abused boys. Our finding of gender differences may be attributed to differences in coping responses to adversity between boys and girls (for example, see Eschenbeck et al., 2007) and the effectiveness of those coping strategies (Littleton, Horsley, John, & Nelson, 2007; Schnider, Elhai, & Gray, 2007), contributing to differences in what type of experience boys and girls find most upsetting and how this perception relates to mental health. However, we are not able to test these important questions with data from the current study but these are avenues of research future studies can explore.

3.6.1   Clinical Implications

Findings from the present study offer a broader understanding of how perceptions of maltreatment as an adolescent's most upsetting experience relate to mental health outcomes across adolescence for clinicians, social workers, and other advocates for the health and wellbeing of children. Our findings suggest clinicians can gauge maltreated children's risk for depression, anxiety, aggression, and rule breaking behavior by asking children to reflect on their most upsetting experience. Treatment plans can then be tailored to address each child's individual risk. Tools for discussing most upsetting experiences have already been developed and shown to be feasible in treatment and intervention settings. For example, clinicians administering PTSD assessments prompt children to describe their most significant trauma and clinicians administering Trauma-Focused Cognitive Behavioral Therapy (Cohen, Mannarino, & Deblinger, 2016) ask children to create their trauma narrative based

Table 3.4 Growth models for internalizing and externalizing behavior problems in boys

	Depression		Anxiety		Aggressive Behavior		Rule Breaking Behavior	
Fixed Effects	b	SE	b	SE	b	SE	b	SE
Intercept	9.41**	.73	36.61**	1.60	6.64**	.46	2.02**	.30
Time	−.44	.27	−2.56**	.62	−.55**	.20	.61**	.14
Age	.46	.31	−.64	.68	.26	.22	.29	.15
Ethnicity	.69	1.56	−1.43	3.15	−.24	1.00	−.35	.68
Most Upsetting Experience	−1.72	1.52	3.24	3.33	−2.47*	.96	−1.46*	.62
Most Upsetting Experience*Time	−.36	.57	−.90	1.30	.40	.42	.16	.30
Maltreatment Type	.57	1.53	.11	3.36	.76	.96	−.08	.63
Maltreatment Type* Most Upsetting Experience	−.02	3.22	2.90	7.06	−.65	2.03	−1.66	1.32
Maltreatment Type*Time	−.33	.58	−.36	1.32	7.21×10^{-4}	.43	.46	.30
Most Upsetting Experience*Maltreatment Type*Time	1.30	1.20	1.94	2.75	.86	.90	.14	.64
Random Effects								
Variance, Intercept	43.51**	8.13	151.52**	39.69	14.46**	3.28	5.43**	1.47
Covariance, Intercept, Slope	−9.66**	2.61	−30.73*	14.34	−3.60**	1.25	−1.32*	.58
Variance, Slope	4.04**	1.14	6.28	6.89	2.04**	.65	.99**	.34
Residual Variance	17.27**	1.93	162.33**	18.00	10.60**	1.19	5.44**	.63
Indices of Fit								
-2 LL	2350.1		3021.1		2124.1		1870.0	
AIC	2358.1		3029.1		2132.1		1878.0	
BIC	2368.8		3039.8		2142.8		1888.7	

AIC Akaike Information Criterion, *BIC* Bayesian Information Criterion
Note. ** $p < .01$, * $p < .05$. -2 LL = -2 Residual Log Likelihood

on their most upsetting or scary experience. However, care should be taken when asking a child to describe their most upsetting experience as this line of questioning could cause emotional distress to the child or clinician, require a report to be made to CFS agencies, or influence an ongoing investigation (Kuehnle & Connell, 2010).

Findings from the present study also highlight the importance of developing interventions and treatment plans that account for gender differences in risk for mental health problems. While maltreatment as a most upsetting experience has not been widely studied across genders, our findings are consistent with other studies showing gender differences in risk factors for psychopathology. For example, previous research has found gender differences in the psychological response to adversity (Eschenbeck et al., 2007) and in the developmental pathway that links child maltreatment to risk for internalizing and externalizing behavior problems (Maschi, Morgen, Bradley, & Hatcher, 2008). Thus, our findings suggest that both a

child's gender and most upsetting experience are critically important for clinicians and child advocates when determining risk for and treatment plans to prevent mental health problems following maltreatment experiences.

3.6.2   Program Evaluation Implications

Our findings have important implications for evaluating interventions and treatments that target depressive disorders in adolescent girls with a history of child maltreatment. Specifically, we suggest that evaluators test short- and long-term intervention and treatment effectiveness for depressive symptoms in girls according to their most upsetting experience. Given that girls reporting a maltreatment most upsetting experience reported increased depressive symptoms over time, the effectiveness of an intervention may not be apparent in girls until years following the maltreatment experience. While most upsetting experience was not associated with change in aggressive or rule breaking behavior over time, most upsetting experience may be a useful metric for evaluating baseline differences in boys and girls following assignment to an intervention, standard care, or no treatment group.

3.6.3   Policy Implications

Our study demonstrated that adolescents' most upsetting experience was associated with risk for mental health problems. While many aspects of the maltreatment experience (e.g., relationship to the perpetrator) likely contribute to the traumatic nature of maltreatment and whether or not it is perceived as most upsetting, the aftermath of reporting maltreatment can also be traumatizing for youth. For example, the child's experience with CFS agencies and the judicial process and familial support following a report have been shown to increase the traumatizing effects of child maltreatment (Goodman et al., 1992). Thus, while legislative efforts to prevent child maltreatment should continue to be supported, it is also crucial to support legislation that protects children during and after the initial report of child maltreatment.

One way legislators can reduce the traumatic aftereffects of maltreatment is through increased financial support of children's advocacy centers (CAC). CAC's are community-based centers that allow children to report child maltreatment to representatives from the criminal justice system, health care system, and other professionals involved in investigating maltreatment allegations and providing treatment (Boeskin, Edwards, Laird, & Lounsbury, 2016). The implementation of CAC's and enacting laws to protect child witnesses has likely improved mental health outcomes for maltreated children (Smith, Witte, & Fricker-Elhai, 2006) by reducing the psychological harm associated with reporting maltreatment. Currently, the majority of funding for CAC's comes from the government, primarily through the

Victims of Child Abuse Act (VOCAA). However, public and private funds gained through VOCAA have not been able to keep up with the rapid development and utilization of CAC's across the US (Boeskin et al., 2016). Given CAC's reduce the traumatic nature of maltreatment which can contribute to children's perception of maltreatment, it is imperative that VOCAA and other laws that provide support for CAC's (e.g., Victims of Crime Act) continue to be reauthorized with annual increases in funding (for review, see Boeskin et al., 2016).

3.6.4   Limitations

The findings from the present study contribute to our understanding of how perception of maltreatment as the most upsetting experience is associated with internalizing and externalizing behavior problems in boys and girls, and how our findings can be used to inform clinical risk, program evaluation, and support for policies that prioritize children and their families. However, the findings and their implications should be considered within the context of the study's limitations. First, perception of maltreatment was indirectly assessed by asking adolescents to describe their most upsetting experience and not by directly asking adolescents about their feelings toward maltreatment. Therefore, we were unable to ascertain whether adolescents reporting maltreatment as their most upsetting experience was a proxy for psychological adjustment to maltreatment (e.g., the ability to describe a maltreatment experience to a stranger) or willingness to voluntarily disclose maltreatment. We were also unable to establish whether adolescents reporting nonmaltreatment as their most upsetting experience was reflective of something comparatively more traumatic happening (e.g., death of a loved one) rather than poor psychological adjustment, or the refusal to voluntarily disclose maltreatment. Although we were unable to directly test these questions, the latter scenario (i.e., something more traumatic happening) is less methodologically problematic as it would have a suppressive effect on our findings.

Second, perception of maltreatment was assessed retrospectively under the assumption that adolescents' most upsetting experience at T3 or T4 would be indicative of adolescents' psychological adjustment or willingness to disclose to the interviewer at earlier time points, regardless of traumatic or disturbing experiences occurring from T1-T3. Perception of maltreatment was not assessed at earlier time points due to ethical and methodological concerns. The CTI assesses a wide variety of traumatic experiences (e.g., rape) and was not administered at T1 and T2 to prevent young adolescents from experiencing emotional distress. Although perception of maltreatment was assessed retrospectively, the elapsed time between the maltreatment and T3 is still less than the elapsed time between childhood and adulthood, when most studies of perception and disclosure take place.

Despite these limitations, this study has many strengths. The present study is valuable in that data were collected longitudinally from a high-risk population of

maltreated youth, with high retention rates at each wave of measurement. Similarly, few studies are able to test developmental hypotheses about maltreated youth while considering differences between boys and girls. As such, the findings from the present study contribute to the literature on how perception of maltreatment as upsetting is associated with the development of mental health problems for adolescent boys and girls.

3.6.5   Conclusions and Future Directions

In summary, the findings from the present study have clinical, program evaluation, and policy implications. In the clinical setting, most upsetting experience can be used by clinicians and social workers to assess risk for internalizing and externalizing behavior problems in boys and girls, which are consistently associated with poor developmental outcomes across the lifespan (Fergusson & Woodward, 2002; Lewinsohn, Rohde, Seeley, Klein, & Gotlib, 2003; Whiteford et al., 2013). Most upsetting experience can be used as a metric to test for baseline differences in intervention groups and short- and long-term intervention effectiveness. Further, both child maltreatment and the events that follow can contribute to the traumatic nature of maltreatment (Goodman et al., 1992). Legislators can minimize the trauma associated with the aftermath of reporting maltreatment by supporting programs that provide resources to maltreated children and their families, such as CAC's (Smith et al., 2006).

Future studies on perception of maltreatment and the development of internalizing and externalizing behavior problems should consider ethically and methodologically sound ways to measure perception of maltreatment during childhood and early adolescence when the maltreatment experience is more proximal. For example, researchers can consult with caseworkers, psychologists, and other licensed professionals on how to ask children about their thoughts and feelings toward their maltreatment experiences in a valid way without causing psychological distress. Future studies should also consider the role programs and services resulting from legislation and intervention by CFS agencies play in shaping children's perceptions of maltreatment, and their association with internalizing and externalizing behavior problems from childhood into adulthood.

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Chapter 4
Community Violence Exposure and Aggressive Behavior Problems Among Adolescents: Does Child Maltreatment Moderate the Longitudinal Associations?

Kristopher I. Stevens and Ferol E. Mennen

Community violence exposure (CVE) and child maltreatment are serious adverse experiences for adolescents. While each of has been studied extensively, there is much less information on how they interact and contribute to psychosocial problems, in particular, aggressive behavior problems. This paper addresses that gap by examining the longitudinal associations between CVE and aggressive behavior problems in a sample drawn from a larger study of the effects of child maltreatment on adolescents' developmental trajectories.

Adolescents in the U.S. are exposed to high rates of community violence and it has been cited as one of the most salient public health problems our adolescents face (U.S. Surgeon General, 2001). According to the National Crime Victimization Survey (Truman & Morgan, 2016), the 2015 prevalence rate for violent victimization (i.e., sexual assault, robbery, aggravated assault, and simple assault) was 31 per 1000 for adolescents between the ages of 12 and 17 years. Strikingly, studies have indicated that upwards of 96% of children and adolescents from low income urban communities are exposed to at least one form of community violence during their lifetime (Lambert, Boyd, Cammack, & Ialongo, 2012). In addition to these high rates of exposure, CVE has been linked to problematic outcomes, such as depression and anxiety (Wilson & Rosenthal, 2003), posttraumatic stress (Fehon, Grillo, & Lipschitz, 2001), academic problems (Lynch, 2003), poor peer relations (Schwartz & Proctor, 2000), and behavior problems (Fowler, Tompsett, Braciszewski, Jacques-

K. I. Stevens (✉)
Outcomes and Evaluation Department, Pacific Clinics, Arcadia, CA, USA
e-mail: kstevens@pacificclinics.org

F. E. Mennen
Dworak-Peck School of Social Work, University of Southern California,
Los Angeles, CA, USA
e-mail: mennen@usc.edu

Tiura, & Baltes, 2009). One of the strongest and most consistent links in the literature has been the association between CVE and aggressive behavior problems (Purugganan, Stein, Silver, & Benenson, 2003). While most of the extant literature has concluded that CVE leads to problematic outcomes (Halliday-Boykins & Graham, 2001) a burgeoning body of research has demonstrated that these associations are bidirectional in nature; while CVE can lead to the development of aggressive behaviors, aggressive behaviors can also place an adolescent at risk for CVE (Lambert, Ialongo, Boyd, & Cooley, 2005; Mrug & Windle, 2009; Skubak Tillyer, Tillyer, Ventura Miller, & Pangrac, 2011).

Despite attention given to the associations between adolescents' CVE and aggressive behavior problems, little is known about contextual and experiential factors that may moderate these associations, especially other forms of violence exposure such as child maltreatment. Studies have indicated that CVE and child maltreatment are positively related to one another. Neighborhoods with high child maltreatment rates also have high rates of community violence (Coulton, Crampton, Irwin, Spilsbury, & Korbin, 2008). Finkelhor, Turner, Ormrod, and Hamby (2009) found that children and adolescents who had a history of child maltreatment were three times more likely to be exposed to violence in the community than those without such experiences. In addition, CVE and child maltreatment also seem to be associated with similar problematic outcomes. Maltreated children and adolescents are at increased risk for depression and anxiety (Lansford et al., 2002), posttraumatic stress (Widom, 1999), problematic peer relationships (Dodge, Pettit, & Bates, 1997), and delinquent behaviors (Stouthamer-Loeber, Loeber, Homish, & Wei, 2001). As with CVE, one of the most consistent and strongest links in the literature has been with aggressive behavior problems (Bolger & Patterson, 2001; Lansford et al., 2002). Researchers have demonstrated differential developmental outcomes for children and adolescents associated with the type of maltreatment (English et al., 2005; Pears, Kim, & Fisher, 2008); evidence suggests that physical maltreatment is strongly associated with aggressive behavior problems (Lansford et al., 2007; Taussig & Litrownik, 1997).

Although the evidence supports positive associations between CVE and child maltreatment and that they each contribute to similar outcomes, CVE and child maltreatment are rarely examined together (Aisenberg & Mennen, 2000). A recent study sheds some light on how child maltreatment may moderate the associations between CVE and psychosocial outcomes. Cecil, Viding, Barker, Guiney, and McCrory (2014) examined adolescents and young adults' self-reported exposure to child maltreatment (i.e., low, moderate, and high) as a moderator in the association between CVE and anger. Results of their study demonstrated that there was an interaction between CVE and child maltreatment. Adolescents and young adults in the low maltreatment group with low CVE demonstrated the lowest levels of anger, whereas those with high CVE demonstrated the highest levels of anger, compared with moderate and high maltreatment adolescents and young adults. Levels of anger were high and stable across all levels of CVE for adolescents and young adults with high levels of maltreatment. While CVE strongly influenced the anger symptoms of adolescents and young adults in the low maltreatment group, CVE had little influ-

ence on anger above and beyond maltreatment experiences for those in the high maltreatment group. This finding supports assertions by researchers that violence in the home has a more detrimental effect other than forms of adverse experiences, such as CVE (Boney-McCoy & Finkelhor, 1995; Horn & Trickett, 1998; Osofsky, Wewers, Hann, & Fick, 1993). In other words, exposure to violence in the home predicts psychosocial problems above and beyond other forms of violence exposure; for adolescents exposed to child maltreatment (especially, physical abuse), the addition of another form of violence does not exacerbate psychosocial problems.

The Cecil et al. (2014) study advances our understanding of the interplay between CVE and child maltreatment but it has several limitations. The design was cross-sectional in nature. Further investigations are needed to examine how these two forms of adversity relate to one another and psychosocial problems over time. As stated previously, adolescents' aggressive behavior problems increase the probability of being exposed to community violence (Mrug & Windle, 2009), yet nothing is known about whether this association differs for adolescents based on child maltreatment experiences. Given the analytical methods used by Cecil et al. (2014), the low maltreatment group may have contained a large proportion of adolescents and young adults who reported no child maltreatment experiences, yet they may have been grouped with adolescents who had experiences of child maltreatment. It is important to understand how these associations differ between adolescents with a history of child maltreatment and those without such a history. Additionally, while Cecil et al. (2014) examined whether associations differed based on the level of maltreatment experienced the field could benefit from better understanding whether there are differential outcomes based on the specific type of maltreatment adolescents experience (Kinard, 2001; Trickett & McBride-Chang, 1995); specifically, evaluating whether maltreatment experiences that include physical abuse are different from those that do not.

4.1 The Current Study

We sought to build on Cecil et al.'s work to enhance our understanding of the associations between CVE, aggressive behavior problems, and child maltreatment using a sample drawn from a longitudinal study examining the effects of child maltreatment on adolescent development. Based on the previous research we hypothesized:

1. The longitudinal associations between CVE and aggressive behavior problems are bidirectional. That is, early CVE would positively predict later aggressive behavior problems and early aggressive behavior problems would positively predict later CVE for the full sample of adolescents.
2. Child maltreatment status would moderate the longitudinal associations between CVE and aggressive behavior problems. Non-maltreated comparison adolescents would demonstrate bidirectionality in the associations. As for the mal-

treated adolescents, there would be a direct effect between early aggressive behavior problems and later CVE.

3. Child maltreatment type would moderate the longitudinal associations between CVE and aggressive behavior problems. Non-maltreated comparison and non-physically abused adolescents would demonstrate bidirectionality in the associations. As for physically abused adolescents there would be a direct effect between early aggressive behavior problems and later CVE.

4.2 Methods

4.2.1 Participants

Data were from Time 2 and Time 3 (approximately one and a half years apart) of an ongoing longitudinal study examining the relationships between child maltreatment and adolescents' development (The Young Adolescent Project (YAP)). At Time 1, 454 adolescents and their caregivers participated (described in more detail below in the Recruitment section). The current study consisted of the 389 adolescents and their caregivers who completed Time 2 (313 adolescents and their caregivers returned at Time 3; discussed in more detail below in the Retention section). Sample characteristics for Time 2 are displayed in Table 4.1. Boys composed 53% of the sample. The adolescents were mean age of 12.10 years ($SD = 1.18$) at Time 2 and 13.69 years ($SD = 1.39$) at Time 3. Nearly 80% of the sample at Time 2 was African-American (37.3%) or Latino (39.1%). As for adolescents' living arrangement at Time 2, 70% were living with a biological parent.

Recruitment The maltreated participants ($N = 303$) were recruited from active cases in the Los Angeles County Department of Child and Family Services (LACDCFS). The inclusion criteria were: (1) a new referral to LACDCFS in the preceding month for any type of child maltreatment (e.g., neglect, physical abuse, sexual abuse); (2) child age of 9–12 years; (3) child identified as Latino, African-American, or Caucasian (non-Latino); (4) child residing in one of 10 zip codes at the time of referral to LACDCFS. With approval of LACDCFS and the Institutional Review Board of the affiliated university, potential participants were contacted via postcard and asked to indicate their willingness to participate. Contact via mail was followed up by a phone call.

The non-maltreated comparison group ($N = 151$) was recruited using names from school lists of children aged 9–12 years residing in the same 10 zip codes as the maltreatment sample. Caretakers of potential participants were sent a postcard and asked to indicate their interest in participating which was followed up by a phone call. Caregivers indicated they had no experience with LACDCFS prior to entry into the study.

Table 4.1 Sample characteristics at Time 2

	Full sample	Comparison[a]	Maltreated[b]	No physical abuse[c]	Physical abuse[d]
N	389	141	248	121	127
Age, *M* (*SD*)	12.10 (1.18)	12.28 (1.22)	11.99 (1.15)	11.95 (1.11)	12.05 (1.18)
Age range	9.74–16.10	9.83–15.15	9.74–16.10	9.74–16.10	9.90–14.72
Gender, *n* (%)[e–g]					
Male	206 (53.0)	85 (60.3)	121 (51.2)	50 (41.3)	71 (55.9)
Female	183 (47.0)	56 (39.7)	127 (48.8)	71 (58.7)	56 (44.1)
Ethnicity, *n* (%)					
Black	145 (37.3)	45 (31.9)	100 (40.3)	52 (43.0)	48 (37.8)
Latino	152 (39.1)	64 (45.4)	88 (35.5)	40 (33.0)	48 (37.8)
White	43 (11.1)	15 (10.6)	28 (11.3)	11 (9.1)	17 (13.4)
Mixed	49 (12.6)	17 (12.1)	32 (12.9)	18 (14.9)	14 (11.0)
Living Arrangement, *n* (%)[e,f,h]					
Biological parent	273 (70.2)	131 (92.9)	142 (57.3)	66 (54.6)	76 (59.8)
Relative	76 (19.5)	8 (5.7)	68 (27.4)	39 (32.2)	29 (22.8)
Nonrelative	35 (9.0)	0 (0.0)	35 (14.1)	15 (12.4)	20 (15.8)
Adoptive	5 (1.3)	2 (1.4)	3 (1.2)	1 (0.8)	2 (1.6)

Note. Differences between comparison and maltreated groups were examined using t-tests and chi-square tests. Differences between comparison, no physical abuse and physical abuse groups were examined using one-way ANOVA and chi-square tests
[**]$p < 0.001$; [*]$p < 0.01$
[a]Comparison group consists of adolescents drawn from the same neighborhoods as the maltreated sample
[b]Maltreated group consisted of all the adolescents who had a history of child maltreatment as indicated in official records obtained from LACDCFS
[c]No physical abuse group consisted of maltreated adolescents who had no instances of physical abuse indicated in their records obtained from LACDCFS
[d]Physical abuse group consisted of maltreated adolescents who had at least one instance of physical indicated in their records obtained from LACDCFS
[e]Comparison group significantly ($p < 0.001$) differs from the maltreated group
[f]Comparison group significantly ($p < 0.01$) differs from no physical abuse group
[g]No physical abuse group significantly ($p < 0.01$) differs from physical abuse group
[h]Comparison group significantly ($p < 0.01$) differs from physical abuse group

At enrollment in the study (Time 1) there were no differences between the maltreated and comparison groups on age ($M = 10.93$ years, $SD = 1.16$), gender (53% male), ethnicity (38% African-American, 39% Latino, 12% Biracial, and 11% Caucasian), and neighborhood characteristics (based on 2000 Census information). There was a difference in living arrangements with 92% of the comparison group living with a biological parent(s) and only 52% of the maltreated group living with a biological parent. The remainder of the maltreated group was living in foster care (i.e., kinship or nonrelative) or with a relative.

Retention The retention rate between Time 1 and Time 2 was 86% ($n = 389$) and between Time 1 and Time 3 was 69% ($n = 313$). Two separate logistic regression analyses were performed to test whether attrition at Time 2 and Time 3 was random. The dependent variable for the attrition analysis was a dichotomous variable (yes/no) indicating attrition at Time 2 and Time 3. Logistic regression analyses indicated that the adolescents who were not seen at Time 2 were more likely to be in the maltreatment group (OR = 4.38, $p < 0.01$; $R^2 = 0.10$) and those not seen at Time 3 were more likely to be Latino (OR = 3.37, $p < 0.01$) and in the maltreatment group (OR = 5.36, $p < 0.01$; $R^2 = 0.19$).

4.2.2 Measures

Community violence exposure The Community Violence Index (CVI) was used to assess adolescents' CVE at Time 2 and Time 3. The CVI was adapted from the Survey of Exposure to Community Violence (SECV; Richters & Saltzman, 1990). The CVI included 19 items that cover a wide variety of violent events that occur within the community. In addition to examining overall CVE, the CVI contains two subscales: direct victimization (9 items: e.g., been beaten up; been robbed) and witnessing (10 items: e.g., seen someone chased; seen someone choked or strangled). Adolescents were instructed to only report incidents that have occurred within the contexts of their neighborhood and their school, and to disregard incidents that have occurred within their home, observed in the media, or been learned through hearsay. For each item, adolescents were asked to indicate if they were exposed to the specific form of violence during their lifetime and during the year prior to the assessment (yes/no). The current study examined exposure during the prior year. Additionally, this study was interested in examining overall CVE, thus, all the items were combined as one scale. Possible scores could range from 0 to 19. Cronbach alphas for the 19 items at Time 2 and Time 3 were .71 and .65, respectively.

Aggressive behavior problems A multi-informant approach was used to assess adolescents' aggressive behavior problems. Adolescents' self-report of aggressive behavior problems was assessed using the Youth Self-Report (YSR; Achenbach & Rescorla, 1991). The YSR is comprised of 112 items. Respondents use a 3-point scale (0, not at all true; 1, somewhat true; 2, very true) to rate how well a series of problems describe them over the past 2 months. The current study used 20 items that comprise the aggressive behavior subscale (e.g., destroys things belonging to others, fights, temper tantrums, physically attacks people). The possible scores for the YSR range from 0 to 40. Cronbach alphas for the YSR at Time 2 and Time 3 were .84 and .87, respectively.

Caregiver report of adolescents' aggressive behavior problems was assessed with the Aggressive Behavior subscale of the Child Behavior Checklist (CBCL: Achenbach & Rescorla, 1991). Like the YSR, the CBCL is comprised of 112 items

using a 3-point response scale (0, not at all true; 1, somewhat true; 2, very true) to rate how well a series of problems describe the adolescents. The aggressive behavior subscale has 20 items (e.g., destroys things belonging to others, fights, temper tantrums, physically attacks people) that correspond to the items on the YSR. The possible scores for CBCL range from 0 to 40. Cronbach alphas for the CBCL at Time 2 and Time 3 were .90, and .90, respectively.

Teacher report of adolescents' aggressive behavior problems in the school setting was assessed using Teacher Checklist (TC: Dodge & Coie, 1987) at Time 2 and Time 3. The TC consisted of 11 items that assess adolescents' use of proactive (e.g., teases and name calls, uses force to dominate others) and reactive aggression (e.g., strikes back when teased, blames others in fights) in a classroom setting. In the current study all 11 items were used as a single measure of adolescents' aggressive behavior problems. Teachers rated items on a 3-point scale assessing the frequency of occurrence (0, almost never happens; 1, in between; 2, happens very often). The possible scores on the TC range from 0 to 22. Cronbach alphas for the TC at Time 2 and Time 3 were .96 and .94, respectively.

Moderators Maltreatment status (non-maltreated comparison vs. maltreated) and maltreatment type (no physical abuse vs. physical abuse) were used as moderators in the current study. Maltreatment status was determined by whether adolescents were in the maltreated or the comparison group upon entry into the larger longitudinal study. The type of maltreatment was determined by careful analysis of the children's case record data using the Maltreatment Case Record Abstraction Instrument (MCRAI) (Trickett, Mennen, Kim, & Sang, 2009). The MCRAI is comprehensive tool for abstracting data on adolescents' maltreatment history from CPS records to allow the categorization of adolescents' maltreatment experiences in quantifiable terms. Details of the process can be found in previous work (Mennen, Kim, Sang, & Trickett, 2010; Negriff, Schneiderman, Smith, Schreyer, & Trickett, 2014; Stevens, Schneiderman, Negriff, Brinkman, & Trickett, 2015; Trickett et al., 2009). According to data from the MCRAI, most of the maltreatment sample experienced neglect in some form (72%), about half of the sample experienced physical abuse (52%) and emotional abuse (49%), while approximately one fifth experienced sexual abuse (19%). On average the participants in the maltreatment group had experienced six types of maltreatment and four referrals to LADCFS. From these data we created two categories of maltreatment type. The physical abuse group included those who had at least one experience of physical abuse in their record regardless of the presence of other types of maltreatment. The no physical abuse group consisted of the remaining adolescents who experienced sexual abuse, neglect, emotional abuse, or caretaker incapacity without any instance of physical abuse.

The comparison and maltreated groups had similar distributions of age and ethnicity but differed significantly regarding gender ($\chi^2(1) = 4.77$, $p < 0.05$) and living arrangement ($\chi^2(3) = 57.97$, $p < 0.001$). As for gender the maltreated group had disproportionately more females than the comparison group. As for living arrangement, disproportionately more adolescents in the comparison group were living

with biological parents than adolescents in the maltreated group. Results are summarized in Table 4.1. Similar patterns were observed between the comparison, no physical abuse, and physical abuse groups. The comparison, no physical abuse, and physical abuse groups differed significantly regarding gender ($\chi^2(2) = 10.06$, $p < 0.01$) and living arrangement at Time 2 ($\chi^2(2) = 50.95$, $p < 0.001$). As for gender, the no physical abuse group had disproportionately more females than the comparison and physical abuse groups. Regarding living arrangement, disproportionately more adolescents in the comparison group were living with biological parent than adolescents in the no physical abuse and physical abuse groups.

Covariates Covariates were chosen based on prior research examining CVE and aggressive behavior problems: age at Time 2, gender, ethnicity (African-American, Latino, Caucasian), and living arrangement at Time 2 (biological parent, non-biological caregiver). Maltreatment status (maltreated, non-maltreated) was used as a covariate in the models examining the associations between the variables for the full sample of adolescents and was not included in the multiple group models.

4.2.3   Data Analyses

Missing data Owing to diligent interview methods, the item-level missing data was kept to a minimum (<1% on all study variables). Item-level missing data were imputed using a multiple imputation method (Rubin, 1987) with NORM software program (Schafer, 1999). As with most prospective longitudinal studies, data for some participants is not available at all time points. Analyzing only those cases with complete data has the potential to produce biased results. Thus, the total sample at Time 2 was used in the analyses (Muthen, Kaplan, & Hollis, 1987) and Full Information Maximum Likelihood (FIML) estimation method (Arbuckle, 1996) was employed to handle variable-level and longitudinal missingness.

Descriptive statistics Mean differences between the comparison and maltreated groups were tested using t-tests. Mean differences between the comparison, no physical abuse and physical abuse groups were tested using one-way ANOVA with post hoc group comparisons.

Substantive analyses/hypothesis testing Structural equation models were used to test the hypotheses using Mplus 6.01 (Muthen & Muthen, 1998–2011). Latent variables were constructed for CVE and aggressive behavior at Time 2 and Time 3 according to Muthen's (1992) strategy. At Time 2, the 19 CVE items were randomly assigned to one of three parcels; two parcels were composed of six items and one parcel was composed of seven items. Each parcel represented the average score of the items assigned to that parcel. These parcels served as indicators of a latent variable representing CVE. Identical parcels were created for the 19 CVE items at Time 3. Latent variables were also constructed for aggressive behavior problems at Time

2 and Time 3. The average scale score for YSR, CBCL, and TC were used as three separate manifest indicators of a latent variable representing adolescents' aggressive behavior problems.

A series of cross-lagged models were tested. A path model was incrementally constructed by adding key paths one at a time and evaluating whether the path significantly improved the fit of the model. First, we tested an autoregressive path only model which served as the baseline model. Next, a model was tested in which a cross-lagged path from Time 2 CVE to Time 3 aggressive behavior was added. Finally, a fully cross-lagged model was tested. The fit for each model was tested to determine the degree of improvement with the addition of the paths compared to the baseline model; chi-square difference tests were used to determine whether each model significantly improved over the baseline autoregressive model. The model that best fit the data was used to address the study hypotheses.

Model fit was evaluated using χ^2 (chi-square) *goodness-of-fit statistic*, the root-mean-square error of approximation (RMSEA), and the comparative fit index (CFI). Overall, a good model fit is indicated by a small χ^2, RMSEA of 0.08 or smaller, and CFI above 0.90 (Browne & Cudeck, 1993; Hu & Bentler, 1999).

Multiple group models were used to test maltreatment status and maltreatment type as moderators. Models were fit simultaneously across groups (i.e., comparison and maltreated; comparison, no physical abuse, and physical abuse). First, an unconstrained model was conducted in which the paths were freely estimated across groups. Next a model in which paths were constrained to be equal was conducted and compared to the unconstrained model. If the fit of the constrained model was significantly worse than the unconstrained model (as determined by a chi-square difference test) then evidence for moderation would be present. Finally, we conducted a series of models in which each path was constrained, in turn, to be equal across the groups; a significant decrement of the fit (as determined by a chi-square difference test) between the single path constrained model and the unconstrained model would indicate that path is moderated by group membership.

4.3 Results

4.3.1 Descriptive Statistics

Means and standard deviations of all study variables for the full sample and separately for adolescents in the non-maltreated comparison, no physical abuse and physical abuse groups can be found in Table 4.2. At Time 2, significant differences were found between the comparison and maltreated groups on caregiver report of aggressive behavior problems ($t(387) = -4.30$, $p < 0.001$), teacher report of aggressive behavior problems ($t(387) = -3.99$, $p < 0.001$), and total aggressive behavior problems ($t(387) = -4.40$, $p < 0.001$). Significant differences were also found between the comparison, no physical abuse, and physical abuse groups on caregiver

Table 4.2 Descriptive statistics for the study variables at Time 2 and Time 3 for the full sample and separately for comparison, maltreated, no physical abuse and physical abuse groups

Variable, M (SD)	Full sample (N = 389)	Comparison (n = 145)	Maltreated (n = 248)	No physical abuse (n = 121)	Physical abuse (n = 127)
T2 YSR aggressive behavior	7.91 (6.05)	7.60 (5.66)	8.08 (6.28)	7.95 (6.02)	8.21 (6.51)
T2 CBCL aggressive behavior[a–c]	7.55 (7.05)	5.54 (5.33)	8.75 (7.68)	7.91 (7.13)	9.44 (8.05)
T2 TC aggressive behavior[a–c]	5.83 (6.00)	4.51 (4.96)	6.41 (6.32)	6.28 (6.58)	6.84 (6.26)
T2 Total aggressive behavior[a,b,d]	21.29 (13.51)	17.65 (10.90)	23.19 (14.47)	22.15 (13.67)	24.49 (15.03)
T2 Total CVE	1.95 (2.08)	1.77 (2.06)	2.06 (2.09)	2.02 (2.24)	2.09 (1.94)
T3 YSR aggressive behavior	8.97 (6.31)	8.36 (5.70)	9.44 (6.71)	9.12 (6.24)	9.68 (7.16)
T3 CBCL aggressive behavior[a,b,d]	6.96 (6.66)	5.00 (4.99)	8.34 (7.30)	7.80 (7.27)	8.88 (7.37)
T3 TC aggressive behavior[d]	4.66 (5.37)	3.70 (4.52)	5.39 (5.83)	5.37 (6.31)	5.24 (5.22)
T3 Total aggressive behavior[a,b,d]	20.59 (13.17)	17.06 (10.10)	23.19 (14.47)	22.16 (14.83)	23.98 (14.06)
T3 Total CVE	1.73 (1.91)	1.61 (1.96)	1.78 (1.75)	1.97 (1.80)	1.55 (1.69)

Note. Differences between the comparison and the maltreated groups were examined using t-tests. Differences between comparison, no physical abuse, and physical abuse groups were examined using ANOVA tests. Post hoc comparisons were examined using Scheffe tests

T Time, *YSR* Youth Self-Report, *CBCL* Child Behavior Checklist, *TC* Teacher Checklist, *CVE* community violence exposure

[**]$p < 0.001$; [*]$p < 0.01$

[a]Comparison group significantly ($p < 0.001$) differs from the maltreated group

[b]Comparison group significantly ($p < 0.01$) differs from no physical abuse group

[c]Comparison group significantly ($p < 0.01$) differs from physical abuse group

[d]Comparison group significantly ($p < 0.01$) differs from the maltreated group

report of aggressive behavior problems ($F(2, 385) = 10.97$, $p < 0.001$), teacher report of aggressive behavior problems ($F(2, 385) = 5.66$, $p < 0.01$), and total aggressive behavior problems ($F(2, 385) = 9.28$, $p < 0.001$). Results of post hoc comparisons indicated that there were significant differences between comparison and no physical abuse group with respect to caregiver report of aggressive behavior problems and total aggressive behavior problems; and between comparison and physical abuse group on caregiver report of aggressive behavior problems, teacher report of aggressive behavior problems, and total aggressive behavior problems. At Time 3, significant differences were found between the comparison and maltreated

groups on caregiver report of aggressive behavior problems ($t(302) = -4.25$, $p < 0.001$), teacher report of aggressive behavior problems ($t(302) = -2.54$, $p < 0.01$), and total aggressive behavior problems ($t(302) = -3.70$, $p < 0.001$). Additionally, significant differences were found between the comparison, no physical abuse, and physical abuse groups on caregiver report of aggressive behavior problems ($F(2, 303) = 10.27$, $p < 0.001$) and total aggressive behavior problems ($F(2, 303) = 8.33$, $p < 0.001$). Results of post hoc comparisons indicated that there were significant differences between the comparison and no physical abuse groups with respect to caregiver report of aggressive behavior problems and total aggressive behavior problems; and between the comparison and physical abuse group on caregiver report of aggressive behavior and total aggressive behavior problems.

4.3.2   Substantive Analyses

Associations for the full sample (Hypothesis 1) The autoregressive paths model fit the data well ($\chi^2(82) = 153.77$; CFI = 0.974; RMSEA = 0.047) which was significantly improved by including the path from CVE at Time 2 to aggressive behavior problems at Time 3 ($\Delta\chi^2 = 12.89$ (1), $p < 0.01$) and then improved again by adding the path from aggressive behavior problems at Time 2 to CVE at Time 3 ($\Delta\chi^2 = 15.12$ (2), $p < 0.01$). The fully cross-lagged model was accepted as the best fitting model and was used to address the second and third hypotheses of the study. As shown in Fig. 4.1, Time 2 CVE did not significantly predict aggressive behavior problems at Time 3 ($\beta = 0.09$, ns) but aggressive behavior problems at Time 2 significantly predicted Time 3 CVE ($\beta = .12$, $p < 0.01$).

Moderation by maltreatment status (Hypothesis 2) Results for the unconstrained model are illustrated in Fig. 4.2. The constrained model differed significantly from the unconstrained model ($\Delta\chi^2 = 25.53$ (4), $p < 0.01$) indicating that child maltreatment status moderated at least one path in the model. Each path was then tested in turn. The cross-lagged path between Time 2 aggressive behavior problems and Time 3 CVE was significantly different between groups ($\Delta\chi^2 = 4.39$ (1), $p < 0.05$). For adolescents in the comparison group the path was significant ($\beta = 0.23$, $p < 0.01$) whereas for the maltreated group the path was not significant ($\beta = 0.08$, ns). The cross-lagged path between Time 2 CVE and Time 3 aggressive behavior problems was also significantly different between groups ($\Delta\chi^2 = 9.25$ (1), $p < 0.01$). For the comparison group the path was significant ($\beta = 0.24$, $p < 0.05$) whereas for the maltreated group the path was not significant ($\beta = 0.06$, ns).

Moderation by child maltreatment type (Hypothesis 3) Results of the unconstrained model are shown in Fig. 4.3. The constrained model differed significantly from the unconstrained model ($\Delta\chi^2 = 39.97$ (8), $p < 0.01$) indicating that at least one path was moderated by maltreatment type. Each path was tested in turn. The cross-lagged parameter between Time 2 aggressive behavior problems and Time 3 CVE
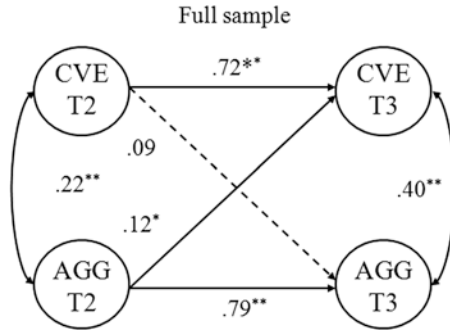
Full sample

Fig. 4.1 Fully cross-lagged model of the longitudinal associations between CVE and aggressive behavior problems for the full sample, controlling for age at T2, gender, ethnicity, maltreatment status, and living arrangement at T2. CVE = community violence exposure, AGG = aggressive behavior problems, T = Time. Standardized path coefficients are presented. Dotted paths indicate that the coefficients were not significant. Manifest variables and covariates were removed for ease of interpretation. $^{**}p < 0.01$. $^{*}p < 0.05$
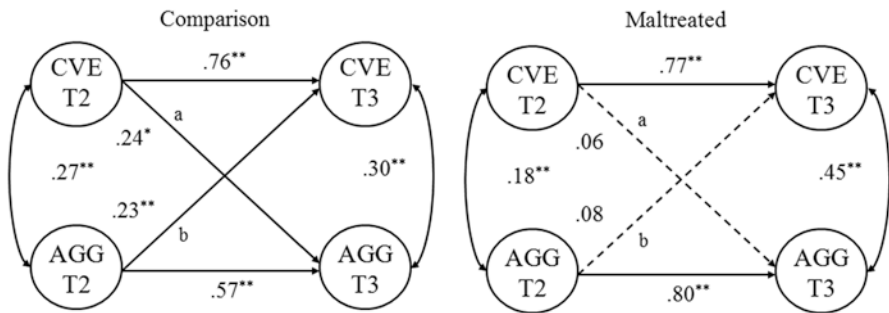
Fig. 4.2 Multiple group models examining maltreatment status (non-maltreated comparison, maltreated) as a moderator on the longitudinal associations between CVE and aggressive behavior problems, controlling for age at T2, gender, ethnicity, and living arrangement at T2. CVE = community violence exposure, AGG = aggressive behavior problems, T = Time. Standardized path coefficients are presented. Dotted paths indicate that the coefficients were not significant. Manifest variables and covariates were removed for ease of interpretation. a = path from CVE T2 to AGG T3 was significantly different between the comparison and maltreated groups ($p < 0.01$). b = path from AGG T2 to CVE T3 was significantly different between the comparison and maltreated groups ($p < 0.05$). $^{**}p < 0.01$. $^{*}p < 0.05$

was significantly different between groups ($\Delta\chi^2 = 13.27$ (2), $p < 0.01$). For the comparison group, the path was significant ($\beta = 0.22$, $p < 0.01$) and marginally significant for the no physical abuse group ($\beta = 0.11$, $p = 0.07$), whereas the path was not significant for the physical abuse group ($\beta = 0.08$, ns). Comparisons between groups indicated that the physical abuse group differed significantly from the comparison group ($\Delta\chi^2 = 4.76$ (1), $p < 0.05$) and the no physical abuse group ($\Delta\chi^2 = 7.60$
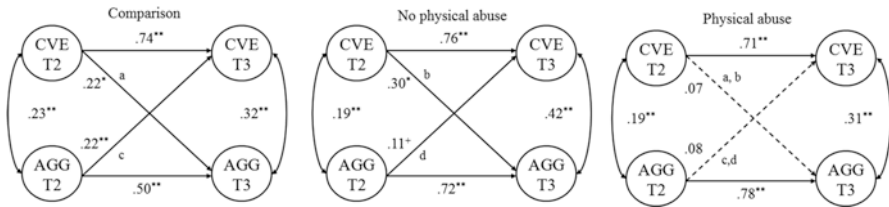
Fig. 4.3 Multiple group models examining maltreatment type (comparison, no physical abuse, physical abuse) as a moderator on the longitudinal associations between CVE and aggressive behavior problems, controlling for age at T2, gender, ethnicity, and living arrangement at T2. CVE = community violence exposure, AGG = aggressive behavior problems, T = Time. Standardized path coefficients are presented. Dotted paths indicate that the coefficients were not significant. Manifest variables and covariates were removed for ease of interpretation. a = path from CVE T2 to AGG T3 was significantly different between the comparison and physical abuse youth ($p < 0.05$). b = path from CVE T2 to AGG T3 was significantly different between the no physical abuse and physical abuse groups ($p < 0.01$). c = path from AGG T2 to CVE T3 was significantly different between the comparison and physical abuse groups ($p < 0.001$). d = path from AGG T2 to CVE T3 was significantly different between the no physical abuse and physical abuse groups ($p < 0.05$). $^{**}p < 0.01$. $^{*}p < 0.05$. $^{+}p = .07$

(1), $p < 0.01$). There were no significant differences between the comparison and no physical abuse groups. The cross-lagged path between Time 2 CVE and Time 3 aggressive behavior problems was also significantly different between groups ($\Delta\chi^2 = 5.92$ (2), $p = 0.05$). The path was significant comparison group ($\beta = 0.24$, $p < 0.05$) and for the no physical abuse group ($\beta = 0.30$, $p < 0.05$) whereas for the physical abuse group the parameter was not significant ($\beta = 0.07$, ns). Comparisons between groups indicated that the physical abuse group differed significantly from the comparison group ($\Delta\chi^2 = 26.7$ (1), $p < 0.001$) and the no physical abuse group ($\Delta\chi^2 = 5.02$ (1), $p < 0.05$). There were no significant differences between the comparison and no physical abuse groups.

4.4 Discussion

4.4.1 Overview of Findings

Our first hypothesis that the longitudinal associations between CVE and aggressive behavior problems were bidirectional was not supported. For the full sample, early CVE did not predict later aggressive behavior problems. This result is contrary to most studies that have found that early CVE predicts later aggressive behavior problems (Gorman-Smith & Tolan, 1998). Early aggressive behavior, however, did predict later CVE. This finding supports a small but growing body of literature

indicating that aggressive behavior problems increase adolescents' risk of CVE and other forms of violence (Lambert et al., 2005; Mrug & Windle, 2009; Skubak Tillyer et al., 2011).

Our second and third hypotheses were partially supported. As for our second hypothesis, early CVE predicted later aggressive behavior problems and early aggressive behavior problems predicted later CVE in the non-maltreated comparison group demonstrating bidirectionality in the longitudinal associations. No significant associations were observed among the maltreated group. Possible reasons for these associations became clearer when examining the support for our third hypothesis. Early CVE predicted later aggressive behavior for the adolescents who did not have a history of physical abuse (no physical abuse and comparison) but not for adolescents with physical abuse. Results of the current study indicated that the effects of CVE and type of child maltreatment combine in outcome-specific ways. For maltreated adolescents without physical abuse and comparison adolescents, early CVE led to aggressive behavior problems and early aggressive behavior problems led to later CVE; demonstrating bidirectionality in the longitudinal associations. No such associations were observed for the physical abuse group.

While the results of both hypotheses support the Cecil et al. (2014) study, the examination of type of maltreatment as a moderator is an advancement over their work as it demonstrates that the experience of physical abuse is key to the associations. A possible explanation for this finding is that maltreated adolescents (especially adolescents who experienced physical abuse) have other experiences that propel them to aggressive behavior that outweigh any effects of CVE. The maltreated adolescents in this sample had significantly higher levels of aggressive behavior at both Time 2 and Time 3 than did the comparison adolescents. This explanation is supported by Boney-McCoy and Finkelhor (1995) and others who argued that the relationally closer a perpetrator of violence is to the victim, the more disadvantageous the outcome is for the victim; thus, violence in the home is more detrimental than other forms of violence, including CVE (Horn & Trickett, 1998; Osofsky et al., 1993). In other words, CVE has little additional influence on adolescents' aggressive behavior problems beyond physical abuse itself.

Additionally, social push might be at play underneath these associations (see Raine, 2002, for a review). That is, both the comparison and maltreated adolescents in the current study experienced similar environmental risks (neighborhood disadvantage) highlighting the possibility that severe stressors (physical abuse) may be more likely than other more moderate stressors (CVE) to overwhelm underlying biological factors that lead to the development of adolescents' aggressive behavior problems (Murray-Close, Nelson, Ostrov, Casas, & Crick, 2016). This explanation was supported in a recent study by Murray-Close, Han, Cicchetti, Crick, and Rogosch (2008). This also underscores the concept of multifinality in which specific risk factors can result in very different outcomes in children (Cicchetti & Rogosch, 1996; Murray-Close et al., 2008).

4.4.2 Implications for Practitioners, Policymakers and Researchers

Clinical practice and assessment These results and the extant literature point to several important practice implications. It is important that all adolescents presenting with aggressive behavior problems in mental health treatment settings have a thorough assessment related to their exposure to both child maltreatment and community violence as possible antecedents to their aggression. Studies have demonstrated, however, that practitioners rarely assess adolescents' exposure to violence outside of the home (Goodman, De Los Reyes, & Bradshaw, 2010) and without this information appropriate treatment conceptualization and planning is not possible. A more routine assessment by practitioners of children and adolescents' experiences around violence exposure, including the use of empirical measures not frequently administered in clinical settings, may lead to the improved accuracy of diagnosis, more comprehensive case conceptualization, and better treatment outcomes for adolescents. While this is an important issue for practitioners in all settings, it is especially critical for those working in community mental health (CMH). CMH settings tend to work with low SES populations who have the highest probability of being exposed to violence in the home and in the community. Graduate training programs must ensure that they prepare the next generation of practitioners to consider how violence exposure relates to symptomatology and how best to assess their clients for exposure. Additionally, CMH agencies and local and state funding entities must make sure that their practitioners also have the appropriate knowledge and skills to assess for violence exposure and integrate it into treatment conceptualization and planning.

Some CVE measures worthy of consideration include the one used in the current study, the SECV (Richters & Saltzman, 1990), the Exposure to Violence (ETV; Selner-O'Hagan, Kindlon, Buka, Raudenbush, & Earls, 1998), Children's Report of Exposure to Violence (CREV; Cooley-Quille, Turner, & Beidel, 1995), Screen for Adolescent Violence Exposure (SAVE; Hastings & Kelley, 1997), and the Conflict Tactics Scale (CTS; Straus, Gelles, & Smith, 1990). While no gold standard exists, these measures have been identified by the National Institute of Mental Health (n.d.) as reliable measures of adolescents' CVE (see http://trans.nih.gov/CEHP/HBPdemo-violence.htm). For practitioners interested in assessing adolescents' exposure to violence across several contexts (e.g., community, school, home), we recommend the Juvenile Victimization Questionnaire (Finkelhor, Ormrod, Turner, & Hamby, 2005). Except for the CTS, all the measures are free to use and can be requested from the respective authors.

Additionally, results support the assertion that intervention strategies for adolescents exposed to violence may vary based on types of exposure experienced. For instance, adolescents who have been exposed to violence and have no history of physical maltreatment may benefit from interventions that focus on helping adolescents cope with violence exposure and address behaviors that place them at risk for

further exposure. For adolescents who have a history of physical abuse, the intervention strategies may focus on the adolescents' reactions to the abuse and strategies to address aggressive behavior. Much more attention is needed in this area from both practitioners and researchers to better understand these associations and whether adolescents respond differently to intervention strategies based on the type of violence exposure.

Policy and research efforts We recommend continuing and expanding the efforts for public health campaigns to increase public awareness of the severity and impact of adolescents' violence exposure with the hope that these will educate community members to recognize the early signs of exposure as well as available resources for intervention. Additionally, these campaigns lower stigma associated with exposure to violence and may also encourage victims to seek help. Our research also points to a need for child welfare agencies to be more explicit in their assessment of the kinds of maltreatment children experience. It has been shown that the official designations often used for referral for services do not capture the totality of adolescents' experiences (Mennen et al., 2010; Stevens et al., 2015). Because those who have physical abuse may have different pathways to aggressive behavior problems, it is important for child maltreatment to be identified and appropriate services made available for those adolescents.

This study adds to the existing literature showing that there is not a linear relationship between exposure to community violence and aggressive behavior problems (Lambert et al., 2005; Mrug & Windle, 2009; Skubak Tillyer et al., 2011). In fact, the associations between CVE and aggressive behavior problems may be better accounted for by criminological and sociological models. For instance, the lifestyle exposure model (Hindelang, Gottfredson, & Garofalo, 1978; Schreck & Fisher, 2004) posits that an adolescent's aggressive lifestyle self-selects into environments and social groups that increase the likelihood that they will be exposed to violence. Additionally, the violence involvement model (Halliday-Boykins & Graham, 2001) posits that violence exposure and aggressive behavior are not sequentially associated with one another but are both manifestations of general involvement in violence that also includes delinquent peer affiliation and positive attitudes towards violence. Future investigations examining the associations between CVE and adolescents' psychosocial problems might use these models to aid their study design to more effectively understand the complex relationships between violence exposure, adolescents' personal and social context, and the resulting outcomes. These models would help inform both better interventions and more effective policies to combat the negative outcomes of adolescents exposed to various forms of violence.

Research on the effectiveness of interventions for adolescents exposed to violence should continue to be funded so that we have better knowledge of which interventions are successful with which specific kinds of problems. While there is a growing body of research on specific interventions for violence exposed adolescents (e.g., Trauma Focused Cognitive Behavioral Therapy (TF-CBT): Deblinger, Stauffer, & Steer, 2001; Trauma Informed Care (TIC): Greeson et al., 2011; Cognitive Behavioral Intervention for Trauma in Schools (CBITS): Jaycox, Stein,

Amaya-Jackson, & Morse, 2007; Alternatives for Families: A Cognitive Behavioral Therapy (AF-CBT): Kolko et al., 2012; Structural Psychotherapy for Adolescents Response to Chronic Stress (SPARCS): DeRosa & Pelcovitz, 2009), the research can be expanded to help us understand whether interventions that are specified for posttraumatic stress symptoms will also be effective for adolescents with exposure to violence and aggressive behavior problems that may not present as posttraumatic stress. Additionally, these intervention strategies are not often available to practitioners who need them the most, again those working directly with adolescents in CMH settings; thus, public policies that adequately fund social service programs for adolescents in vulnerable communities is crucial. Much more work needs to be done in order to improve the lives of these adolescents. There are excellent examples of large scale initiatives to address community violence throughout the U.S. Since 2010, the Office of Juvenile Justice and Delinquency Prevention (OJJDP) and the Centers for Disease Control and Prevention (CDC) have collaborated the Youth Violence Prevention Initiatives: The National Forum on Youth Violence Prevention (Forum), the Community-based Violence Prevention Program (CBVP), and the Defending Childhood Initiative (see https://www.ojjdp.gov/programs/youth-violence-prevention.html). All three initiatives intend to help communities reduce and prevent youth violence through evidence-based and promising programs, practice, and strategies (OJJDP, n.d.). The Youth Violence Prevention Initiatives are currently serving 39 communities across the U.S. These initiatives recognize the impact that violence exposure has on adolescents and that community-based collaborations are the most effective approach to addressing youth violence. The outcomes thus far for all three initiatives seem promising (OJJDP, n.d.). Perhaps these methods will become gold-standard approaches to dealing with youth violence but much more work is needed.

We recommend that graduate training programs stress the value of such evidence-based practices (EBPs) for students who will be working with this population, especially in CMH settings. We also recommend that local and state funders of CMH agencies promote the use of EBPs that are most effective for adolescents affected by their exposure to violence. For readers interested in more information regarding EBPs for adolescents affected by violence and potentially traumatizing events, the CDC's National Centers of Excellence in Youth Violence Prevention (see https://www.cdc.gov/violenceprevention/ACE/index.html), Substance Abuse and Mental Health Services Administration's (SAMHSA) National Registry for Evidence-based Programs and Practices (see http://nrepp.samhsa.gov/landing.aspx), California Evidence-based Clearinghouse for Child Welfare (see http://www.cebc4cw.org/), and the National Child Traumatic Stress Network's (NCTSN) Empirically Supported Treatments and Promising Practices (see http://www.nctsn.org/resources/topics/treatments-that-work) are excellent resources.

Research training and culture shifts Researchers can work to promote their work with practitioners and policymakers highlighting those key research findings that can be used to inform intervention and child welfare policy (Shonkoff, 2000; Toth & Cicchetti, 1993). Several efforts have come about over the past two decades to

bridge these gaps. Professional societies such as the Society for Research on Child Development (SRCD: e.g., University-based Child and Family Policy Consortium: see http://universityconsortium.srcd.org/) and the American Psychological Association (APA: e.g., Public Interest and Government Relations Office: see http://www.apa.org/about/gr/pi/index.aspx) have developed initiatives to train and encourage social scientists to be more socially responsive in regards to their work. Direct federal support through SAMHSA has led to the development and the maintenance of the NCSTN (see http://www.nctsn.org/). The NCSTN has more than 80 funded sites (as well as 150 affiliate members) that not only provide treatment to youth impacted by violence (through the integration of trauma-informed and evidence-based practices) but also provides support and developmental opportunities for professionals working with children and adolescents exposed to violence (e.g., trainings, program development and evaluation, data analysis, policy analysis). Additionally, several universities throughout the U.S. have developed multidisciplinary research and training centers that focus on the intersection of research, practice, and policy. Excellent examples of these centers include Duke University's Center for Child and Family Policy (see https://childandfamilypolicy.duke.edu/), Columbia University's Institute for Child and Family Policy (see http://www.columbia.edu/cu/childpolicy/), the Pennsylvania State University's Social Science Research Institute (see https://ssri.psu.edu), and the University of Rochester's Mount Hope Family Center (see http://www.psych.rochester.edu/MHFC/). Each of these programs is training the next generation of researchers who will be equipped with the skills and abilities to move the field forward. In lieu of formal training opportunities, we encourage researchers to make informal connections within their local communities, specifically with local government and community-based organizations (especially, CMH agencies). This outreach could provide valuable resources for these organizations, produce fruitful collaborative projects, and possibly lead to innovative solutions to the problem of adolescent violence. Future collaborative efforts to bridge the gaps between research, practice and policy will ensure that the benefits of violence research can more effectively impact adolescents, families, and communities.

4.4.3   Limitations and Strengths

The results of this study must be considered in light of several limitations. First, we used only official reports of maltreatment and it is possible that there were instances of maltreatment in the comparison group that were not reported to child welfare and the maltreatment group may have had additional maltreatment that was not reported. We were unable to include adolescents' self-reports of maltreatment experiences and thus unable to examine adolescents' perceptions of their maltreatment and how that might impact the associations examined in the current study. Gaining a better grasp of adolescents' perceptions of their experiences could help determine what contributes to the associations observed. Second, adolescents were sampled from

Los Angeles County zip codes that had high rates of reported child maltreatment and ethnic diversity so may not be representative of the county or the general population. Third, the current study examined overall CVE. Although it was beyond the scope of the current study, it is possible that there were differential associations for witnessing CVE and being a direct victim of CVE. Future research should explore whether the associations examined in this study differ for witnessing and direct victimization. Fourth, the current study did not account for violence exposure and victimization other than CVE and child maltreatment. As stated previously, adolescents exposed to one form are more likely to experience other forms and/or to be re-victimized (Finkelhor et al., 2009). Failure to account for other forms of violence could lead to inflated relationships and an overestimation of how much CVE contributes to problematic outcomes. Fifth, CVE was measured over the previous year while aggressive behavior problems were measured over the previous 2 months. While this is an issue inherent in most CVE studies, it must be considered as a possible threat to internal validity; especially, with analytical models as the ones employed in the current study. Sixth, the average time between Time 2 and Time 3 was 1.60 years with a range of just under 1 year to just over 4 years. For those just under 1 year, it is possible that at Time 3 they were reporting events that they reported at Time 2. As with the previous limitation this too must be considered as a possible threat to internal validity. Finally, there was a considerable amount of attrition from Time 1 through Time 3 (31%). While this amount of attrition is expected and acceptable given the high-risk nature of the sample, consideration should be given to the impact that sample attrition may have had on the results of the study. Analyses indicated that maltreated adolescents (and their caregivers) were more likely to drop out of the study. Perhaps, these adolescents are significantly different from those captured in the current study.

Despite these limitations, the current study is the first to examine the longitudinal associations between CVE and aggressive behavior problems and whether the associations differ based on whether the adolescent was exposed to child maltreatment. The current study's use of the case record abstraction (MCRAI) allowed us to move beyond the usual dichotomy of maltreated versus non-maltreated to examine whether various forms of maltreatment (nonphysical versus physical) have differential impacts on adolescents. Additionally, the careful consideration devoted to obtaining a sample of comparison adolescents from the same communities as the maltreated adolescents allowed us to examine adolescents with and without histories of child maltreatment from the same neighborhoods exposed to similar contextual factors over the same time frames.

4.4.4 Conclusions

Future research should continue to explore the longitudinal associations of CVE, aggressive behavior problems, maltreatment, and other psychosocial problems (depressive symptoms, trauma symptoms, delinquency). Additionally, researchers

should further explore differential associations based on maltreatment experiences and examine what contributes to these differences. Attention should be paid to further elucidating the antecedents leading to adolescents' violence exposure. A better understanding of these relationships could further inform the work of practitioners and policymakers to deal effectively with a serious public health problem.

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Chapter 5
Profile Analysis of Child Sexual Abuse Experiences in Korea: An Exploratory Study

Kihyun Kim, Jae-Won Kim, Bee Ryou, and Jungtae Choi

5.1 Profile Analysis of Child Sexual Abuse Experiences in Korea: An Exploratory Study

5.1.1 Global Perspective on Child Sexual Abuse

Child sexual abuse is a serious public health problem both in the United States and in an international context. According to the latest National Incidence Study (NIS-4) conducted in the United States, using the stringent Harm Standard definition, more than 135,300 children experienced sexual abuse during 1 year. The NIS-4 estimates an incidence rate of 3.8 per 1000 children for females (Sedlak et al., 2010). In the National Intimate Partner and Sexual Violence Survey based on retrospective self-report on childhood sexual abuse, approximately 8% or an estimated ten million girls reported to having experienced rape or attempted rape, which was perpetrated by an acquaintance (43.6%), current or former intimate partner (28.8%), family member (27.7%), person in a position of authority (4.5%), or stranger (10.1%) (Smith et al., 2017).

There is evidence that child sexual abuse is much more widespread internationally than was previously thought. A recent meta-analysis based on 217 publications of the prevalence of child sexual abuse (Stoltenborgh, vanIjzendoorn, Euser, & Bakermans-Kranenburg, 2011) estimated a prevalence rate of 127 per 1000 children in self-report studies and four per 1000 children in informant studies around the

K. Kim (✉) · B. Ryou · J. Choi
Sungkyunkwan University, Department of Social Welfare, Seoul, South Korea
e-mail: kihyun.kim@skku.edu

J.-W. Kim
Seoul National University Hospital, Department of Psychiatry & Behavioral Sciences,
Seoul National University College of Medicine, Seoul, South Korea

world. The lowest rates for both girls (113 per 1000 girls) and boys (41 per 1000 boys) were found in Asia, while the highest rates were found for girls in Australia (215 per 1000 girls) and for boys in Africa (193 per 1000 boys) (Stoltenborgh et al., 2011). It is clear that a substantial proportion of children and adolescents around the world experience sexual trauma during childhood.

Korea is not an exception. In 2015, an estimated 16,651 cases were investigated by Child Protection Service (K-CPS) agencies in Korea, due to alleged child maltreatment (Korean Ministry of Health and Welfare, 2016). An estimated 11,750 (70.4%) children were determined by the agencies to be victims of child abuse and neglect. Child sexual abuse constituted approximately 3.7% of the total child maltreatment cases substantiated by K-CPS agencies. Given the extremely low report rate to K-CPS (1.32 per 1000 children), it is very likely that K-CPS statistics significantly underestimate the actual incidence of child sexual abuse. Survey data estimate higher prevalence and incidence rates of child sexual abuse in Korea than reports to K-CPS. According to a 2013 national survey, the lifetime prevalence rate of sexual violence (i.e., sexual touching, attempted rape, and rape) among women was 10.2%. Out of the women reporting experiences of sexual violence during their lifetime, 30% to 39.3% reported that the violence occurred before age 19 (Korean Ministry of Gender Equality & Family, 2013). The Korean Institute of Criminology (2010) estimated that the number of unreported sexual assault cases in Korea may be 168 times higher than the number of cases reported to legal authorities. This data indicates that child sexual abuse is a serious social problem in Korea.

While a significant portion of Korean children experience sexual abuse, only recently have specialized service systems for victims been created across the country. Briefly, advocacy for victims of sexual violence began in the 1970s, led by civic society as a part of the feminist movement. In 2001, such services were first institutionalized and began to provide integrated services for victims, but the services were largely limited to investigation and medical treatment. In 2004, the first national child advocacy center was established in Korea (Kim, Lee, & Lee, 2014). A national system for providing integrative and quality professional services for sexual abuse victims was recently implemented and is still expanding. To date, 36 service agencies have been established nationwide, although there remains much room for developing and improving services for victims. Development of effective and efficient service models is an ongoing endeavor in Korea (Kim, Lee, & Lee, 2014).

Research on child sexual abuse in Korea is also in the beginning stage. Knowledge on the sequelae and intervention programs for child sexual abuse relies heavily on studies from relatively wealthy countries, mostly from North America. Unfortunately, little is known about the similarities or differences in experiences of child sexual abuse and its impact on children's development in Korea. Moreover, in Korea, there have been virtually no studies to analyze case record data generated from service agencies for research studies. The government releases very basic statistics for the population using victim support programs (e.g., total number of victims using the program during one fiscal year, types of services provided) and does not provide further details on their abuse experiences. Given the inaccuracy of retrospective self-reporting of child sexual abuse experiences (for review, see Hardt & Rutter,

2004) and the strong association between abuse characteristics and service utilization (Horowitz, Putnam, Noll & Trickett, 1997), it is imperative to examine the nature and scope of child sexual abuse experiences in Korea and to analyze abuse characteristics based on a case record review.

5.1.2 *Variability of Child Sexual Abuse Experiences*

In the United States, evidence of the impact of child sexual abuse on development has been accumulating. Trickett, Noll, and Putnam's (2011) longitudinal study was a major contributor to enhance our knowledge on child sexual abuse and its impact on normal development. The study began in 1987 and had many innovative features including, but not limited to: (1) prospective, longitudinal design; (2) a comparison group; (3) intergenerational findings; and (4) a large battery of outcome measures encompassing biological, psychological, cognitive, and social domains. The study had many strengths for elucidating causal relationships between child sexual abuse and later adjustment.

Especially relevant to the present study is the attention Trickett et al. (2011) paid to the variability of child sexual abuse experiences. At the onset of the study, research on child maltreatment was plagued by definitional problems such as lack of common definitions of child abuse and lack of specificity of definitions utilized for published studies. For example, the physical abuse studies used different definitions of physical abuse and thereby recruited very different samples of physically abused children. Most of the studies failed to provide detailed descriptions of physical abuse experiences among the study participants. Operational definitions of physical abuse varied across studies. Perpetrator of abuse, actions inflicted on the child, duration, frequency, and age of onset are all important components constituting abuse experiences. However, all too frequently, the studies used only one dimension (e.g., frequency or action type) of the abuse characteristics in operationalizing abuse experiences, although the characteristics are inter-correlated (Trickett, Noll, Reiffman, & Putnam, 2001) and, in many cases, affect outcomes differently (Herrenkohl, 2005; Trickett, Reiffman, horowitz, & Putnam, 1997; Verrecchia, Fetzer, Lemmon, & Austin, 2011). According to Trickett and her colleagues (Trickett et al., 2001), this lack of consensus and lack of detailed descriptions of abuse explained in large part the inconsistencies in the findings across studies.

The innovation of Trickett et al. (2011) lies in the conceptualization of child sexual abuse experiences presented in their conceptual model. Central to the model was the notion that type of abuse, duration, frequency, relationship to abuser, existence of physical threats co-occurring with abuse, and age of onset would constitute the degree of sexual abuse trauma and impact normal development in complex ways. Their descriptive study of abuse characteristics among the 84 participating girls supported their initial notion of sexual abuse trauma (Trickett et al., 2011). The abuse experiences of the girls were quite varied, although the individual characteristics were correlated with each other. For example, girls who were abused by a

biological father showed longer duration of abuse and earlier onset than the girls whose abuse was perpetrated by a stepfather or other father figure. Furthermore, abuse variables emerged as powerful predictors of utilization of treatment services among the girls (Horowitz, Putnam, Noll, & Trickett, 1997).

Based on the variability of specific abuse characteristics and their intercorrelations, Trickett et al. (2001) conducted a hierarchical cluster analysis and found three different subgroups within the sample: multiple perpetrators, single perpetrator, and biological father. Subgroups showed different developmental trajectories. Specifically, the biological father group consistently showed the most severe symptoms across multiple developmental domains both in short- and long-term. The single perpetrator group demonstrated elevated symptoms at Time 4 (i.e., 7 years after the disclosure of abuse) in comparison with the Time 1 initial assessment, implicating possible sleeper effects of child sexual abuse on the girls' long-term development. The study utilized relatively stringent criteria to define child sexual abuse; only girls who experienced intrafamilial sexual abuse involving genital contact and/or penetration were enrolled in the study. Importantly, even within such a homogeneously-defined group of sexually abused girls, Trickett et al. (2001) showed that there is considerable variability in children's experiences of sexual abuse, and that different subgroups (based on abuse characteristics) demonstrate qualitatively different short- and long-term functioning.

The questions that Trickett and colleagues raised three decades ago have been shared with many other child maltreatment researchers. Several studies have conducted similar lines of research following Trickett and her colleagues' initial conceptualization. For example, McCrae, Chapman, and Christ (2006) conducted Latent Class Analysis (LCA) to create subgroups for 5501 children who were affiliated with child protective services. This study used characteristics of sexual abuse that included: (a) relationships with perpetrator such as parent, parental figure, and other relative; (b) multiple types of maltreatment; (c) prior report; (d) family functioning (e.g., parental history of inter-parental violence, substance abuse, and mental illness); (e) severity and duration; and (f) child factors such as gender and age. The study found that there were four to five profile subgroups in each age group of 3–7, 8–11, and 12–14 years. Based on the profiles found in each age group, the study examined the associations between children's abuse profiles and their psychosocial symptoms. For example, in the group of 3- to 7-year-olds, children with a "DV/MI" profile (i.e., girls investigated for less severe abuse over a short duration and having caregivers with domestic violence issues/mental illness) showed the highest internalizing and externalizing symptoms. In the group of 8- to 11-year-olds, children who fell into the chronic, relative profile (i.e., white girls investigated for less severe abuse by a non-parental relative over a long duration) showed the highest externalizing and Pediatric Trauma Scores (PTS). Finally, in the group of 12- to 14-year-olds, children in the boys profile (i.e., white boys investigated for moderately severe abuse by a parent or parent figure over a long duration) demonstrated the highest internalizing, externalizing, depression, and PTS scores of all classes.

In a similar vein, Hulme and Agrawal (2004) conducted cluster analysis to identify clusters within a sample of women (*n* = 130) who had experienced child sexual abuse. They found seven clusters among their participants: contact intrafamilial

child sexual abuse without force or threat, contact intrafamilial child sexual abuse with force or threat, penetration intrafamilial child sexual abuse without force or threat, penetration intrafamilial child sexual abuse with force or threat, non-contact extrafamilial child sexual abuse without force or threat, contact extrafamilial child sexual abuse without force or threat, and penetration extrafamilial child sexual abuse with force or threat. In both intra- and extra-familial child sexual abuse, women who experienced penetration with threat or force showed high levels of depression as well as physical and psychosocial symptoms. Overall, the number of subgroups and the specific abuse characteristics within each subgroup differed depending on the set of variables entered in the analysis model and the sample characteristics. The results support Trickett and her colleagues' initial conceptualization of child sexual abuse and reiterate the importance of examining within-group variability for advancing our understanding child sexual abuse experiences. Simply categorizing all victims of sexual abuse into one group of "child sexual abuse" might minimize the important nuances of their experiences that may provide insight into their post-trauma functioning.

5.1.3   The Current Study

The goal of this study was to apply Trickett et al.'s (2001) conceptualization of child sexual abuse to Korean children and adolescents who experienced sexual abuse. Only a limited number of qualitative studies have examined types and characteristics of child sexual abuse in Korea (Han, Ku, & Moon, 2015; Han, Moon, & Ku, 2014; Kim, Lee, & Lee, 2014). The Korean National Incidence Study on Sexual Violence and crime statistics are released on a regular basis (Korean Ministry of Gender Equality & Family, 2013). However, they provide only limited information on the characteristics of sexual abuse. Existing studies have indicated that the population who uses intervention services is very different from those whose cases are handled by the police and prosecuted (Kim, Kim, Park, & Ryou, 2016). To help understand child sexual abuse experiences in Korea, this study examined child sexual abuse experiences and the relationship to service utilization. Provision of service is often influenced by agency characteristics (e.g., resource availability, staff competency, and budget; Kim, Lee, & Lee, 2014). This study also considered agency characteristics in understanding the relationship between child sexual abuse characteristics and service utilization.

Given the magnitude and pervasiveness of the problem, it is important to understand subgroups of sexual abuse victims and to apply such knowledge strategically to develop services and facilitate positive adaptation among sexually abused children. The specific research questions of the present study were as follows:

1. Are there subgroups or profiles, based on the specific characteristics of the abuse experienced, that can be identified in a sample of children and adolescents who were sexually abused by various types of perpetrators and had utilized intervention services in Korea?

2. Are these profile groups related to different utilization of intervention services such as medical treatment, psychological counseling, and legal services? Are these relationships still significant after the characteristics of service agencies are considered?

5.2 Method

5.2.1 Case Record Data

The current study utilized case record data from the standardized case management system used by the national sexual violence intervention centers. Overall, out of 36 agencies nationwide (called Sunflower centers), 11 participated in this study. Each center represents eight provinces and one metropolitan city across Korea. In case of Gyeonggi-do and Seoul Metropolitan city, four centers participated in the study. High population density of the regions, where over 40% of total Korean population resided was considered. Cases were allocated to each center based on the total number of cases each center had served in previous year. The participating centers provided 88.6 cases on average, and a total of 947 cases were collected. The centers randomly selected 40 to 121 cases served during the year 2015.

Trained agency staff extracted information on sexual abuse characteristics from the case records using a template developed for this study (Kim et al., 2016). Information gathered for this study is summarized in Table 5.1. The collected information included sexual abuse characteristics (i.e., action type, age of onset, frequency, duration, and relationship to perpetrator), service utilization (i.e., use of medical treatment, psychological counseling, and legal services) as well as demographic information of perpetrators and victims. Additionally, agency information was provided, including center type, annual budget, number of staff, and full-time director's career background and length of employment in the field of sexual abuse.

Out of the 947 cases collected only child sexual abuse cases were analyzed for this study ($N = 381$). Of the cases included, 97.1% were female, and the mean age of the participants was 13.3 ($SD = 3.7$) years, with 35.4% of cases being children younger than 12 years old ($N = 135$). Most of the children attended school (83%), followed by under-school-age (4.5%) and school drop-outs (3.4%). Thirty-eight children (10%) had at least one type of disability.

5.2.2 Analysis Plan

Two-step cluster analysis (Chiu, Fang, Chen, Wang, & Jeris, 2001) was conducted in order to examine the profiles of the sexually abused children based on sexual abuse characteristics. This type of analysis is a person-oriented approach that inductively classifies study samples based on a certain set of sample characteristics.

Table 5.1 A list of study variables

Variables	Values
Sexual abuse characteristics	
Action type inflicted on the child	Penetration, Non-penetrative contact[a], Non- contact[b]
Frequency	Only once, 2–4 times, 5–7 times, 8–10 times, more than 10 times
Duration	One day only, less than 1 month, 1–3 months, 4–6 months, 7–9 months, 10–12 months, 1–2 years, more than 2 years
Age of onset	Age of child when the first incident occurred
Relations to perpetrators	Family member, relative, friends and peer, acquaintances, strangers
Service utilization	
Medical treatment	Gynecology, Psychiatry
Psychological counseling	
Legal services	Police investigation, Lawsuits
Agency characteristics	
Types	Crisis intervention, Integrative services
Number of staff members	
Annual budget	
Full-time director	
Career background	Police officer, Social worker
Length of employment	# of years

Note. Along with the use of psychiatric service, information on diagnoses was also collected
[a]Non-penetrative contact includes genital or breast touching, kissing etc
[b]Non-contact sexual abuse includes coercing children into conducting sexual acts in front of the perpetrator, sexual joking, sending sexual jokes and pictures via electronic communication devices, etc

Two-step cluster analysis identifies grouping by, first, constructing a Cluster Features Tree (CFT) and then by grouping the nodes of CFT using an agglomerative clustering algorithm. To determine the best number of clusters, each of the cluster solutions is compared using Baysian Inference Criteria (BIC) or the Akaike Information Criterion (AIC) as the clustering criterion. Two-step cluster analysis uses log-likelihood distance and a function, which allows two different levels of variables in the same model. For this analysis, two continuous variables (i.e., age of onset, frequency and duration of abuse) and two categorical variables (i.e., type of abuse and relationship with perpetrator) were entered into the model. This study named each subgroup derived from the analysis as a profile group. In order to examine characteristics of each profile group, we conducted and presented descriptive statistics of each group (Crocetti, Rubini, Luyckx, & Meeus, 2008; de Graaf, Vanwesenbeeck, Meijer, Woertman, & Meeus, 2009; Silk, Steinberg, & Morris, 2003; Trickett et al., 2001).

Hierarchical linear modeling (HLM: Raudenbush & Bryk, 2002) was used to examine the association between subgroups and service utilization, after accounting for the agency characteristics. Hierarchical linear modeling is a statistical analysis of data sets with a hierarchical structure (Bryk & Raudenbush, 1992). A data set is regarded as having a hierarchical structure when one unit of observation (Level 1: e.g., individual) is nested within another unit (Level 2: e.g., agency, community, organization) (Reise & Duan, 1999). For this analysis, two levels of hierarchical linear models for medical, psychological counseling, and legal services utilization were assumed. The first-level model included profile groups (based on abuse characteristics) and individual demographic information such as gender; the second-level model consisted of agency characteristics as predictor variables. Modeling began with construction of an unconditional model that included only service utilization (no predictor variables). Because service utilization was coded as a binary variable, logistic (Bernolli) HLM modeling was used. Moreover, since the effect of each predictor variable was expected to be common across agencies, fixed-effects models were employed.

5.3 Results

5.3.1 Descriptive Statistics of Sexual Abuse Characteristics

Table 5.2 describes sexual abuse characteristics among the 381 sexually abused children. Overall, 41.5% of the abused children experienced penetration. Non-penetrative contact (e.g., genital or breast touching) comprised almost half of the sample. In terms of relationship to perpetrator, a stranger was involved for only 17.1% of the participants. The most frequent type of perpetrator was a friend or acquaintance (24.7% and 29.4%, respectively). Also, we found that the detailed sexual abuse characteristics differed depending on whether the sexual abuse began during childhood (0–12 years) or adolescence (13–18 years). Specifically, sexual abuse experienced among children was more frequent and of a longer duration than that of adolescents. Family or relative perpetrators were more common among child victims compared with adolescents. Rate of penetration was higher among adolescents.

5.3.2 Abuse Characteristics and Development of Profile Groups

Table 5.3 presents profile groups in the 381 cases based on the characteristics of child sexual abuse (relationship to perpetrator, action type, frequency, duration, and age of onset). The results identified three profile groups among 381 child and adolescent victims.

Table 5.2 Descriptive statistics of sexual abuse characteristics for the sample

		Total (n = 381)		Children (0 to 12 yrs.) (n = 135)		Adolescents (13 to 18 yrs.) (n = 246)		
		M	SD	M	SD	M	SD	t-test
Age of onset		13.3	3.7	9.2	2.6	15.6	1.6	29.12***
Frequency		2.0	1.7	2.4	1.9	1.9	1.6	2.6*
Duration		2.1	2.0	2.5	2.2	1.9	1.8	2.4*
		N	%	N	%	N	%	x^2
Types of abuse								200.1***
Penetration		158	41.5	34	25.2	124	50.4	
Non-penetrative contact		186	48.8	97	71.9	89	36.2	
Non-contact		37	9.7	4	3.0	33	13.4	
Relation to perpetrator								154.2***
Family and relatives		62	16.3	37	27.4	25	10.2	
Friends and peers		94	24.7	23	17.0	71	28.9	
Acquaintances		112	29.4	38	28.1	74	30.0	
Strangers		65	17.1	20	14.8	45	18.3	

*$p \leq 0.05$; **$p \leq 0.01$; ***$p \leq 0.001$

The profile 1 subgroup ($n = 45$) showed high rates of penetration (42.5%) and non-penetrative contact (57.5%), which were mainly perpetrated by family members and relatives (97.8%). Thus, we called this profile group the familial abuse group. The profile 2 subgroup ($n = 125$) showed the highest rate of penetration (76.8%), which was perpetrated by non-familial members such as friends and peers (43.2%) or acquaintances (40.0%). This group was thus labeled the non-familial sexual abuse profile. Finally, the profile 3 group ($n = 100$) showed the highest rate of non-penetrative contact, which were perpetrated by strangers (38.0%) and acquaintances (36.0%), followed by family or relative (26.0%). Thus, this group was labeled as the non-penetrative contact profile subgroup. Among these three profile subgroups, the familial abuse profile demonstrated the earliest age of onset ($m = 11.2$, $sd = 4.2$), more frequent abuse ($m = 3.8$, $sd = 2.1$), and longer duration ($m = 4.7$, $sd = 2.7$).

5.3.3 Profile Groups and Service Utilization

Table 5.4 presents descriptive statistics of service utilization among the abused children. Overall, 43.0% of the abused children received medical treatment, with 33.1% referred to Gynecology and 16.8% to Psychiatry. Over half of the children (60.9%) who visited Psychiatry received a diagnosis. The most frequent diagnoses were Post-Traumatic Stress Disorder (38.4%) and Acute Stress Disorder (30.7%). In addition, 22.3% of the abused children received psychosocial intervention. Finally, 87.1% utilized legal services, with 60.6% filing a lawsuit against their perpetrator.

Table 5.3 Characteristics of sexual abuse for profile groups

	Profile 1: familial (n = 45)		Profile 2: non-familial (n = 125)		Profile 3: non-penetrative (n = 100)	
	M	SD	M	SD	M	SD
Age of onset	11.2[b]	4.2	14.2[c]	2.4	12.6[b]	3.5
Frequency	3.8[bc]	2.1	2.2[ac]	1.8	1.3[ab]	0.8
Duration	4.7[bc]	2.7	2.1[ac]	1.8	1.3[ab]	0.9
	N	%	N	%	N	%
Types of abuse						
Penetration	19	42.5	96	76.8	0	0.0
Non-penetrative contact	26	57.5	8	6.4	100	100
Non-contact	0	0.0	21	16.8	0	0.0
Relationships w/ perpetrators						
Family and relatives	44	97.8	0	0[a]	26	26.0
Friends and peers	0	0.0	54	43.2	0	0.0
Acquaintances	1	2.2	51	40.8	36	36.0
Strangers	0	0.0	20	16.0	38	38.0

Bonferroni correction employed for group contrasts
*$p \leq 0.05$; **$p \leq 0.01$; ***$p \leq 0.001$
[a]Different from Profile 1, $p < 0.05$
[b]Different from Profile 2, $p < 0.05$
[c]Different from Profile 3, $p < 0.05$

The results also indicated differences in service utilization among the profile subgroups. In terms of medical treatment, familial sexual abuse and non-familial sexual abuse profiles showed higher rates of service utilization than non-penetrative contact profile. Both familial sexual abuse and non-familial abuse profiles received more gynecological and psychiatric treatment than the non-penetrative contact profile. The familial sexual abuse profile also received more psychological counseling and legal services than the non-penetrative contact profile.

In terms of agency characteristics, a majority of full-time directors' career background was social worker (72.7%), with a mean length of employment in the field of sexual abuse of 8.4 years. Among the centers, the average number of staff members was 14.1, and the average annual budget in the year 2015 was $391,322 dollars. Table 5.5 presents the results of HLM analysis conducted in order to investigate whether each profile subgroup was related to medical, psychological, and legal service utilization even after accounting for agency characteristics. Profile subgroup was still a significant predictor of service utilization after accounting for the set of agency characteristics. The familial abuse subgroup received significantly more services in all three areas compared to the non-penetrative contact profile. Differences between familial abuse and non-familial abuse profile subgroups were negligible. Among the agency characteristics, type of agency and full-time director's features were significantly associated with the abused children's service utilization. When the children visited the agency providing integrated services, they received more

Table 5.4 Descriptive statistics of profile groups and service utilization

	Total		Profile1: familial		Profile2: non-familial		Profile3: non-penetrative		
Services	N	%	N	%	N	%	N	%	x^2
Medical	164	43.0	24	53.3	73	58.4	11	11	56.08***
Gynecology	126	33.1	19	42.2	62	49.6	4	4.0	56.44***
Psychiatry	64	16.8	9	20.0	23	18.4	8	8.0	5.92*
Diagnoses(y/n)[a]	39	60.9	7	77.6	16	69.5	6	75.0	3.98
PTSD	15	38.4	2	28.5	7	43.7	1	16.6	
ASD	12	30.7	2	28.5	5	31.2	4	66.6	
AD	5	12.8	2	28.5	1	6.2	1	16.6	
Depression	4	10.2	0	0.0	2	12.5	0	0.0	
ADHD	1	2.5	1	14.2	0	0.0	0	0.0	
ID	1	2.5	0	0.0	0	0.0	0	0.0	
Insomnia	1	2.5	0	0.0	1	6.2	0	0.0	
Psychological counseling	85	22.3	14	31.1	22	17.6	21	21.0	3.62
Legal	332	87.1	39	86.7	108	86.4	89	89.0	0.36
Investigation	329	86.4	38	84.4	108	86.4	89	89.0	0.65
Lawsuits	231	60.6	32	71.1	73	58.4	69	69.0	3.77

Note. [a]*PTSD* Post-Traumatic Stress Disorder, *ASD* Acute Stress Disorder, *AD* Adjustment Disorder, *ADHD* Attention Deficit Hyperactivity Disorder, *ID* intellectual disability
*$p \leq 0.05$; **$p \leq 0.01$; ***$p \leq 0.001$

medical, psychological counseling, and legal services. The longer the full-time director's length of employment was, the more psychological counseling services were provided for children. Number of staff and annual budget of the agency were not related to the abused children's service utilization.

5.4   Discussion

Child sexual abuse is a significant problem in the U.S. and around the world; unfortunately the cross-cultural similarities or differences in child sexual abuse have received limited attention. Knowledge about child sexual abuse heavily depends on research studies mostly conducted in the U.S. This study explored characteristics of child sexual abuse in Korea, and examined the profiles of sexually abused children using case record data generated from national intervention centers for sexual violence.

Supporting Trickett and her colleague's initial notion of child sexual abuse, actual experiences of abused children were quite varied. Among the Korean children who utilized intervention services for sexually abused children, almost half experienced non-penetrative sexual assault and a stranger was involved in only

Table 5.5 Results from hierarchical linear model (HLM) analysis

	Medical service		Psychological counseling		Legal service	
	Coef.(SE)	Odds ratio	Coef.(SE)	Odds ratio	Coef.(SE)	Odds ratio
Agency level						
Constant	−0.34(0.2)	0.71	−1.19(0.2)	0.30	1.68(0.2)	5.38
Types of Agency	−2.64(0.7)**	0.07	1.68(0.6)*	5.38	1.82(0.6)*	6.21
Number of Staff	−0.05(0.1)	0.94	0.24(0.1)	0.77	−0.12(0.5)	0.88
Annual budget	0.01(0.0)	1.00	0.01(0.0)	1.00	−0.00(0.0)	0.99
Director Career background	1.99(0.6)*	3.30	−0.74(0.1)	0.47	−0.12(0.4)	1.13
Length of employment	0.01(0.0)	1.00	0.01(0.1)*	1.01	0.01(0.1)	1.00
Individual level						
Gender	−0.20(0.4)	0.89	−0.61(0.3)	0.54	0.69(0.5)	1.99
Profile 2: non-familial	0.15(0.2)	1.17	−0.53(0.2)	0.58	−0.14(0.1)	0.86
Profile 3: non-penetrative	−1.36(0.2)***	0.25	−0.62(0.2)**	0.51	−0.75(0.3)*	0.47
ICC	0.34		0.23		0.25	
Reliability estimate	0.86		0.80		0.68	
Variance component (*p*)	1.7(0.01)		1.0 (0.05)		1.1(0.04)	

Note. Types of agency (0 = crisis, 1 = integrated), Full time-director's career background (0 = Police officer, 1 = Social worker). Profile 1 is a reference group
*$p \leq 0.05$; **$p \leq 0.01$; ***$p \leq 0.001$

17.7% of the cases. Experiences of sexual abuse considerably differed between childhood- and adolescence-onset. Significant differences between children under and over 13 years were noted in almost all of the abuse characteristics studied.

There are not many studies providing detailed characteristics of child sexual abuse across countries. Putting the present findings in international context is challenging. In the NIS-4 (Sedlak et al., 2010) conducted in the U.S., 37% of sexually abused children were abused by a biological parent and 23% by a non-biological parent or parent's partner. The remaining 40% were abused by a person other than a parent or parental figure. One study examined detailed characteristics using Child Protective Services case record data in the United States (Negriff, Schneiderman, Smith, Schreyer, & Trickett, 2014). The study reported that about 40% of children had experienced penetration out of 60 cases showing some indication of sexual abuse. In these cases, 50% of male perpetrators were a father, father figure, or relative. Unrelated males comprised the other half of the perpetrators, including mother's non-live-in romantic partner, other youth, a parent's coworker, school bus driver, older sibling's friend, romantic partner of relative, and neighbor. Overall, the rate of penetration was comparable between the current findings from Korea and the statistics from the U.S., while the proportion of familial abusers was higher in the U.S. data.

Various indices of abuse characteristics were inter-correlated. Relation to perpetrator and specific actions inflicted on the child were found to be important factors in determining the profiles or subgroups of sexually abused children. The results based on the service agency data in Korea yielded three different profiles of the sexually abused children. The profiles were moderately related to the services children received. These relationships were significant even after the characteristics of service agencies were taken into account. The results suggest that sexual abuse characteristics may be a potent determinant of service use.

This study found three distinctive subgroups of sexually abused children based on the case record data in Korea, supporting the notion of variability of child sexual abuse experiences. Each profile was distinguished mostly by relation to perpetrator and type of action inflicted on the child. There are not many studies that have conducted profile analyses based on child sexual abuse characteristics. Existing studies yield different numbers of subgroups depending on sample characteristics, the research definition of child sexual abuse, and variables included in the analysis model. For example, Trickett and colleague's study (2001) found three profiles, while Hulme and Agrawal (2004) showed seven subgroups of child sexual abuse experiences. McCrae and her colleagues (2006) found four to five profiles, which differed by victim age. In McCrae et al. (2006), the researchers included other major risk factors (e.g., other types of maltreatment, domestic violence, parent mental illness) along with abuse characteristics in their analysis model. Given the nature of child maltreatment co-occurring with other environmental risks (Evans, 2003; Sameroff, 1998), examining child sexual abuse characteristics with other major environmental risks has potential to provide newer insights both for the scientific community and the field in general. Although the studies yield different results, they commonly found relationship with perpetrator and action type to be important factors in determining abuse profile.

In this study, 16.8% of the abused children in Korea were referred to psychiatry. Among the children referred to psychiatry, 61% were diagnosed, with PTSD and ASD being the most common diagnoses (69.1%), followed by adjustment disorder (12.8%) and depression (10.2%). Yet only 22.3% of the children received some psychological counseling. Significant differences were detected across profile subgroups with regard to use of medical treatment. After controlling for agency characteristics, we found that the non-penetrative contact profile received less psychosocial counseling, legal services, and medical treatment than the familial sexual abuse profile.

It is premature to conclude whether sexually abused children receive sufficient mental health services in Korea based solely on this study. One study conducted in the U.S. estimated that nearly half (47.9%) of the youths aged 2–14 years who had been the subject of a completed child welfare investigation had clinically significant emotional or behavioral problems (Burns et al., 2004), but only 25% of the troubled youths received mental health services during the year prior to the study. In Korea, no studies have conducted comprehensive and systemic assessment of mental health needs among sexually abused children using intervention services.

5.4.1 Implications for Practice, Programs, and Policy

First of all, a clearer and consistent definition of child sexual abuse is necessary. National intervention centers in Korean operate based on the Sexual Violence Prevention and Victim Protection Act (2011). According to the Act, sexual violence includes rape and molestation (sexual touching) attempted or completed for the purpose of sexual exploitation or sex trafficking. The same Act also includes lewd acts in public as a sexual violence. In a similar vein, the Act on special cases concerning punishment for sexual violence also specifies the lewd acts via communication media and photographing as an important sexual crime. By doing so, the centers provide services for both contact and non-contact cases. National intervention centers are designed to provide services for the sexual violence victims who are referred to or walk in intervention centers. As the current study shows, most of the cases involve direct contact with the perpetrators (90.3%). But the data included 9.7% of non-contact cases ($n = 37$). Out of thirty-seven non-contact cases, cases using communication media and photographing comprise 87% of the non-contact cases.

In addition to the legal definitions, the administration allows a certain extent of discretion to individual agencies over which cases to intake. Recently, sexual violence using communication media and camera is increasing, which can contribute for overload of local agencies. Whether national intervention centers should provide services for non-contact abuse is controversial and currently no clear guideline exists for these cases. Clear definition of sexual abuse and guidelines for service provision for this group are imperative in Korea.

Second, this study failed to find significant differences in terms of service provision between familial abuse and non-familial abuse. This is problematic, in that service needs between two profiles may be vastly different. We examined the types of services that exist in case records data, which reflected types of services that national intervention centers currently provide for the victims and their families. It is expected that service needs differ among the three profiles. Especially, in cases of familial sexual abuse profile, intensive family preservation or substitute services might be essential. Currently, in Korea, national intervention centers for sexual violence are serving sexually abused children and their families, rather than child protective services. Usually, two types of agencies collaborate for serving many child sexual abuse cases. Often, these collaborations are hampered for a number of reasons. National intervention centers are more oriented toward crisis intervention and treatment, while K-CPS focuses on investigation and psychosocial interventions based on a more holistic approach. Policy makers and administrators need to pay more attention to the strategies used to facilitate collaboration between two independent services in Korea, or to integrate these services for the familial sexual abuse profile.

The present study suggests that programs supporting child victims of sexual abuse need to be diversified according to profile groups. At the policy level, the results reiterate the importance of developing specialized centers serving each profile group, which will facilitate research and program development for different profile groups. Administrators need to allocate agency resources differently for different profile groups and to train personnel to gain expertise in each profile group.

Finally, in Korea, there is no standardized service protocol to assess children's mental health needs or to provide relevant services. As of now, mental health services are heavily dependent on staff sensitivity to mental health needs as the current study results showed. Also, policy makers and administrators need to pay more attention to developing culturally-sensitive trauma-informed mental health treatments tailored to sexually abused children and their families. One of the most potent barriers to using mental health services among this population indicates stigma of mental health treatment in Korea (Kim, Lee, Lee, & Ryou, 2014). Such treatment model should address their concerns about stigma and include education for the families as well as training for professionals in order to successfully implement the program and improve service quality among this population.

5.4.2 Implications for Research

The current study suggests several important areas for future research. First of all, while understanding children's sexual abuse experiences and their profiles has potential to advance theory and program development, studies on their experiences are at infantile stage in Korea. More studies are needed to advance our understanding of children's sexual abuse experiences. In addition, future research in Korea should involve accurate assessment of mental health needs among this population. Given the distinctions of the three profiles, extensive assessments for their service needs of each profile members are also required.

Finally, this study calls for international efforts to research children's sexual abuse experiences and their implications for later adjustments as well as development of intervention programs across countries. The current study found more similarities than differences with regard to children's sexual abuse experiences. More studies are needed to build the knowledge base for cross-cultural differences in child sexual abuse. Specifically, combining data with common measures or definitions of child sexual abuse across countries may be a basic, fundamental step to advance the study of cross-cultural similarities or differences in child sexual abuse.

5.4.3 Caveats

This is the first study in Korea to analyze case record data generated from national intervention centers for sexual violence and is exploratory in nature. Eleven of 36 agencies nationwide participated in the study, each representing an individual province. However, this number might not be large enough to allow sufficient variability in the Level 2 analysis in HLM. Substantial information on the detailed abuse information was missing in the case management system. Often, the abuse information in the case management system was limited to index incident that led the children and families to get involved with the system. Future research should seek to

diversify data sources. Data abstraction of case records and interviews with children on their abuse experiences will provide more comprehensive views of abuse experiences.

This study is part of a Korean longitudinal study on the impact of sexual violence on mental health sequelae. Various risk and protective factors related to victims' post-abuse adjustments have been hypothesized. A large battery of outcome measures will be administered. Scientific knowledge from the study will enhance our understanding of cross-cultural similarities and differences of child sexual abuse and later adjustments. It will also foster the development of more individualized services tailored to victim needs and to improvement of a service delivery system for sexually abused children and families in Korea.

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Chapter 6
The Policy and Practice Implications of Child Maltreatment Research: The Legacy of Penelope K. Trickett

Jennie G. Noll, Elizabeth J. Susman, Karen Appleyard Carmody, and Jonathan M. Reader

Until Dr. Trickett's landmark studies, the majority of findings connecting child maltreatment to deleterious outcomes were derived from cross-sectional, short-term, or adult retrospective study designs severely limiting scientific credibility and causal inferences. Studies focused on health outcomes spanning more than one developmental period were exceedingly rare resulting in very little knowledge about the optimal timing for intervention or windows of particular malleability that would be ripe for the promotion of resilience and reversibility. Moreover, the mechanisms involved in explaining deleterious health outcomes were poorly understood and severely understudied. This lack of knowledge has hampered our ability to articulate viable targets for intervention and to implore increased public spending on universal and selective prevention as well as clinical intervention. Partially based on some of Dr. Trickett's early work, the 2014 Institute of Medicine (IOM) report put forth guidelines for future research that is high quality, longitudinal, and focused on the pathways to long-term developmental and physical health problems for victims and thus a treatise for better science that will lend itself to more convincing arguments for spending early to save costs later.

J. G. Noll (✉) · E. J. Susman · J. M. Reader
The Pennsylvania State University, University Park, PA, USA
e-mail: jgn3@psu.edu

K. A. Carmody
Duke University, Durham, NC, USA

6.1 The Public Health Cost of Child Maltreatment

The Centers for Disease Control and Prevention (CDC) estimate the aggregate life-time economic burden incurred by child maltreatment is $124 billion (Fang, Brown, Florence, & Mercy, 2012), underscoring the public health impact of maltreatment. Yet these cost burden estimates are likely substantially underestimated as they do not fully account for the myriad of sequelae that can set the stage for persisting adversity that Dr. Trickett and her colleagues have highlighted in their prospective studies, including risky sexual behaviors (Noll, Trickett, & Putnam, 2003), obesity (Noll, Zeller, Trickett, & Putnam, 2007), HPA dysregulation (Trickett, Noll, Susman, Shenk, & Putnam, 2010), cognitive deficits (Noll et al., 2010), and even the intergenerational impact of abuse (Kim, Trickett, & Putnam, 2010; Noll, Trickett, Harris, & Putnam, 2009). It is imperative that cost estimates be accurate not only so that the economic impact of child maltreatment can be fully understood but also so that the cost benefits and return on investment of prevention and early intervention efforts can be quantified. Dr. Trickett's work, extended through the papers included in this volume, entreats such early expenditures to stave off the public health costs that will be incurred by this vulnerable and sizable segment of our population. Indeed, over 1 million children are abused or neglected each year in the USA (Sedlak et al., 2010), and over 13% of children will be victims of maltreatment before their 18th birthday (Wildeman et al., 2014). To put these figures into context with other childhood public health problems, the rate of maltreatment is nearly twice the rate of asthma (7.8%; Centers for Disease Control and Prevention, 2017) and nearly on par with childhood obesity epidemic (17%; Ogden et al., 2016). Almost as many children die of child maltreatment each year as die from all childhood cancers combined (Ilves, Lintrop, Talvik, Sisko, & Talvik, 2010). Finally, maltreated adolescent females become teenage mothers at five times the national average (Noll & Shenk, 2013) underscoring how, if not prevented or treated, maltreatment will continue to be a significant contributor to major public health issues.

6.2 The Research to Practice and Policy Gap

The proliferation of child maltreatment research in the past two decades is astounding. The number of articles published per decade has tripled, rising from approximately 8000 articles in the 1980's to nearly 25,000 in the first decade of the twenty-first century (Stroud & Peterson, 2012). The field's work has been influenced heavily by the advances and innovations in theory, methodology, and measures by Dr. Trickett and significant others. Yet there remains a staggering lag between good science and policies and practice fully implementing the implications of this science, leading to a gap between our knowledge of effective approaches and treatments and what is actually being received by families and consumers in the field (Fixsen, Naoom, Blase, Friedman, & Wallace, 2005). The Institute of Medicine summarized the disconnect between medical research and practice as "not just a

gap, but a chasm" (2001, p. 1). Several major reports, including the recent IOM study on child abuse and neglect (2014), review these gaps and call for improvements in efficiency and effectiveness in policies and programs.

Numerous well-documented barriers sustain the research to practice gap. Factors affecting implementation of evidence-based strategies range from community (funding, politics, policies) to organization (climate and readiness for change, supportive leadership, and administration), to provider (perceived need for and benefit of the innovation, skills, and education), and to the innovation/strategy itself (compatibility and adaptability) (Durlak & Dupre, 2008; Fixsen et al., 2005; Stroud & Peterson, 2012). In order to reduce barriers and bridge the gap, broad-based changes are needed, including organizational supports for implementing evidence-based practices (assessing readiness for change, providing decision making support), provider supports (e.g., workforce training and consultation), and developing tools and interventions that lend themselves to implementation in community settings (e.g., technology, shorter interventions) (Stroud & Peterson, 2012).

In the area of child maltreatment, effective policies and practices based on sound science are needed, according to the recent IOM study (2014). In this Discussion section, we provide an overview of key federal policies and services which address prevention and treatment services for child maltreatment and link them to key findings from Dr. Trickett's portfolio of work and those of the papers in this volume that extend this body of knowledge. The papers included in this volume utilized stringent methodologies (either from Dr. Trickett's previous studies or from extensions of her methodological expertise) to showcase the impact of maltreatment in ways that have significant practice and policy implications.

6.3 Policies and Services for Victims of Child Maltreatment

There are many existing acts of legislation that benefit maltreatment victims and those who are at risk of being maltreated. Sustaining these acts will require sound empirical evidence to demonstrate their impact and necessity. For example, the Child Abuse Prevention and Treatment Act, known as CAPTA, was signed into law by President Richard Nixon on January 31, 1974 (CAPTA P.L. 93–247). The purpose of the Act was to provide funding for the prevention, identification, and treatment of child abuse and neglect. The Act also created federal grant programs to states to support new prevention, assessment, investigation, prosecution, and treatment activities. The original law has been amended numerous times, including under Title VI, Subtitle F of the Stewart B. McKinney Homeless Assistance Act Amendments of 1990, authorizing matching grants to state and local agencies for the prevention of child abuse. The CAPTA Reauthorization Act of 2010 was signed on December 20, 2010 and increased resources adoption of children in foster care (CAPTA Reauthorization Act of 2010, P.L. 111–320). In 2011, the Child and Family Services Improvement and Innovation Act revised required services for children in foster care, including requiring states to outline how they would address the monitoring and treatment of emotional trauma associated with maltreatment as well as

placement in care. For over 40 years, CAPTA has functioned as a key mandate for states to ensure that abuse and neglect remains at the forefront of policy-makers legislative activities (Child Welfare Information Gateway, 2016). By fostering multi-sector approaches and partnerships, CAPTA resulted in a keen focus on reducing risk and enhancing child protection and abuse prevention. At the time of writing, CAPTA will be up for reauthorization by Congress in the coming fiscal year (FY2019). Its reauthorization will be essential to the continuance of prevention efforts and to ensuring that states receive adequate funding to maintain resources that will aid the child welfare system to care for our most vulnerable children. The lack of a fully funded reauthorization will have devastating consequences. Much of Dr. Trickett's work showcases the need for CAPTA and how it dissolution would deleteriously impact the health and well-being of hundreds of thousands of children each year who would otherwise benefit by it being sustained.

State child welfare agencies are responsible for the safety and well-being of children under their care and connecting them to a permanent and safe home if they cannot be reunited with their biological parents. Agencies must also ensure that the health needs of these children are met. While Title IV-E of the Social Security Act provides federal funding for child welfare assistance of children who have been removed from their homes, these funds may not be used for mental and physical health. Medicaid is the federal assistance program that can be used for these unmet needs and an average of one million children are eligible for Medicaid each year based on their receipt of certain child welfare assistance. As Dr. Trickett's work thoroughly details, maltreated children have highly complex health needs, including psychopathology and disordered behavior, risky sexual behaviors, physical injuries (including later revictimization), cognitive and language delays, stress hormone (HPA axis) dysregulation, obesity, disordered sleep, and accelerated pubertal development, and preterm delivery (Trickett, Noll, & Putnam, 2011), that require an array of specialized services. As a result, the average Medicaid spending for children with a history of child maltreatment is much higher than that of most other children enrolled in Medicaid. Expenditures include basic physical health wellness visits, outpatient treatments (including trauma treatments), psychotropic medications, medication management, outpatient substance use treatment, family therapy, psychological evaluations, psychosocial rehabilitation, and targeted case management. Cuts to Medicaid will decrease wellness opportunities for abused and neglected children, significantly curtailing the likelihood that they recover adequately from trauma and precluding the probability that they can lead healthy and productive lives.

6.4   Implications of Research Findings in This Volume for Policy and Practice

Findings from the chapters in this volume have important implications for policy and practice that may help to bridge the research to policy and practice divide across multiple areas: (1) assessment and evaluation of maltreatment, (2) maltreatment and violence prevention, and (3) physical and mental health treatment and services.

They also speak to the cross-cultural matters that deserve ongoing attention in the policy and practice arena.

Assessment and Evaluation of Child Maltreatment A guiding principle that has emerged from the maltreatment science is the value and importance of multidisciplinary assessments of child maltreatment, including assessing and determining service needs across the various levels of the child's social ecology (child, family, school, community) (Cicchetti, 2004). In support of such approaches, the Peckins et al. paper underscores the need for the expansion of the Child Advocacy Center (CAC) model. The CAC is a national approach, currently operating in 25 US states, for improving the outcomes for children who undergo a child abuse investigation (Boeskin, Edwards, Laird, & Lounsbury, 2016). CACs are staffed by professionals who ensure that holistic needs of the child are met and reduce the number of times that the child victim is required to repeat the details of the trauma. By ensuring that the child only tells their story once to a trained interviewer, the probability of stigmatization and further exacerbation of posttraumatic stress symptomatology are reduced. In addition, the CAC process improves the likelihood that outcomes of investigations are sound and consistent with case evidence. Most CACs have a Multidisciplinary Investigative Team (MDIT) that includes medical professionals, law enforcement, mental health providers, child protective services, victim advocacy, and other professionals that review findings and make decisions together about how to help the child based on the interview. CACs offer therapy and medical exams, courtroom preparation, victim advocacy, case management, and other services. As such, this model ensures that children are heard, that their testimony is obtained in ways that increases accuracy and objectivity, that they are safe and cared for, and most importantly, that they are believed and supported in ways that minimize the stress and exacerbation of posttraumatic stress symptomatology that can accompany a disclosure. Given that identifying maltreatment as the most upsetting life event was associated with deleterious outcomes, the Peckins et al. study highlights the need to expand and fund this model nationwide and to introduce and support it internationally.

Maltreatment and Violence Prevention In terms of child maltreatment prevention, Peckins and colleagues highlight the importance of legislation such as The Family First Prevention Services Act of 2017 (H.R.253) which provides funding for in-home parent skill-based programs, an important prevention strategy which has demonstrated reduction in children's internalizing and externalizing behavior problems (e.g., Olds et al., 2014). Another key federal policy is the Maternal Infant and Early Childhood Home Visiting (MIECHV) legislation, which was up for reauthorization in 2017. This policy supports families at high risk for adverse childhood experiences (ACES), including child maltreatment. The bipartisan federal and state partnership provides funds to voluntary home visiting services to support evidence-based home visiting services designed to reduce maltreatment and promote child and family health and development. Prevent Child Abuse America (PCA) reports that home visiting currently only reaches one third of the counties that states have identified as being at the highest risk (Prevent Child Abuse America, 2017).

Reauthorization and expansion of such services could significantly impact rates of maltreatment – and the associated sequelae – for generations to come.

Findings from Stevens et al. point to the value of the prevention of community and youth violence, particularly with respect to child maltreatment victims. Using the Young Adolescent Project (YAP) sample, Stevens and colleagues addressed a long-standing question regarding the links between maltreatment, community violence exposure, and aggression. Results were surprising in that the comparison youth had stronger links between community violence and aggression than the maltreated youth. However, for the total sample, early aggressive behavior predicted exposure to community violence (but not vice versa). This finding supports a small but growing body of literature indicating that aggressive behavior problems predict community violence exposure. Important implications can be derived from this study for designing and implementing intervention and prevention efforts and policies targeting the reduction of violence toward youth. It follows that future studies should consider prevention interventions that reduce aggression in maltreated youth.

For the past 30 years, Dr. Trickett and several of her distinguished academic counterparts (Cicchetti & Toth, 1995; Fergusson, Boden, & Horwood, 2008; Widom, 1989) have been calling for increased attention to the impact of community violence on child well-being. The connection between violence and child maltreatment incidences has been well documented, but the exacerbating effects of violence on abuse sequelae have been less studied. Findings from the Stevens paper draws a direct link between aggressive behavior and community violence suggesting that we have much to do if we are to improve the lives of children growing up in urban settings characterized by violent neighborhoods. To address community-based violence, the Office of Juvenile Justice and Delinquency Prevention (OJJDP), in collaboration with the CDC, funded three key initiatives in 2010 under its National Youth Violence Prevention strategy: The National Forum on Youth Violence Prevention, the Community-Based Violence Prevention Program (CBVP), and the Defending Childhood Initiative (see https://www.ojjdp.gov/programs/youth-violence-prevention.html#outcomes_jump). These initiatives use cross-sector, multi-level community-based collaborative approaches that utilized evidence-based, trauma-informed, positive youth development approaches to address the root causes of youth violence (OJJDP, n.d.). In total, the program has funded 39 sites across the USA. All sites shared common theory of change and approach (i.e., the importance of collective action to address youth violence), though each site implemented different strategies, depending on their communities' needs.

The CVBP program supports three evidence-based, multi-partner models (e.g., law enforcement, service provider, residents, community- and faith-based organizations) in 16 cities, with built-in rigorous research and evaluation efforts. Results to date include reductions in gun violence and increased community engagement (OJJDP, n.d.). The goal of the Defending Childhood Initiative is to prevent and examine the impact of trauma resulting from children's exposure to violence (CEV). This initiative has supported six communities and two tribal nations to conduct evidence-based treatment and community-based solutions for violence prevention,

as well as policy and practice changes at the local systems level. Also under this initiative, the Attorney General's Task Force on Children Exposed to Violence compiled a 256-page report outlining the scope of the problem of CEV and proposing 56 recommendations for policy and practice (Listenbee et al., 2012). The National Forum on Youth Violence Prevention established a network of 15 communities and federal agencies working together to share resources and information and to build local capacity for youth violence prevention. Together, these three initiatives recognize the long-term consequences of trauma on children and youth and the importance of comprehensive, community-based approaches to address youth violence.

Physical and Mental Health Treatment Services   Some of the core findings from Dr. Trickett's research portfolio detail the lifelong, cascading effects of maltreatment on physical and mental health. The current papers extend these findings, with critical relevance to today's policy and practice agenda. First, of relevance to physical health, using data from the long-term longitudinal cohort the Female Growth and Development Study (FGDS), the first report by Li and colleagues examined eating disorder symptomatology in adolescence and eating disorder-related health problems in adulthood (such as swollen or painful joints, excessive bleeding or bruising, heart problems, depression and anxiety, insomnia, alcohol and tobacco use, binge eating, high cholesterol, frequent indigestion, and kidney stones). Importantly, subthreshold symptom counts were stronger predictors of subsequent health as opposed to full diagnoses. Broad implications of these findings support long-standing recommendations for assessment and treatment of maltreated children to include biological and health measures (Cicchetti, 2004). The authors recommend trauma-informed eating disorder screening treatment for subthreshold symptoms. More specifically for the current policy and fiscal landscape, proposed cuts to Medicaid could result in less access to healthcare, resulting in missed opportunities to discover these important predictive symptoms, leading to increased long-term health problems for victims of abuse.

Regarding mental health services, taken together, the first three studies document the need for improved mental health assessment and intervention services, increased access to these critical services, and expanded training and resources for practitioners to provide evidence-based, trauma-informed assessment and treatment services. Moreover, the findings speak to the variability in outcomes for victims and the need for tailored treatments according to needs. For example, based on Dr. Trickett's second large longitudinal study (YAP), Peckins and colleagues advanced the novel perspective that the sequelae of maltreatment are regulated partially by the perceived seriousness of the experience of maltreatment. The study assessed how perception of maltreatment as an adolescent's most upsetting experience was associated with the onset and development of mental health problems that manifest during adolescence. Interestingly, girls who reported maltreatment as their most upsetting experience also had increased depressive symptoms (compared to girls with nonmaltreatment as their most upsetting experience). On the other hand, boys who reported maltreatment as their most upsetting experience had decreased aggressive and rule-breaking behavior (compared to boys with nonmaltreatment as

their most upsetting experience). These findings highlight the necessity to tailor treatment and intervention by sex and inform clinicians in the different predictive value trauma experiences that may have on mental health and behavior problems for males and females. Sex differences are not always examined in studies of maltreatment, but important differences do exist. Sex differences are particularly important to consider when biological processes are being studied given the differences between males and females in endocrine and multiple other systems. Basic and applied future research efforts considering sex differences will undoubtedly yield results that will lead to more effective interventions to prevent negative sequelae of maltreatment for males and females.

The importance of meeting the mental health needs of children and families exposed to trauma through such innovations and improvements has been acknowledged through federal policy in several ways. The most direct federal support for this work is provided under the auspices of the Substance Abuse and Mental Health Services Administration (SAMHSA). In 2001, Congress appropriated $10 M in funds as part of the Children's Health Act (2000) to support the National Child Traumatic Stress Network (NCTSN) through SAMHSA. The funding mandated a collaborative network of sites around the USA with the goal of raising the standard of care and improving access to evidence-based services for traumatized children and families (Pynoos et al., 2008). The NCTSN consists of a national center co-located at the University of California, Los Angeles, and Duke University (charged with coordinating the collaborative system and serving as a national resource center; see www.nctsn.org), 82 funded sites, as well as over 150 affiliate (formerly funded) members nationwide. Together these sites provide treatment, intervention development, training, data analysis, program evaluation, policy analysis, systems change, and the integration of trauma-informed and evidence-based practices across all child-serving systems (Pynoos et al., 2008).

The NCTSN has a far reach with significant contributions. For example, in FY2014, over 41,000 individuals received evidence-based services for trauma, and over 202,000 community providers and professionals received training in the assessment and treatment of child traumatic stress (SAMHSA, 2015). The NCTSN emphasizes high-quality evaluation and tracks program effectiveness, including a core dataset (with detailed trauma and service use history on over 14,000 children and youth served by NCTSN sites from 2004 to 2010) and other ongoing evaluation efforts. The NCTSN was reauthorized in 2016 as part of the Twenty-First Century Cures Act, with a funding level for 2017 at over $48 M per year. With bipartisan congressional support, allies are pushing for continued funding for or expansion of this trauma network in order to meet the needs underscored in Dr. Trickett's body of work, including those specified in the papers herein.

Another source of services and treatment for child abuse victims is the Victims of Crime Act (VOCA). VOCA was passed in 1984 under President Ronald Reagan and provides funds for crime victim assistance programs. It is important to note that VOCA does not depend on taxpayer dollars as it is derived from fines and penalties on offenders at the federal level. VOCA dollars are distributed to the states to support victims with support and guidance in the aftermath of crime including child

abuse and neglect. Significant cuts to VOCA dollars are proposed in the current federal budget (FY2017), and lower amounts of money collected from federal offenders will be released to support the vital services crime victims' need at the state and local levels. Such cuts would directly impact the number and quality of local mental health service providers who are trained to deliver evidence-based trauma treatments for survivors of childhood sexual abuse (e.g., Trauma Focused Cognitive Behavioral Therapy; TFCBT Mannarino, Cohen, & Deblinger, 2014). Diminishing access to treatment will significantly hamper efforts to mitigate deleterious trauma sequelae such as those reported in this set of papers.

6.5 Cross-Cultural Implications

Based on Dr. Trickett's attention to the variability of child sexual abuse experiences, it is now known that considerable variability exists in children's experiences of sexual abuse, and that different subgroups of maltreatment based on abuse characteristics demonstrate qualitatively different short- and long-term impacts on normal development. Importantly, this conceptualization is having an impact globally. Expanding Dr. Trickett's work to a cross-cultural context, in the final paper, Kim and colleagues examined the characteristics of child sexual abuse in Korea revealing three different profiles based on abuse characteristics: familial sexual abuse (16.7%), non-familial sexual abuse (46.3%), and noncontact sexual abuse (37.0%). As hypothesized, based on Dr. Trickett's previous work, service utilization differed depending on the profile. Hence, the influence of Dr. Trickett's early work on the clustering of characteristics of sexual abuse and how distinct clusters showed vastly differential outcomes (Trickett, Noll, Reiffman, & Putnam, 2001) can be clearly seen in this paper. As in the USA, these are important findings due to the fact that there is recent momentum to study the impact of stress in conglomerate form and lump all types of stressors into single categories of toxic stress (Garner et al., 2012) or adverse childhood experiences. While this type of research is no doubt important in advancing our knowledge of stress and victimization, Dr. Trickett's work shows notable exceptions regarding the differential outcomes of subtypes of adverse experiences. For example, her YAP prospective cohort study (Negriff, Brensilver, & Trickett, 2015) showed more risky sexual behaviors for sexually abused females when compared to other types of abuse and neglect. Moreover, Heim and colleagues (Heim, Mayerg, Mletzko, Nemeroff, & Pruessner, 2013) found a thinning of the genital somatosensory cortex in women with a history of sexual abuse. Dr. Trickett acknowledged that it is difficult to discern the unique impact of maltreatment given the high rates of polyvictimization among maltreated children, yet if we refrain from attempting to disentangle unique effects of differing types of abuse, we will lose vital information needed to design or tailor interventions targeting trauma-specific issues. Although no standardized service protocol to provide relevant services to children exists in Korea currently, results from Kim and colleagues suggest that support for such a protocol is warranted. Resources should be put toward

increasing policy-makers' and administrators' awareness of the variability of children's sexual abuse experiences such that appropriate services can be provided.

6.6   Conclusion

Scientific knowledge from Dr. Trickett's studies have had a major national and global impact on enhancing a basic understanding of patterns of child sexual abuse and later adjustments both nationally and internationally. The reports within this volume contribute to the understanding of the sequelae of maltreatment and will foster the development of more prevention programs and individualized services tailored to individuals and communities. Moreover, the implications of her work demonstrate how the negative sequelae of maltreatment affect not only the individual but also the family and social and economic institutions. This is important because protective service agencies are continually stretched by the overwhelming numbers of children who need services at a time when funding for staff and daily operations is being reduced. In order to influence the ways in which policy and practice can be impacted, budding scientists should take particular note of Dr. Trickett's work and how it raised the bar on the rigor and quality of research conducted in the field of child maltreatment by significantly improving methodological rigor and conducting multilevel, mechanistic research that points to promising new avenues for intervention to stave off deleterious health and development outcomes for maltreated children. The basic yet illusive tenet of science as a vehicle to impact policy and mobilize social change will thusly be significantly advanced.

Finally, although Dr. Trickett's work has contributed greatly to better science in the area of child maltreatment, there is still much work to be done in terms of closing the chasm between good science and good policy, programs, and practice. Critical elements still needed include (1) financial support for research to aid the development of policy, programs, and practice; (2) dissemination of research to policy-makers; (3) dissemination of maltreatment research to practitioners with the healthcare and child welfare systems; (4) continued development of prevention programs grounded in maltreatment science; and (5) continued development of trauma-specific interventions for children, adolescents, and families. NIH's newly initiated program of CAPSTONE Centers for Multidisciplinary Research in Child Abuse and Neglect specifically target and address each of these needs. Funds are directed to support multiple multidisciplinary centers specializing in child maltreatment research (clinical interventions, longitudinal studies of understudied subtypes of maltreatment, neurobiology of maltreatment and health outcomes, screening and assessment for early identification and treatment) married with training opportunities for new scientists and practitioners as well as community participatory activities to engage scientific and lay communities. The goal is that these efforts, and others, will continue to broaden and expand the legacy of Dr. Penelope Trickett's research and implement policy and programs to truly ameliorate the lifelong consequences of child maltreatment.

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Index