An ecological-transactional analysis of children and contexts:
The longitudinal interplay among child maltreatment, community violence, and children’s symptomatology

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Abstract
Cicchetti and Lynch have conceptualized ecological contexts as consisting of nested levels with varying degrees of proximity to the individual. These levels of the environment interact and transact with each other over time in shaping individual development and adaptation. With a sample of maltreated (n = 188) and nonmaltreated (n = 134) children between the ages of 7 and 12 years, this investigation employed a 1-year longitudinal design to conduct an ecological-transactional analysis of the mutual relationships among community violence, child maltreatment, and children’s functioning over time. Indicators of children’s functioning were externalizing and internalizing behavior problems and self-rated traumatic stress reactions, depressive symptomatology, and self-esteem. Either full or partial support was obtained for the study’s primary hypotheses. Rates of maltreatment, particularly physical abuse, were related to levels of child-reported violence in the community. In addition, child maltreatment and exposure to community violence were related to different aspects of children’s functioning. Specific effects were observed for neglect and sexual abuse and for witnessing and being victimized by violence in the community. Finally, there was evidence that children and their contexts mutually influence each other over time. Results were discussed within the framework of an ecological-transactional model of development.

In this investigation, we provide an ecological-transactional analysis of child maltreatment, exposure to community violence, and children’s behavioral and emotional functioning. Although Cicchetti and Lynch (1993) formulated their ecological-transactional model to explain the combined influence of child maltreatment and community violence on children’s development and adaptation, this model is applicable to the study of development more broadly, as well as to other psychopathological conditions. Drawing on the work of Belsky (1980), Bronfenbrenner (1977), and Cicchetti and Rizley (1981), Cicchetti and Lynch (1993) conceptualized ecological contexts as consisting of a number of nested levels with varying degrees of proximity to the individual. The macrosystem includes cultural beliefs and values that permeate societal and family functioning. The exosystem consists of the neighborhood and community settings in which families and children live. The microsystem incorporates the family environment.
that children and adults create and experience. Finally, the level of ontogenic development includes the individual and his or her own developmental adaptation. This final level reflects the belief that individuals are important elements of their own environments. Cicchetti and Lynch (1993) have hypothesized that these levels of the environment interact and transact with each other over time in shaping individual development and adaptation. In this model, context and children’s functioning are conceptualized as mutually influencing each other. Transactions between children and their contexts both allow for continuity in children’s development (and context) over time and create potentialities for change.

This ecological-transactional model points out the complexity inherent in children’s contexts. A thorough assessment of context should contain relevant elements from each level of the ecology over time. To conduct such assessments will require substantial effort on the part of researchers. Some levels of the ecology may be difficult to assess directly. The cultural beliefs and values that make up the macro-system could be measured using population-wide surveys, but such an undertaking may not always be practical. From a different vantage point, it may be possible to infer a culture’s beliefs and values though more indirect indicators. For example, the high rate of violent crime in the United States compared to that of other industrialized nations might be considered evidence that this society condones or accepts some level of violence (Cicchetti & Lynch, 1993).

Other levels of the ecology may be easier to assess directly. The challenge for researchers is to capture the diverse nature of each level. The exosystem includes a variety of factors associated with neighborhoods and communities. Demographic characteristics of communities, the availability of and satisfaction with resources, formal and informal social supports and the links among them are but a few features that contribute to the individual’s experience of the exosystem. Likewise, the microsystem includes a multitude of important elements. An assessment of this level of the ecology might include examinations of the quality of parenting and parent–child relationships, marital and family dynamics, and parental histories and emotional/psychological/cognitive resources. Finally, a thorough assessment of ontogenic development would contain the full array of developmental tasks and competencies that are mastered by the individual throughout the life span. Of course, different aspects of each level of the ecology may be more or less relevant for particular issues of interest to researchers. The task for researchers is to identify the aspects of the ecology that are theoretically salient for specific outcomes and to measure them over time.

Along these lines, an ecological-transactional model can be used to help specify the kinds of adversity children face and their likely impact on development. Each level of the environment is thought to contain “potentiating” and “compensatory” risk factors for the individual (Cicchetti & Rizley, 1981). These risk factors exert influence on the individual as well as on events in surrounding levels of the ecology. Potentiating factors increase the probability of poor outcomes (either for the child or in other levels of the ecology), and compensatory factors decrease the risk for such outcomes. Furthermore, there is a temporal dimension linked to both types of risk factor. Transient risk factors (both challenges and buffers) fluctuate and may indicate a temporary state. Enduring vulnerability and protective factors represent more permanent conditions or characteristics. With respect to individual functioning, potentiating and compensatory factors that are enduring and proximal to the individual will have the strongest long-term effects on children’s development. Risk factors that are more distal and transient may moderate the overall effects of proximal and/or enduring factors, while also exerting their own direct influence on the individual. The general balance in favor of potentiating or compensatory factors found in children’s ecological contexts indicates whether a given child is likely, with increasing probability, to display developmental competence or incompetence. Children growing up in dangerous ecologies with insufficient compensatory factors, whether they be enduring protective factors or more transient buffers,
are especially at-risk to display incompetencies that are associated with increasing symptomatology and psychopathology (Cicchetti & Lynch, 1993). To the extent that their negative developmental adaptations are expressed outwardly, these children may contribute to sustaining adversity in the environment.

Although data demonstrating transactions between individuals and their contexts have been scant, a growing body of research clearly points to the adverse consequences on children’s development that are associated with growing up in threatening environments. Recent research on the effects of children’s exposure to community violence sheds light on some of these effects. On the one hand, exposure to traumatic forms of violence can interfere with basic developmental stirvings. Preschool and school-aged children who have been exposed to violence may be less likely to explore and master their environment (Osofsky, 1995b; Pynoos, 1993). The increased anxiety that these children manifest as a result of their experiences with violence can disrupt the normal development of trust and the later emergence of autonomy through exploration (Osofsky & Fenichel, 1994). In some cases, regression in the developmental achievements of young children, such as toileting and language, may be observed (Drell, Siegel, & Gaensbauer, 1993). The generation of intense negative emotions resulting from experiences with community violence may also interfere with the unfolding of emotion regulation in children (Osofsky, 1993). Moreover, feelings of ineffectiveness in coping with violent communities may lead to negative self-images and poor self-esteem.

Evidence of more specific clinical syndromes and symptomatology also has been associated with experiences of community violence. For children who are exposed to extreme violence, whether it is in the form of isolated events, such as sniper attacks or acts of terrorism, or in the form of chronic stress, such as living in a “war zone,” posttraumatic stress disorder (PTSD) may result (Eth & Pynoos, 1985; Nader, Pynoos, Fairbanks, Al-Ajeel, & Al-Asfour, 1993; Terr, 1990). In a representative national telephone survey of 2,000 youths between the ages of 10 and 16, children who were victimized by violence displayed significantly more symptomatology related to PTSD than did nonvictimized children (Boney-McCoy & Finkelhor, 1995).

More generally, children exposed to community violence may manifest signs of aggressive behavior, negative affects, and relationship disturbances (Osofsky, 1995b). A number of investigators have provided evidence that exposure to community violence relates to aggressive behaviors and anxious or depressive symptoms in children ranging in age from 6 to 15 years (Cooley-Quille, Turner, & Beidel, 1995; Martinez & Richters, 1993; Osofsky, Wewers, Hann, & Fick, 1993; Schwab-Stone, Ayers, Kasprzak, Voyce, Barone, Shriver, & Weissberg, 1995). Moreover, the effects of violence exposure appear to remain intact even after controlling for previous symptom status (Gorman-Smith & Tolan, 1998). Much of this research has been conducted on samples that consist predominantly of economically disadvantaged minority urban youth. A majority of children in these studies report some exposure to violence in their communities, highlighting the widespread presence in these children’s environmental contexts of potentiating risk factors for increased behavioral and emotional problems. In general, the degree of disturbance that children display appears to be influenced by the type of exposure to violence (e.g., witnessing vs. being victimized), the child’s level of development, related contextual features of the family and community, and the availability of other supports (Cicchetti, Toth, & Lynch, 1997; Marans & Cohen, 1993; Pynoos, 1993; Zeanah, 1994).

As predicted by an ecological-transactional model, violence in the community (a characteristic of the exosystem) may be associated with an increased likelihood of domestic violence at home (a microsystem variable). There are significant positive correlations between children’s reports of exposure to community violence and the level of spousal conflict in their homes (Osofsky et al., 1993; Richters & Martinez, 1993). Although it is not clear what the relationship between these two co-occurring forms of violence may be, it is possible that the stress and negative conditions associ-
associated with living in a violent community may cause heightened stress for some families that contributes to and potentiates an increased probability of violent responses to spousal conflict. For the children growing up in contexts in which violence is occurring at multiple levels of the ecology, the risk for problems is great.

In a similar vein, community violence may be one of a number of exosystem factors that potentiate the occurrence of child maltreatment in the microsystem. A number of researchers have demonstrated links between exosystem variables such as neighborhood poverty, availability of social supports, population turnover, concentration of female-headed households, and proportion of children per adult resident with probabilities of child maltreatment (Coulton, Korbin, Su, & Chow, 1995; Drake & Pandey, 1996; Garbarino & Gilliam, 1980; Korbin, Coulton, Chard, Platt–Houston, & Su, 1998; Kupersmidt, Griesler, DeRosier, Patterson, & Davis, 1995; Sampson & Laub, 1994). With regard to the impact of community violence on the occurrence of child maltreatment, it is possible that violence in communities acts as an enduring vulnerability factor increasing the risk for maltreatment at the level of the microsystem (Cicchetti & Lynch, 1993). More research is needed examining both the relationship between community violence and child maltreatment and the enduring vulnerabilities and transient challengers that their co-occurrence create for children.

There has been extensive work demonstrating the serious consequences of child abuse and neglect on development and adaptation. Deficits in virtually all of the major tasks of development can be found in children who have been maltreated (see Cicchetti and Lynch, 1995, for a review). Moreover, histories of child maltreatment are associated with increased rates of behavior problems and psychopathology. A number of investigations have revealed that school-aged maltreated children and adolescents manifest higher levels of depressive symptomatology, behavior problems at home and at school, and juvenile delinquency than do nonmaltreated children (Crittenden, Claussen, & Sugarman, 1994; Okun, Parker, & Levendosky, 1994; Toth & Cicchetti, 1996; Toth, Manly, & Cicchetti, 1992; Zingraff, Leiter, Myers, & Johnsen, 1993). In general, problems seem to become more severe and differences between maltreated and nonmaltreated children become more pronounced as children get older (Crittenden et al., 1994; Dodge, Pettit, & Bates, 1994). However, it is difficult to determine whether this apparent trend reflects true developmental differences in maltreated and nonmaltreated children or greater sophistication in clinical assessments of older children.

In addition, a higher prevalence of psychiatric symptoms and diagnoses is observed in maltreated children. Maltreated children exhibit greater incidence of attention deficit/hyperactivity disorder, oppositional disorder, and PTSD than do nonmaltreated children (Famularo, Kinscherff, & Fenton, 1992). Maltreatment, especially physical and sexual abuse, is related to a number of psychiatric complaints in childhood and adulthood including panic disorders, anxiety disorders, depression, eating disorders, somatic complaints, dissociation, sexual dysfunction, borderline personality disorder, and traumatic stress reactions (see Cicchetti & Lynch, 1995).

This investigation focuses on assessing the interrelationship between two potentiating factors associated with children’s contexts and the transactional relationship that these two risk factors and children’s development exhibit over time. In particular, we examined children’s exposure to community violence (an exosystem variable) and their history of child maltreatment (a microsystem variable). There are many other aspects of children’s context that could be assessed according to our ecological-transactional model, but we have chosen these two contextual features because of their demonstrated negative impact on children’s adaptation. This investigation represents the first time that the joint effects of community violence and child maltreatment have been examined in a single study. Employing a 1-year longitudinal design, we conducted an ecological-transactional analysis of the mutual relations among community vi-
Ecological-transactional analysis

violence, child maltreatment, and children’s functioning over time. As indicators of children’s functioning, we examined externalizing and internalizing behavior problems and self-rated traumatic stress reactions, depressive symptomatology, and self-esteem. We tested the following hypotheses generated from the ecological transactional model:

1. **Levels of the ecology influence each other.** We predicted that community violence occurring in the exosystem would be associated with the occurrence of maltreatment in the microsystem. Specifically, increased violence in the community should predict higher rates of maltreatment and more severe forms of maltreatment.

2. **Factors from different levels of the ecology shape development independently and in interaction with each other.** We predicted that both community violence and child maltreatment would be related to children’s functioning. Specifically, it was predicted that maltreatment and high levels of violence exposure would be associated with greater maladaptation in children’s concurrent functioning. Although both of these factors should have independent effects on children’s functioning, they also will have joint effects. Because maltreatment occurs at a more proximal level of children’s ecological context than community violence, it was hypothesized that exposure to community violence would moderate the overall negative effect of maltreatment on children’s functioning.

3. **There are continuities in children’s ecological contexts and functioning over time.** We predicted that children’s exposure to community violence at Time 1 would be significantly correlated with their exposure 1 year later. Likewise, indices of their behavioral and emotional functioning would be correlated at Time 1 and Time 2.

4. **Because individuals are part of their own ecological context, individual functioning transacts with other levels of the ecology over time.** Evidence of transactions between children and their context would be seen via two relations: (a) maltreatment status and violence exposure at Time 1 would predict children’s functioning at Time 2, and (b) children’s functioning at Time 1 would predict their exposure to community violence at Time 2.

**Method**

**Participants**

This investigation included 322 children who attended an annual summer day camp designed for maltreated and nonmaltreated economically disadvantaged children. Children were invited to attend a free 1-week session of camp. While they were in camp, research activities also took place including individual interviews and questionnaires with children and structured group observations. Camp staff also completed ratings on the children.

The investigation reported here includes a 1-year follow-up of this sample. At Time 1, the children ranged in age from 7 to 12 years old ($M = 8.79; SD = 1.32$) and 62.7% ($n = 202$) were boys. The majority of the children were from minority racial/ethnic backgrounds: 62.1% were African American, 12.1% were Hispanic American, and 2.1% were from other racial/ethnic groups. The remainder of the children (23.7%) were European American. The sample consisted of both maltreated children ($n = 188$) and demographically comparable nonmaltreated children ($n = 134$).

Parents of all the children gave consent for an examination of records at the Department of Social Services (DSS). Maltreated children in this study were those who had been identified by DSS as having experienced substantiated maltreatment. All existing DSS records for these families were coded by raters using the Barnett, Manly, and Cicchetti (1993) nosological classification system for child maltreatment. For the purposes of this study, information about the presence or absence of four types of maltreatment (physical abuse, sexual abuse, physical neglect, and emotional maltreatment) as well as the severity rating of each type of maltreatment was obtained from the classification system. Consistent with the literature, the majority of children in this study (60.1%) experienced multiple forms of maltreatment (Cicchetti & Rizley, 1981). On average, the maltreated children in this sam-
ple experienced 2.06 types of maltreatment. A designation for a child’s primary type of maltreatment was made based on the degree to which the form of maltreatment violated cultural standards. Specifically, any child who had been sexually abused was given a primary subtype classification of sexual abuse \((n = 27, 14.4\%)\), irrespective of other subtypes of maltreatment. Children who had been physically abused but not sexually abused were given a primary classification of physical abuse \((n = 72, 38.3\%)\). Children who had been neglected (consisting of a lack of supervision, and/or failure to provide, and/or educational neglect, and/or moral-legal neglect) but not physically or sexually abused were classified as neglected \((n = 66, 35.1\%)\). Children who had been emotionally maltreated but not physically or sexually abused or neglected were classified as emotionally maltreated \((n = 13, 6.9\%)\). Finally, there were 10 maltreated children \((5.3\%)\) who could not be classified according to major type of maltreatment because of incomplete information in the DSS records. These children were not included in analyses involving the effects of maltreatment subtype.

A demographically comparable comparison group of nonmaltreated children were recruited from families receiving Aid to Families with Dependent Children (AFDC). Parental consent was obtained from these families to search DSS records to confirm the absence of any documented maltreatment in these families. Children’s maltreatment status was reconfirmed at Time 2.

Table 1 provides demographic information on the maltreated and nonmaltreated groups of children. Based on these features, the sample as a whole is characterized by substantial disadvantage. Overall, the two groups of children were comparable in terms of most major demographic characteristics. Maltreated and nonmaltreated children did not differ on their age at Time 1, their sex, the number of adults in their homes, the number of years their families had been receiving AFDC, the per capita income of their family, or their Hollingshead social status level. In part because of the large sample size in this investigation, there were significant differences between the two groups in terms of their racial/ethnic composition, \(\chi^2(1) = 5.28, p < .03\), maternal education, \(t = 4.59, p < .0001\), and the number of children in the home, \(t = -3.19, p < .002\). In general, maltreated children were somewhat less likely to be of ethnic minority status compared to nonmaltreated children, and they came from families with fewer years of maternal education and more children. The possible effects of these group differences will be accounted for in all subsequent analyses.

At Time 2, 1 year after the initial set of assessments, 245 of the 322 children (76.1%) returned to camp where they were evaluated a second time. Attrition from Time 1 to Time 2 primarily was due to children being difficult to locate or moving out of the area. Children who participated in the 1-year follow-up were compared with those who did not on their demographic characteristics and on all of their Time 1 assessments (e.g., exposure to community violence, posttraumatic stress symptomatology, depressive symptomatology, total behavior problems, and self-esteem). There were no demographic differences between the two groups, and there were no differences in their maltreatment status. In addition, there were no differences between the two groups of children on any of the constructs that were assessed at Time 1.

**Procedure**

Data for the current investigation were gathered from children during the Mt. Hope Family Center’s annual summer day camp program. Children attend the day camp for 1 week for a total of 30 hr. During the week, they are placed into same-age, same-sex groups of six to eight children. Each group is supervised by a team of three adult camp counselors. Throughout the week, research staff periodically conduct brief individual interviews with the children (on average once per day). Camp counselors also are trained to complete a range of assessment measures based on their observations and interactions with the children in their groups. Camp staff (both research assistants and group counselors) were different at Time 1 and Time 2. Camp counselors and research assistants were unaware of
**Table 1.** Comparison of nonmaltreated and maltreated children on demographic characteristics

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