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The Role of Stress Exposure and Family Functioning in Internalizing Outcomes of Urban Families

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Abstract

Although research suggests that stress exposure and family functioning are associated with internalizing problems in adolescents and caregivers, surprisingly few studies have investigated the mechanisms that underlie this association. To determine whether family functioning buffers the development of internalizing problems in stress-exposed families, we assessed the relation between stress exposure, family functioning, and internalizing symptoms among a large sample of inner-city male youth and their caregivers living in poverty across five waves of data collection. We hypothesized that stress exposure and family functioning would predict development of subsequent youth and caregiver internalizing problems and that family functioning would moderate this relation, with higher functioning families demonstrating greater resiliency to stress exposure. We used a longitudinal, prospective design to evaluate whether family functioning (assessed at waves one through four) activated or buffered the effects of stress exposure (assessed at wave one) on subsequent internalizing symptoms (assessed at waves four and five). Stress from Developmental Transitions and family functioning were significant predictors of depressive symptoms and anxiety in youth; however, family functioning did not moderate the relation. Family functioning mediated the relation between stress from Daily Hassles and internalizing outcomes suggesting that poor parenting practices, low structure, and low emotional cohesion activate depression and anxiety in youth exposed to chronic and frequent everyday stressors. Surprisingly, only family functioning predicted depressive symptoms in caregivers. Results validate the use of a comprehensive, multi-informant assessment of stress when investigating internalizing outcomes in youth and support using family-based interventions in the treatment and prevention of internalizing.

Keywords

Urban families; Stress exposure; Family functioning; Mediator/moderator; Internalizing

Introduction

Urban families living in poverty are exposed to frequent, significant, and diverse stressors, including criminal victimization, community violence, reduced access to medical services, economic hardships, and limited educational and employment opportunities (e.g., Fitzpatrick and Boldizar 1993; Gorman-Smith and Tolan 1998; Leventhal and Brooks-Gunn 2000; Ludwig et al. 2001; Martinez and Richters 1993; US Census 2010). A vast body of research links exposure to stressors—both minor and severe—to the development of internalizing problems in youth and adults (e.g., Bolger et al. 1989; Hammen 2005; Holmes et al. 1999; Kessler 1997; McLoyd 1990). Relative to non-depressed adolescents, adolescents with depression experience more peer, family, and school problems, are at heightened risk of suicide, and are more likely to develop depressive and substance use disorders in adulthood (Copeland et al. 2009; Crum et al. 2008; Harrington et al. 1990; Jaycox et al. 2009). Thus, intervention and prevention programs designed to bolster the resiliency of at-risk youth should be a public health priority.

Research suggests that exposure to a variety of different types of stressors is associated with the development of mood and anxiety disorders in youth. Multiple studies have shown that children and adolescents who witness or who are the victims of violence are at heightened risk of internalizing problems (Fitzpatrick and Boldizar 1993; Gorman-Smith and Tolan 1998; Kliewer et al. 1998; Martinez and Richters 1993; Osofsky et al. 1993; Overstreet et al. 1999; Schwab-Stone et al. 1995). Specifically, exposure to domestic violence and child physical and sexual abuse are strongly correlated with development of internalizing disorders such as MDD and PTSD (Boney-McCoy and Finkelhor 1995; Crittenden et al. 1994; Deblinger et al. 1989; DePaul and Arruabarrena 1995). Major negative life events such as divorce also predict the development of internalizing problems in youth and adolescents. Relative to children with continuously married parents, children with divorced parents report higher internalizing problems and poorer psychological adjustment (Amato and Keith 1991; Amato 2001; Sandler et al. 2008). Additionally, although resiliency is the norm following exposure to natural and human-made disasters, research suggests that some youth may develop significant internalizing symptoms years following the event (Vogel and Vernberg 1993). Finally Bennett's (1994) meta-analytic review of the relation between internalizing and chronic health problems among children and adolescents suggested that youth with certain conditions are at an elevated risk of depression.

Although studies examining the association between stress exposure and internalizing problems have typically focused on the psychological impact of major life and traumatic events, the normative developmental transitions (e.g., puberty) that accompany adolescence as well as minor, everyday stressful life events (e.g., getting in trouble at school) also heighten risk of depression and anxiety in youth. Indeed, research suggests that stress from daily hassles may be more predictive of internalizing outcomes than stress from major life

and traumatic events for both youth and adults (e.g., Chamberlain and Zika 1990; Goodyer 2001; KannerSandler et al. 1981; Schmeelk-Cone and Zimmerman 2003; Schneiders et al. 2006; Sim 2000; Zimer-Gembeck and Skinner 2008). Further, the onset of puberty is associated with elevated depressive symptoms and anxiety in adolescence (e.g., Ge et al. 2001, 2003; Rudolph 2008). The physical, emotional, social, and behavioral changes that occur during adolescence appear to impact the family unit as a whole, contributing to heightened caregiver distress and family conflict (Ge et al. 2006; Paikoff and Brooks-Gunn 1991; Papp et al. 2004). These investigations underscore the importance of assessing not only stress from major life and traumatic events, but also stress from daily hassles and developmental transitions when examining the impact of stress on internalizing outcomes in youth and their families.

To this extent, economically disadvantaged inner-city families may be especially vulnerable to the negative psychiatric impact of stress exposure because they experience higher rates of stressors and have fewer resources to deal with them (Attar et al. 1994; Dubow et al. 1991; Tolan et al. 1997). Indeed, research suggests that the majority (i.e., 70–96 %) of inner-city youth witness acts of violence during their lifetimes, with many exposed to serious events such as shootings, stabbings, and physical assaults on multiple occasions (e.g., Gorman-Smith and Tolan 1998; Sheidow et al. 2001). Rates of victimization among inner-city youth are also elevated, with as many as 51 % reporting physical and/or sexual abuse (Gorman-Smith and Tolan 1998; Osofsky et al. 1993; Richters and Martinez 1993; Sheidow et al. 2001). Further, members of urban families are at heightened risk for developing chronic health and psychiatric conditions such as substance use disorders (Aday 1994; Bane and Ellwood 1989; Hernandez 1993; McLoyd 1990; US Department of Health and Human Services 1993). Second, relative to their suburban counterparts, children living in urban areas are more than twice as likely to be living in poverty (US Bureau of the Census 1990). Economic hardship may exacerbate the psychiatric impact of stress exposure by limiting families' access to resources that could mitigate the impact of stress exposure. Indeed, urban families are less likely to receive routine preventive care and more likely to utilize emergency healthcare systems compared to suburban and rural families (US Department of Health and Human Services 1990).

Another potential consequence of stress exposure within inner-city families is caregivers' internalizing symptoms. Although the relation between stress and adult depression has been thoroughly studied and documented, few researchers have focused on stress exposure and caregiver outcome. The few studies that have addressed this question found stress exposure to be related to caregiver distress (Aneshensel and Stone 1982; Bolger et al. 1989; McLoyd 1989). However, these studies failed to measure stress as a family level construct, relying on a single informant's self-report for concurrent measurement of both variables. Conger et al. (1995) partially addressed this problem by using multi-source measurement, finding that counts of stressful life events were related to depressive symptomatology in caregivers.

In addition to exposure to external stressors, characteristics of family functioning (i.e., quality of family relationships, sense of family cohesion, parenting practices, family structure and organization) are directly associated with psychological health of family members. For adolescents, adaptive parenting practices are associated with psychological

resiliency, while harsh and authoritarian parenting styles are associated with the development of internalizing problems (Conger et al. 2002; Gutman et al. 2005; Kliewer and Kung 1998; McLoyd et al. 1994; Nomura et al. 2002; Overstreet et al. 1999). Although the relation between parenting practices and internalizing in youth has received the most attention in the literature, other aspects of family functioning including family relations, cohesion, beliefs, and structure appear to be directly related to emotional health in youth. For example, high levels of intra-parental conflict as well as argumentative interactions between parents and children contribute to internalizing problems in adolescents (Black and Pedro-Carroll 1993; Osofsky et al. 1993). Further, low levels of family cohesion (i.e., level of emotional closeness, dependability, support, communication) appear to be significantly associated with internalizing symptoms in children and adolescents (Cumsille and Epstein 1994; Holmes et al. 1999; Kronenberger and Thompson 1990; Tolan et al. 1997). Asarnow et al. (1987) found that low family cohesiveness and high family conflict were significantly associated children's suicidal behaviors. Tolan et al. (1997) validated a family assessment model and found that beliefs about family (i.e., expectations about the importance and purpose of family and child development), cohesion, and structure (predictability of routines and family roles) in addition to parenting practices were related to youth internalizing among minority families living in inner-city Chicago, with lower levels of these three factors predicting higher levels of psychopathology. These studies suggest that in addition to parenting practices, cohesion, beliefs, and structure should be assessed when examining the construct of family functioning and its impact on child psychological health.

In summary, the vast literature linking stress exposure to heightened risk of internalizing among adolescents may obscure the fact that even among youth exposed to significant stress, resiliency is the norm. Why do some youth develop psychopathology following stress exposure while others do not? Given research documenting the relation between family functioning and psychiatric outcomes in youth, an important question is whether or not family processes can mediate or moderate the development of internalizing problems in stress-exposed families over time. That is, can family functioning buffer the negative emotional health effects of stress? To the extent that strong family functioning is related to psychiatric outcomes in youth, interventions that bolster family structure, cohesion, and parenting practices may reduce rates of depression and anxiety disorders in youth and adolescents.

Family stress models of youth psychopathology highlight the role of family processes and social contexts in potentiating the negative psychiatric effects of stress exposure (e.g., Conger et al. 2000; Felner et al. 1995; Wadsworth and Compas 2002; McLoyd 1990, 1998). More specifically, chronic and frequent stress exposure may lead to adolescent psychopathology indirectly by altering specific family processes (i.e., increasing negative parenting behaviors, reducing emotional cohesion, and disrupting routines; McLoyd 1990, 1998). Indeed, there is strong evidence that specific family processes influence the relation between stress exposure and internalizing outcomes. Among youth living in poverty, poor discipline practices, low parental warmth, low youth/caregiver attachment, poor supervision, and low levels of family routine have been found to mediate the relation between economic hardship and psychological health of youth (Bolger et al. 1995; Conger et al. 1992, 1993, 1994, 2002; Kliewer and Kung 1998; Lempers et al. 1989). Moreover, the quality of family

relations can attenuate the psychiatric impact of stress exposure on youth. Low levels of family conflict can protect children from the negative effects of both major and minor chronic and discrete stressors (Holmes et al. 1999; Kliewer and Kung 1998; Murch and Cohen 1992). Emotional closeness within inner-city families was found to moderate the effect of family stress on internalizing symptoms, with lower cohesion having a negative association with symptomatology (Gorman-Smith and Tolan 1998; Kliewer and Kung 1998).

In spite of these important contributions to the literature, methodological limitations inherent to these investigations (e.g., reliance on cross-sectional data, use of untested or psychometrically weak assessments) prohibit researchers from clarifying the complex relations between stress exposure, family variables, and youth psychiatric outcomes. To move from “markers” to “mechanisms” (Grant et al. 2003) of risk for internalizing, investigators may address these current shortcomings by applying longitudinal, prospective designs, using multiple informants to measure family stress, and applying an empirically derived, robust taxonomy of stress. Longitudinal, prospective studies can provide essential information about causation, prognosis, and stability of clinical phenomena over time and may help investigators identify critical periods for intervention. Unfortunately, the majority of studies investigating the relation between stress, family variables, and youth psychopathology have applied cross-sectional designs (e.g., Conger et al. 2002). For example, Conger et al. (2002) analyzed concurrent reports of stress exposure, family processes, and psychiatric symptoms; thus, investigators could not address the question of whether strong family functioning could ameliorate the negative health effects of stress over time.

Studies investigating the emotional impact of family stress have typically relied on caregiver reports of stressful life experiences, neglecting the youth’s perspective. However, research suggests that parents may underestimate the amount of stress their children experience (e.g., Howard et al. 1999). For example, Zimmerman and Pogarsky (2011) found that among families living in inner-city Chicago neighborhoods, the majority of parents underestimated their child’s exposure to community violence; this lack of concordance was associated with heightened internalizing and externalizing problems in youth. Such findings underscore the need to assess multiple informants when measuring family stress as individual family members may contribute unique and clinically relevant information.

Development and application of an empirically derived classification system for stress would improve specificity of results and allow researchers to make cross-study comparisons. Indeed, relative to simple “tally” measures of stress, specific factor models of stress (i.e., models incorporating frequency, type, and perceived severity of the stressor) may have greater predictive utility when measuring mental health outcomes (Kliewer and Kung 1998; Sheidow 2000; Tolan and Lorion 1988). Felner et al. (1983) developed a taxonomy of stressors based on the type, complexity, and duration of the coping response required to address that stressor. Under this system, minor stressors or “daily hassles” (e.g., getting into trouble at work or school) are delineated from severe stressors (e.g., traumatic events; DeLongis et al. 1982; Dohrenwend and Shrout 1985). Within the category of severe stressors, “circumscribed events” (e.g., physical assault) requiring short-term adjustment are

distinguished from “life transitions” (e.g., puberty or divorce) requiring lengthier and more comprehensive accommodation from family members (Felner et al. 1983). “Life transitions” can be further subdivided based on their universality and “expect ability” (Dohrenwend and Dohrenwend 1974; Moss 1981; Muuss 1982). Thus, the anticipated developmental changes that transpire during adolescence (e.g., individuation) require different coping responses than do “induced transitions” (e.g., coping with a chronic illness). Applying dimensions of coping to stressful life experiences results in a four, broad categories: Daily Hassles, Circumscribed (Traumatic) Events, Induced Transitions, and Developmental Transitions. Studies suggest that such a taxonomy predicts psychiatric problems in youth (Tolan et al. 1997). Further, categorical stress division based on coping strategies has a direct and practical clinical application: The identification and remediation of maladaptive coping strategies can become core components of family-based interventions.

The current study examined the relation between stress exposure, family functioning, and internalizing problems among a sample of male African-American youth and their caregivers living in economically disadvantaged urban neighborhoods. We interviewed adolescents and their caregivers about the frequency, type, and perceived severity of stress exposure, family functioning, and psychiatric symptoms across five annual waves of data collection. This design and method allowed us to assess whether youth and caregiver internalizing assessed at waves four and five were a function of stress exposure assessed at wave one and whether family functioning (i.e., cohesion, beliefs, structure and parenting practices, assessed at waves one through four) activated or buffered subsequent youth and/or caregiver internalizing. We hypothesized that youth and their caregivers would report high rates of stress exposure (i.e., frequency and type) and that stress exposure would be related to family processes and subsequent internalizing symptoms in youth and caregivers. Further, we hypothesized that level of family functioning would moderate the relation between stress exposure reported at baseline and internalizing symptoms at waves four and five with stress-exposed youth and caregivers from highly functioning families reporting fewer internalizing symptoms than stress-exposed youth and caregivers from struggling families. We based our hypotheses on a developmental ecological model of risk and psychopathology in youth (e.g., Tolan et al. 1986, 1995; Tolan and McKay 1996), which suggests that social stressors may disrupt important family processes that have been implicated in the development of psychopathology in youth.

Method

Participants

Participants were adolescent boys and their caregivers from the Chicago Youth Development Study (CYDS), a longitudinal study of the development of delinquency among minority male adolescents living in economically disadvantaged urban areas. CYDS applied a multilevel, multiwave assessment strategy to evaluate interactions among the individual, family, peer, community, and social factors affecting boys’ involvement in antisocial behavior. Sixty-six percent of participants were African-American and 34 % were Latino. The majority of participants lived in single-family homes (62 %) and had incomes below \$20,000 per year (74 %). Participants were between the ages of 11 and 15 during the first

wave of data collection, and there were five annual waves of assessment. All research procedures were approved by the human subjects protections board at the University of Illinois at Chicago.

We recruited fifth and seventh grade classrooms from 17 Chicago public schools. As delineated in Fig. 1, parental permission was obtained for 1,105 boys, which was 92 % of 5th and 7th grade boys. This sample was screened using the Teacher Report Form (TRF; Achenbach and Edelbrock 1986) so that half of the sample selected for the longitudinal study would be at “high risk” for the development of serious aggression (given the overarching purpose of CYDS). High risk was defined as having TRF aggression scores above the 90th percentile. Thus, 300 boys were randomly selected from those having high levels of aggressive behavior and 300 were randomly selected from those with little to none.

Of the 600 boys identified for participation in the longitudinal study, 68 moved and 1 died prior to the first wave of interviews, 11 were excluded because their brothers were already participating, and 34 were excluded because their legal guardians could not be reached for consent. Of the 486 who were still eligible, 82 % agreed to be interviewed and 75 % actually completed the first wave of interviews ($n = 362$). Participants included in the current analyses were those cases who had complete youth and caregiver reports for stress at wave one or family functioning in at least two of the first four waves, and for internalizing outcome at waves four or five ($n = 283$).

In the larger CYDS study (Tolan et al. 2003) comparisons showed little evidence of bias due to missing data or subject attrition. Tolan et al. (2003) compared ongoing participants to drop outs across each of the behavioral health variables at each assessment time point. Of the more than 80 comparisons, only teacher reports of aggressive behaviors at wave one were significant; ongoing participants had slightly lower ratings of aggression. Notably, none of the comparisons for internalizing outcomes was significant.

Procedures

The study team interviewed participants annually, beginning when the boys were in sixth and eighth grade. Highly trained and monitored staff conducted interviews in families’ homes or at another convenient location. Questions and response options were asked as they were written. Staff interviewed the youth and primary caregiver separately; interviews were similar across waves, taking between 3 and 3.5 h. The current study focused on youth and caregiver reports of stress during wave one, family functioning across waves one through four, and internalizing outcomes across waves four and five.

Measures

Stress Exposure—The CYDS Stress and Coping Interview was developed with items from the Social Stress Measure (Tolan 1988) to assess urban adolescent’s experience of various types of stressors. Tolan (1988) developed the Social Stress Measure to assess four types of social stress (Induced Transitions, Daily Hassles, Developmental Transitions, and Circumscribed Life Events) shown to relate to adolescent psychopathology in the literature. Development and validation of the measure are detailed in previous manuscripts (e.g., Tolan

1988; Tolan and Lorion 1988; Tolan et al. 1988). Briefly, Tolan (1988) operationalized each type of social stress and asked four independent raters to classify stressful events under each type. For the majority of items (53 %), all four raters agreed on classification. At least three raters agreed on the classification for all but three items (90 %). This yielded a 5-item Daily Hassles scale, a 9-item Circumscribed (Traumatic) Events scale, a 10-item Induced Transitions scale, and a 6-item Developmental Transitions scale. Although it has primarily been used to assess relation between social stress and adolescent externalizing symptoms, several studies have used this to demonstrate the relation between social stress and internalizing problems in child and adolescents (e.g., Attar et al. 1994; Tolan et al. 1988; Morales and Guerra 2006).

We obtained frequency reports of events occurring during the last year from participants. If the participant indicated that the event had occurred during the last year, the respondent was asked for specifics about the most recent incident, which included rating how stressful the event was for them (0 = Not at all; 4 = Extremely). These data provided basic information on variety and extent of stress exposure. For the remainder of analyses we used the latent factors of Daily Hassles, Circumscribed (Traumatic) Events, Induced Transitions, and Developmental Transitions to represent stress exposure.

The proposed hypotheses made it important to evaluate separately the impact of various categories of stressors and to include both youth and caregiver reports of stress. Scores from a previous confirmatory factor analysis (Sheidow 2000) were used. In the analysis, chronicity (for each informant) was the sum of reported frequency of exposure to stressors during the last year within each category separately for each informant (i.e., number of stressful events experienced during the last 12 months). Severity was the mean for reports of perceived stressfulness for stressors experienced during the last year within each category. Thus, the model consisted of four indicators (youth reports of chronicity, youth reports of severity, caregiver reports of chronicity, and caregiver reports of severity) for each of the four stress categories. Aside from the theoretical rationale for selecting this division of stressors, the model is supported by the data. With significant loadings across all variables, this model fit the data [i.e., ratio of Chi square to degrees of freedom (χ^2 (80) = 142.89) below the 2:1 ratio, RMSEA of 0.06, and satisfactory fit indexes of GFI = 0.93 and AGFI = 0.88]. Further, the model's revised Akaike Information Criteria (CAIC; Akaike 1974; Bozdogan 1987) showed a substantial improvement over a single factor model (72 %; Sheidow 2000). Because the CYDS Stress and Coping Interview underwent considerable changes following wave one, only initial levels of stress could be included in analyses.

Family Functioning—Family functioning has been a primary area of investigation for the CYDS and within the sample four family clusters have been identified: Exceptional, Task-Oriented, Moderately Functioning, Struggling. Although the development of the measure of family functioning and the derivation of the four family clusters are described in detail in previous papers (Gorman-Smith et al. 1996, 2000; Tolan et al. 1997), we provide a brief summary here, highlighting relevant psychometrics.

The measure of family functioning included two broad constructs, Family Relations and Parenting Practices, known to be related to internalizing and externalizing in youth. To

assess family relations, Tolan et al. (1997) selected items from previously validated measures: the Family Assessment Measure (FAM; Skinner et al. 1983), the Family Adaptability and Cohesion Evaluation Scales (FACES-III; Olson et al. 1985), the Family Environment Scale (FES; Moos and Moos 1981), and the Family Beliefs Inventory (Roehling and Robin 1986). Factor analysis with the 92 item scale derived six factors: Emotional Cohesion, Communication, Support, Organization, Shared Deviant Beliefs, and Beliefs about Family with internal consistency coefficients for the scales ranging from 0.54 (Communication) to 0.87 (Beliefs About Family). Investigators found that these factors loaded onto three higher order factors (Communication, Beliefs, and Structure) ($\chi^2(4) = 3.92, p < 0.41, RMS = 0.02, GFI = 0.98$), cross-validating the model with an independent sample. Cohesion includes four of the six scales (Cohesion, Communication, Support, and Organization), and represents the extent of emotional closeness, dependability, support, and clear communication among families. Deviant Beliefs and Beliefs about Family made up the Beliefs factor, representing expectations about child development, about the importance of family, and about the purpose of family. Structure is orthogonal to these two dimensions but shares measured scales (Deviant Beliefs, Organization, and Support), and represents family organization and support, as well as beliefs about antisocial behavior. Caregiver and youth reports were averaged to create scale scores for the first order factors, and latent scores were created for Cohesion, Beliefs, and Structure using weighted averages of these first order scales.

To assess Parenting Practices questions were selected from the Pittsburgh Youth Study (Loeber et al. 1991) which factored into four scales: Positive Parenting, Extent of Monitoring/Involvement in the child's life, Discipline Effectiveness, and Avoidance of Discipline. Internal consistency reliabilities of each subscale ranged from 0.68 to 0.81. Positive Parenting refers to the use of positive rewards and encouragement of appropriate behavior. Extent of Monitoring/Involvement pertains to caregiver involvement in daily activities and routines, as well as knowledge of the child's whereabouts. Discipline Effectiveness refers to how effective parental discipline is in controlling the child's behavior. Avoidance of Discipline measures the parent's avoidance of providing consequences or disciplining for fear of escalating the child's behavior. Only caregivers report on the effectiveness of discipline and discipline avoidance, but youth and caregiver reports are combined to create the two other subscales. The results of a confirmatory factor analysis were consistent with others in identifying two latent constructs of Discipline and Monitoring (Gorman-Smith et al. 1996; Patterson et al. 1992). Subscales were averaged to compute these second-order scales.

The four waves of family relations (Cohesion, Beliefs, and Structure) and parenting practices (Discipline and Monitoring) were standardized using the means and standard deviations of wave two (Gorman-Smith et al. 2000). The hierarchical cluster analysis yielded four clusters of family process variables over time (Exceptional, Task-Oriented, Moderately Functioning, Struggling). The first identified group, Exceptionally Functioning families, had consistently high levels of parenting practices and structure, as well as high cohesion and strong family beliefs. The second group, Task-Oriented families, had high levels of parenting practices and structure but low levels of cohesion and family beliefs. The

third group was Moderately Functioning, with adequate levels of parenting practices and slight improvement in cohesion and beliefs over time. The final group was Struggling families with consistently poor parenting practices and structure, as well as low cohesion and beliefs over time. Based on previous work using this measure (Gorman-Smith et al. 2000, 2001), we hypothesized that a general ordering of family clusters would be observed based on scores for stress levels. Specifically, the suggested order would be: Exceptionally Functioning, Task-Oriented, Moderately Functioning, and Struggling. We evaluate and discuss this ordering in the Results. Further, we used the clusters to create an ordinal variable to analyze family functioning as a potential mediator/moderator of stress exposure on internalizing outcomes.

Caregiver Internalizing—We used the Beck Depression Inventory (BDI; Beck and Steer 1984) to evaluate caregiver internalizing problems. The BDI is one of the most frequently used clinical measures for depressive symptomatology and extensive reviews have identified strong psychometric properties for this scale (Beck et al. 1988). For these analyses, we combined scores from waves four and five by dichotomizing the scores such that a “1” represented indication of a mild, moderate, or severe level of depression during at least one wave. Conversely, a “0” represented no report of a clinically significant symptom level at either wave. This grouping is not a representation of those who would necessarily receive a clinical diagnosis, but relates to those individuals who had notable clinical symptoms and who likely would be referred for mental health services in a “real-world” setting.

Youth Internalizing—We measured youth internalizing at waves four and five using the Internalizing Problems scale of the Child Behavior Checklist (CBCL) and the Youth Self Report (YSR; Achenbach 1991). These checklists are among the most commonly used clinical measures for childhood problems and the author reports extensive, sound psychometric properties (Achenbach 1991). We combined youth and caregiver reports for the Internalizing broad-band scale by dichotomizing the scores such that one category represented at least one informant indicating a clinical level score ($T > 60$) for the youth during at least one wave. Conversely, the other category represented no reports of a clinical level score by either informant at either wave. Again, this type of grouping does not necessarily represent those who would have received a clinical diagnosis, but instead corresponds to those youth who had notable clinically meaningful behavior and who likely would be referred for mental health services in a “real-world” setting. The agreement between youth and caregiver for clinically meaningful internalizing behaviors was significant at wave four ($\chi^2(702) = 774.20, p < 0.05$) and at wave five ($\chi^2(500) = 683.01, p < 0.05$), consistent with Achenbach’s (1991) data.

Results

First, we assessed rates of exposure to stress. Second, we evaluated the impact of stress exposure on subsequent family functioning. Finally, we evaluated the relations of stress exposure and family functioning to youth and care-giver internalizing outcomes, with potential mediating and/or moderating effects considered in these models.

Rates of Stress Exposure

We conducted an initial examination of stress exposure. Rates of youth and caregiver stress exposure at wave one are provided in Table 1, including caregiver and youth reports of specific stressors and overall reports for the four stress categories. As seen in the Table 1, urban families experienced both high rates of stress and a wide variety of stressors. The majority, 99 %, of families experienced some type of stressor during the last year. In addition, three-quarters (75 %) were exposed to at least seven instances of stress during the previous year and over one-third (38 %) were exposed to at least 15 instances. In addition to experiencing frequent stressors, many families also had a broad variety of stressors, with just over half (51 %) of the families experiencing ten or more different kinds of stressors.

Relation of Stress Exposure to Family Functioning

We performed a discriminant analysis to identify whether exposure to specific categories of stress differentiated various family functioning clusters, generating a function based on all predictors that classified individual cases into predicted group membership. The grouping variable here consisted of four categories of families based on measures of family functioning and parenting: Exceptionally Functioning, Task Oriented, Moderately Functioning, and Struggling. The predictors were the families' latent scores for Daily Hassles, Circumscribed Events, Induced Transitions, and Developmental Transitions. Stressors were a significant predictor of family clusters, with one significant function, Wilks' lambda = 0.87, $\chi^2(12) = 23.84$, $p < 0.05$. This function accounted for 84.7 % of the between-group variance, with a canonical correlation of 0.34. As seen in Table 2, the function was characterized predominantly by Developmental Transitions and Daily Hassles, with Traumatic Events playing a lesser role. Table 3 illustrates that the function discriminated the Exceptionally Functioning and Task-Oriented families from the Moderately Functioning and Struggling families. Seventy-two of the 172 cases (41.9 %) were correctly classified into the four categories based on prior probabilities, which was a significantly higher correct classification rate than would be expected by chance alone (25.3 %; $\chi^2(9) = 31.54$, $p < 0.01$). Based on the discrimination of family clusters, we calculated classification rates for a two-group classification with one group made up of Exceptionally Functioning and Task-Oriented categories and the second group made up of Moderately Functioning and Struggling categories. For this type of classification, 116 cases (67.4 %) were correctly classified compared to the 50 % that would be expected by chance ($\chi^2(1) = 21.31$, $p < 0.01$).

We used post hoc tests (Tukey's HSD) to make specific group comparisons of means (see Table 4 for means and standard deviations). Stress of Daily Hassles, $t = 2.92$, $p < 0.05$, and Developmental Transitions, $t = 2.89$, $p < 0.05$, was significantly lower for Exceptionally Functioning families than for Struggling families. In addition, the difference between these families approached significance for Circumscribed Events ($p = 0.09$). The stress of Developmental Transitions, $t = 2.98$, $p < 0.05$, was also lower for Exceptionally Functioning families when compared to Moderately Functioning families. Finally, the difference between Task-Oriented families and both Moderately Functioning and Struggling families was marginally significant for Developmental Transitions ($p = 0.057$ and 0.067 , respectively), with Task Oriented families having lower stress levels.

These results indicated that family clusters could be distinguished by the stress of both Developmental Transitions and Daily Hassles. Further, the results suggested that the family clusters generally fall into the hypothesized ordering of: Exceptionally Functioning, Task Oriented, Moderately Functioning, and Struggling.

Relation of Family Stress and Family Functioning to Internalizing Outcomes

Data Analysis—Finally, we evaluated the relation of initial stress exposure to later youth and caregiver internalizing, with family functioning considered as a means of transferring and/or buffering the negative effects of stress. We hypothesized that each type of stress would predict internalizing, and that family functioning would moderate internalizing outcomes for each type of stress. We used two hierarchical logistic regression analyses to examine the relations between a family's experience of stress and subsequent internalizing outcome, with family functioning considered as a potential mediator and/or moderator. We performed separate analyses for youth and caregiver internalizing outcomes. For each regression analysis, we regressed combined scores for waves four and five internalizing problems on the family stress variables (Daily Hassles, Circumscribed Events, Induced Transitions, and Developmental Transitions) from wave one in the initial step. We added family functioning in the second step, and interactions between each stress variable and family functioning in the final step. While direct effects are essential in establishing mediating effects, they are not a necessary condition in testing for moderating effects (Baron and Kenny 1986). Baron and Kenny explain that a significant interaction between the independent variable(s) and the potential moderator confirms moderating effects, and that main effects are superfluous in examining moderation.

Hierarchical Logistic Regression Models—The first step examined the direct effects of stress on youth and caregiver outcome. For youth internalizing, the initial step was significant, $\chi^2(4) = 17.44, p < 0.01$. Developmental Transitions was a significant predictor (Wald Statistic = 7.11, $p < 0.01$), with Daily Hassles approaching significance (Wald Statistic = 3.10, $p = 0.078$). For caregiver outcome, this step was not significant. Thus, although stress was not predictive of later caregiver depressive symptoms, stress associated with predictable, universal, developmental transitions and minor, daily annoyances were predictive of youth internalizing problems.

The second step examined family functioning's effect on internalizing outcomes. For youth internalizing, this step was significant, $\chi^2(1) = 17.12, p < 0.01$, bringing the model significance to $\chi^2(5) = 34.56, p < 0.01$. The significant coefficient for family functioning (Wald Statistic = 15.30, $p < 0.01$; see Table 5) indicated that lower levels of family functioning directly related to negative youth outcomes. Family functioning was also a significant predictor of caregiver outcome, $\chi^2(1) = 10.14, p < 0.01$ (model $\chi^2(5) = 11.40, p < 0.05$; Wald Statistic = 10.29, $p < 0.01$), indicating that while stress exposure may not be related directly to later caregiver outcome, family functioning is a key predictor of subsequent caregiver depressive symptoms. More results of this step are presented below.

Mediating Effects of Family Functioning—As evidenced by the first step of the hierarchical regression for caregiver depressive symptoms, the first condition for Baron and

Kenny (1986) was not met. This finding makes exploration of mediators inappropriate for caregiver depressive symptoms.

For youth internalizing problems, the first of these conditions was met in the first step of the hierarchical regression. The second condition was preliminarily explored by the discriminant function analysis. However, Baron and Kenny recommend a formal evaluation by regressing the potential mediator on the independent variable(s). Because Daily Hassles and Developmental Transitions were the only predictors to meet the first condition for mediation, only these two variables were included in this regression. As seen in Table 5, these two variables both met the second condition of mediation, $F(2, 182) = 9.67, p < 0.05$. The final two conditions for mediation were both explored in the second step of the hierarchical regression for youth outcomes. As stated previously, family functioning was a significant predictor, which satisfies the third condition. The fourth condition, reduction in the relation between the independent and dependent variables in the presence of the mediator was met for Daily Hassles (Wald Statistic = 1.24, ns), but not for Developmental Transitions (Wald Statistic = 4.44, $p < 0.05$). That is, family functioning operates as a mediator only for the effect of Daily Hassles on later internalizing symptomatology for youth.

Moderating Effects of Family Functioning—In the final step of the hierarchical regressions, we included the interactions between family stress variables and family functioning to test for moderating effects of family functioning for the stressors' effects on outcomes. However, these interaction terms were not significant for either youth or caregiver outcomes, indicating that family functioning does not significantly alter the effects of stress on internalizing outcomes.

Discussion

The goal of the present study was to utilize multi-informant, empirically derived assessment of stress to clarify the relation between stress exposure, family functioning, and internalizing outcomes for inner-city adolescents and their caregivers. Consistent with previous research on rates of stress exposure in urban families, families in the current study were under significant stress, with three-quarters experiencing at least seven instances of stress during the last year and over one-third experiencing at least 15 instances. Further, at least half of families experienced ten or more different types of stressors in a 1-year period. While stress associated with Developmental Transitions significantly predicted youth internalizing and stress associated with Daily Hassles approached significance, stress related to other categories (e.g., Induced Transitions, Circumscribed Events) did not predict youth internalizing. These findings are consistent with previous research that suggests stress associated with developmental transitions and with daily, relatively minor frustrations are salient predictors of internalizing problems during adolescence (e.g., Chamberlain and Zika 1990; Ge et al. 2001), and the findings may challenge common assumptions that prioritize only traumatic and/or major life events as precipitants of depression and anxiety in these youth.

Consistent with research that suggests strong family cohesion, structure, and parenting practices are associated with psychological resiliency in youth, youth from highly functioning families displayed fewer internalizing problems than youth from struggling families. Contrary to hypotheses however, family functioning did not moderate the relation between stress from developmental transitions and youth internalizing problems. It may be that internalizing problems that develop at the onset of puberty are more biologically (i.e., hormonally), as opposed to environmentally driven, and thus, potentially less responsive to the protective effects of strong family functioning. Indeed, several researchers have hypothesized that adolescent-onset depression may follow a different etiological course than depression that develops in childhood or adulthood (Weissman et al. 2005).

We found that family functioning mediated the effect of stress from Daily Hassles on youth internalizing outcomes. For adolescents, poor family functioning (i.e., low structure, cohesion, and beliefs) appears to “activate” the negative psychological impact from frequent, minor stressors. This finding is consistent with extant research that suggests strong family functioning can attenuate the emotional health consequences of exposure to chronic, everyday frustrations for youth (e.g., Kliewer and Kung 1998).

Interestingly, only family functioning, and not stress exposure, was related to subsequent caregiver internalizing. We assessed stress exposure at baseline and caregiver depression at waves four and five allowing for the possibility that caregiver depressive symptoms related to initial stress exposure subsided over the course of the study. Unfortunately, changes to the stress assessment measure over the course of the study prevented us from measuring stress exposure at subsequent waves of data collection and thus, from evaluating whether stress exposure bears a more proximal or immediate relation with caregiver depressive symptoms.

Selection of the target sample was consistent with the primary objective of the CYDS: to examine correlates of delinquency in an urban poor population. As such, our findings may not generalize to youth living in rural environments or to girls. Indeed, research suggests that, relative to boys, adolescent girls experience higher rates of internalizing disorders, and may have different emotional responses to the developmental changes associated with puberty (e.g., Hammack et al. 2004). Further, stressors associated with poverty appear to transcend geographic residence: Rural youth living in poverty experience similarly high rates of stress exposure and related psychiatric disorders (Costello et al. 2001). These investigations support replication of the current study with samples of adolescent girls and geographically diverse youth.

The primary goal of the current investigation was to determine whether family functioning moderated/mediated the relation between stress exposure and internalizing outcomes in youth and caregivers. While our hypotheses and selection of analyses were consistent with this objective, future investigations should consider other pathways to youth internalizing problems. For example, stressful life experiences may contribute to the etiology of internalizing in youth via their role in precipitating caregiver depression. Conger et al. (2002) found that economic hardship (e.g., low income, unemployment) was related to emotional distress in African-American suburban and rural caregivers. In turn, caregiver distress was associated with maladaptive parenting practices which predicted internalizing

and externalizing symptoms in youth. In this sense, stress exposure may serve as a primary (via impact on the individual) and secondary (via impact on other families members) precipitant of internalizing problems in youth and caregivers. Depressed and stress-exposed caregivers may hold negativistic perceptions of their children becoming less nurturing, more critical, and more punitive. Further, stressful life experiences (e.g., needing to care for a sick loved one, criminal victimization) and symptoms characteristic of internalizing disorders (e.g., withdrawal from family and friends, emotional numbing) may compromise a parent's capacity to provide consistent supervision for their children (e.g., Cui et al. 2007; Papp et al. 2005). Indeed, multiple studies suggest that depressed parents are less likely to display warmth and more likely to engage in maladaptive parenting practices (e.g., harsh punishment practices), known risk factors for internalizing problems in youth (e.g., Conger et al. 1995; Elgar et al. 2004; McCabe et al. 1999, 2007).

Finally, changes to the measure of stress exposure prevented us from examining rates of stress exposure over time. Changes in measures from one wave of data collection to another limits the ability to create identical scales at each wave. Without identical measurement, the ability to clearly study the relation of change in one phenomenon to change in another phenomenon is restricted. Therefore, changes in family stress exposure over time could not be studied.

This study offers several unique contributions to the literature. First, by using a longitudinal, prospective design we were able to evaluate the psychological impact of stress exposure over time and to examine whether family functioning attenuated the development of internalizing problems in at-risk families. The finding that youth living in struggling families were less resilient to stress from Daily Hassles underscores the importance of promoting family structure, routine, and organization in treatment programs for depressed adolescents. Second, the majority of studies investigating trajectories of stress in urban families have focused on the relation between stress and externalizing outcomes; substantially fewer studies have focused on internalizing outcomes. Thus, the current study fills a gap in the literature by investigating pathways to internalizing problems in vulnerable youth. Third, to the extent that aggregating both youth and caregiver self-reports of stress exposure better captures the phenomenon of family stress, results may provide a more valid inspection of the impact of stress exposure on family members. Future research may incorporate this approach to provide a more robust representation of family-based phenomena. Additionally, the stress assessment used in the current study should be further evaluated to determine applicability to other clinical phenomena and populations.

Findings from the current study have several important clinical implications. First, consistent with previous research, stress from Developmental Transitions predicted youth internalizing problems. Programs that offer anticipatory guidance about the physical, emotional, and relational changes associated with adolescence may help parents and youth navigate this period successfully, reducing risk of internalizing problems in youth. Second, family functioning predicted both youth and caregiver internalizing problems; youth and caregivers from lower functioning families displayed higher levels of depression and anxiety. This finding suggests that family-based prevention programs designed to promote adaptive parenting practices and family cohesion may reduce risk of internalizing problems

among vulnerable family members. Further, therapies that bolster family functioning may serve as effective interventions in and of themselves for depressed adolescents and caregivers, a hypothesis supported by recent literature. Indeed, Compas et al. (2010) found that improvements in coping with stress and parenting practices mediated the effects of a family-focused cognitive behavioral treatment on internalizing outcomes for both caregivers and youth. Third, family functioning mediated the relation between stress from Daily Hassles and youth internalizing outcomes, a finding that underscores the relative salience of frequent exposure to minor, everyday frustrations in the development of adolescent internalizing and supports the use of interventions that promote strong family structure, routines, organization, and adaptive coping in the treatment of depressed youth.

In summary, the current study provided an extension of previous research by highlighting the use an empirically derived assessment of stress in the prediction of adolescent internalizing problems, by detailing the relationship between stress and family functioning, and by clarifying the relation between stress, family functioning, and later internalizing problems in urban families. Despite research supporting the efficacy of family therapies for depressed youth (e.g., Carr 2009; Diamond and Josephson 2005), only about 30 % of treatment protocols for youth involve family members (Sander and McCarty 2005). Taken together, our results support the incorporation of familybased components in interventions to treat both depressed youth and depressed caregivers. Further, as strong family functioning protects youth against the negative psychological impact of stress from Daily Hassles, prevention programs that promote family structure, routine, organization and coping may reduce risk of internalizing outcomes in vulnerable youth.

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Figure 1. Selection of cases for Chicago youth development study ($n = 362$) sample and for the present analyses ($n = 283$)

Table 1

Percentage of youth and caregivers reporting stress exposure

Stress category	Youth report	Caregiver report
Daily hassles	33.4	51.8
Got into trouble at work/school	3.1	45.3
Parents had to spend time away from the family	12.5	6.1
Parent-youth arguments about substance use	4.1	2.6
Increased caregiver arguments	20.3	2.9
Other small daily problems or events	17.2	6.5
Circumscribed events	65.6	76.0
Lost a good friend	15.0	34.6
Property got wrecked or damaged	6.0	12.9
Family member died	18.4	28.9
Another close relative or friend died	26.5	23.7
Family member became seriously ill or injured	20.3	29.8
Family member ran away	3.1	6.1
Family member got arrested or went to jail	19.4	28.4
Family member was robbed or attacked	11.6	16.7
Someone other than a family member attacked	8.5	18.2
Induced transitions	83.8	79.2
Parents quit or lost a job	10.9	15.8
Serious financial problem	25.3	16.1
Received public aid	41.9	31.8
Moved to a new home or apartment	14.4	24.6
Family member moved out	11.3	19.3
Family member found to have a learning problem	11.6	6.1
Lost or gained a lot of weight	39.1	36.8
You got pregnant/got someone pregnant	8.8	1.2
Family member had major emotional problems	12.2	6.7
Family member was drinking or using drugs	14.4	14.7
Developmental transitions	72.2	64.0
Family member got married	13.4	22.5
New baby came into the family	29.1	35.2
Other big life changes or events	15.7	9.6
Parent-youth arguments about staying out	28.4	12.6
Parent-youth arguments about friends and activities	27.8	19.0
Parent-youth arguments about youth's appearance	24.7	14.9

Table 2

Canonical correlations

Variable	<i>r</i>
Daily hassles	0.61
Circumscribed events	0.45
Induced transitions	−0.03
Developmental transitions	0.83

Table 3

Group means for discriminant function

Family cluster	<i>M</i>
Exceptionally functioning	−0.39
Task oriented	−0.31
Moderately functioning	0.30
Struggling	0.41

M mean

Table 4

Group means for stress variables

Family cluster	Daily hassles		Circumscribed events		Induced transitions		Developmental transitions	
	M	SD	M	SD	M	SD	M	SD
Exceptionally functioning	1.12 ^a	1.12	1.16	0.12	1.27	0.13	0.99 ^{bc}	0.11
Task-oriented	1.23	1.12	1.32	0.13	1.49	0.14	1.04 ^{de}	0.12
Moderately functioning	1.42	0.08	1.56	0.13	1.37	0.14	1.45 ^{cd}	0.12
Struggling	1.31 ^a	0.07	1.39	0.12	1.30	0.13	1.44 ^{bc}	0.11

M mean, SD standard deviation

Variables sharing a common superscript letter differed at $p < 0.05$, Tukey HSD post hoc test

Table 5

Logistic regressions predicting youth and caregiver internalizing

Variables	Step (df) χ^2	Model (df) χ^2	Wald	β (SE)	Odds
Youth internalizing					
Step 1	(4) 17.44**				
Daily hassles			3.10***	0.73 (0.41)	2.07
Circumscribed events			0.01	0.01 (0.30)	1.01
Induced transitions			0.02	0.03 (0.24)	1.03
Developmental transitions			7.11**	0.76 (0.28)	2.13
Step 2	(1) 17.12** (5) 34.56**				
Daily hassles			1.24	0.49 (0.44)	1.63
Circumscribed events			0.02	-0.04 (0.33)	1.00
Induced transitions			0.14	0.10 (0.25)	1.10
Developmental transitions			4.44*	0.65 (0.31)	1.91
Family functioning			15.30**	0.74 (0.19)	2.10
Caregiver internalizing					
Step 1	(4) 1.26				
Daily hassles			0.07	0.11 (0.41)	1.12
Circumscribed events			1.07	0.29 (0.28)	1.33
Induced transitions			0.19	-0.10 (0.24)	0.90
Developmental transitions			0.15	-0.11 (0.28)	0.90
Step 2	(1) 10.14** (5) 11.40**				
Daily hassles			0.08	-0.12 (0.42)	0.89
Circumscribed events			0.59	0.22 (0.28)	1.25
Induced transitions			0.02	-0.04 (0.25)	0.97
Developmental transitions			0.89	-0.27 (0.29)	0.76
Family functioning			9.43**	0.55 (0.18)	1.74

 df = degrees of freedom, χ^2 = chi statistic, β SE = beta standard error*
 $p < 0.05$,

$d = 0.078$

 $d < 0.001$
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