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## Characteristics of resilient youths living in poverty: The role of self-regulatory processes

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### Abstract

As part of a larger investigation of very low income families, this study examined the characteristics that differentiated resilient from nonresilient school-age youths, with a focus on self-regulation (e.g., executive function, emotion regulation) skills. Resilience was operationally defined in a robust and comprehensive manner using well-established instruments that measured children's emotional well-being and mental health. Controlling for other explanatory variables, including differences in the experience of negative life events and chronic strains, resilient youths were notably different from nonresilient youths in terms of having greater self-regulatory skills and self-esteem, as well as in receiving more active parental monitoring. Study findings are discussed with regard to the theoretical framework of self-regulation and their implications for preventive intervention.

Children growing up poor in America face an array of adverse experiences that place them at heightened risk for behavioral and emotional problems (Buckner, Bassuk, Weinreb, & Brooks, 1999; Duncan, Brooks-Gunn, & Klebanov, 1994; Huston, McLoyd, & Garcia Coll, 1994; Luthar, 1999; McLoyd, 1998). Although many of these experiences are not unique to being poor, youths in low-income neighborhoods are much more likely to witness violence, vandalism, drug dealing, illegal substance use, and other forms of crime than youths in middle or upper class settings and to

have fewer (or inferior) community resources such as parks and youth activities. In their family environments, poor children are also more apt to be exposed to the risks of domestic violence, parental substance abuse and mental health problems, and other stressors that emanate from economic hardship. Some adversities, homelessness being one example, are virtually only experienced by children living in poverty. In addition to the discrete negative life events to which poor children are too regularly subjected, it is also necessary to consider the chronic strains in their lives in order to more fully capture their experiences. Such strains can take the form of concerns over the safety of oneself and loved ones, hunger, or worries over where they will be living in the future, to name a few, and emanate from their life histories and environmental circumstances. Whether discrete, episodic, or constant, these stressors can each exact a toll on the emotional well-being of children.

Despite the well-established link between poverty and elevated rates of psychiatric symptomatology for children, a sizable percentage of economically disadvantaged youths

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are free of significant mental health problems and exhibit competence in the face of adversities in their lives (Masten & Coatsworth, 1998). The resilience that these youths manifest is important to appreciate and better understand in order to present a more balanced portrayal of their mental health and adaptational status. In addition, identifying the inner skills and external resources that they are able to draw from in more successfully adapting to their environments can shed light on protective mechanisms for promoting mental health and preventing mental health problems.

There are only a handful of studies specifically on resilience that have involved inner city youths (cf., Luthar, 1991; Luthar, Doernberger, & Zigler, 1993; Wyman, Cowen, Work, Hoyt-Meyers, Magnus, & Fagen, 1999; Wyman, Cowen, Work, & Parker, 1991) or children from economically disadvantaged settings (cf. Werner, 1993; Werner & Smith, 1992), despite the burgeoning literature on this topic. Garmezy (1991, 1999) stressed the importance of studying resilience in the context of poverty; this is an endeavor that can be justified on at least two grounds. First, the absolute number of children growing up in families below the poverty line is substantial: approximately 13.5 million children, representing 19% of all persons under the age of 18 in American (U.S. Bureau of the Census, 1999). Second, by studying extremely poor children directly, it is more likely that findings about resilience (and stress and coping processes more broadly) can be translated into effective prevention programs and policies that can benefit economically disadvantaged children and families.

Toward this end, this paper describes an effort to compare and contrast a group of youths who appear resilient to youths of similar background who are not resilient. All youths in the study were from extremely low income, residentially unstable, predominantly single-parent families. The goal was to operationally define resilience in a robust and comprehensive manner using well-established instruments that measured children's emotional well-being and mental health. As will be described in detail, five separate criteria were

employed in categorizing youths as resilient or nonresilient with the intent that those deemed resilient would evidence good functioning and lack of significant mental health problems across multiple indices. A comprehensive array of assessment instruments was administered (in a manner blind to resilience status) in order to assess child-centered (i.e., internal) and family/environment-centered (i.e., external) characteristics and resources. We focus, in particular, on the extent to which self-regulatory skills (comprised of problem-focused and emotion-focused coping skills) distinguish resilient from nonresilient youths, while controlling for other more firmly established predictors such as intelligence, parental monitoring, and social support.

### Creating an Operational Definition of Resilience

In this study, we primarily adopted a *person-focused* approach to the study of resilience; although, as will be further described in the Methods section, we considered resilience from a *variable-focused* perspective as well. A person-focused approach, in that it entails grouping people together (e.g., resilient or nonresilient) who fit a common pattern across different aspects of functioning, has the advantage of enabling a more complex and holistic portrayal of resilience than can typically be accomplished using a variable-centered approach (Masten, 2001). A person-focused approach makes it simple to draw distinctions about what each group (resilient vs. nonresilient) is like and how they might have come to be different. Alternatively, a variable-centered (nongrouping) approach often enables the number of participants in a study of resilience to be larger (as those who are neither resilient or nonresilient can also be included) leading to greater statistical power.

There is debate among investigators about the meaning of resilience and whether a definition of resilience can be applied across settings or should be context specific (Kaplan, 1999; Luthar, Cicchetti, & Becker, 2000; Luthar & Cushing, 1999). According to Masten and Coatsworth (1995), resilience refers to

“achieving desirable outcomes in spite of significant challenges to adaptation or development” (p. 737). Children who exhibit positive outcomes without having experienced significant hardship of one sort or another could be considered competent but not resilient. Thus, resilience is a term that is most meaningfully applied to persons who are exhibiting successful adaptation even though their environment (or prior experiences) has placed them at heightened risk for maladaptive outcomes.

Researchers have typically defined resilience and examined its correlates in circumstances in which there is a shared context or commonality of adversity experienced by all participants in the study. This makes it easier to attribute variation in an individual’s adaptational status as due to differences in inner and external resources (and other determinants) rather than differences in the type of adversity encountered. Even so, there can be great variation in the kind of experiences persons within the same risk category have had, as documented in studies of children who have experienced parental divorce (Grych & Fincham, 1997; Sandler, Wolchik, & Braver, 1988), parental depression (Beardslee, Keller, Lavori, Staley, & Sacks, 1993; Beardslee, Versage, & Gladstone, 1998; Hammen, 1997), or parental illness (Compas, Worsham, Ey, & Howell, 1996) or who have survived childhood cancer (Beardslee, 1981). Hence, within a single category of adversity (e.g., living in poverty, divorce, parental mental illness) it is important to account for variation in experience when comparing individuals on measures of outcome (Cicchetti & Garnezy, 1993).

To address these issues, resilient and non-resilient youths were classified using indices of mental health and competence from widely employed instruments. Using multivariate analyses, factors that distinguished the two groups were identified while statistically controlling for variation in negative events and chronic strains. The intent was to statistically equate the two groups in terms of prior adversity in order to reach more valid conclusions about other factors that may differentiate them.

### **Resilience in Child Development: Inner and External Resources**

As summarized by Kumpfer (1999), a multitude of factors (internal and external) have been linked to resilience in children. Inner characteristics of resilient children include attachment to positive adult role models during critical developmental periods (Werner & Smith, 1992), intellectual ability (Masten, Best, & Garnezy, 1990; Masten & Coatsworth, 1998; Masten, Hubbard, Gest, Tellegen, Garnezy, & Ramirez, 1999), an internal locus of control (Luthar, 1991; Magnus, Cowen, Wyman, Fagen, & Work, 1999; Werner & Smith, 1992), high self-esteem and self-efficacy (Bandura, 1989; Werner & Smith, 1982), self-reflection and self-understanding (Beardslee, 1989), good problem-solving skills (Anthony, 1987; Murphy & Moriarty, 1976), the ability to be empathic (Werner, 1986), and emotion regulation (Cicchetti, Ackerman, & Izard, 1995; Cicchetti, Ganiban, & Barnett, 1991; Cicchetti & Lynch, 1993; Cicchetti, Rogosch, Lynch, & Holt, 1993).

#### *Self-regulatory skills*

In this study, we focus on children’s ability to self-regulate as a potentially important characteristic of resilient youths. According to Karoly (1993):

Self-regulation refers to those processes, internal and or transactional, that enable an individual to guide his/her goal-directed activities over time and across changing circumstances (contexts). Regulation implies modulation of thought, affect, behavior, or attention via deliberate or automated use of specific mechanisms and supportive metaskills. (p. 25)

The development of self-regulatory skills is a defining feature in the emergence of competence and resilience among younger children (Kopp, 1982; Masten & Coatsworth, 1998). Additionally, self-regulation is important throughout the lifespan (Carver & Scheier, 1999; Heckhausen, 1999; Karoly, 1993), not just early childhood, and is a con-

cept that has received little attention in prior studies of resilience. Cicchetti and Tucker (1994) state that an individual's effort to adapt to his or her environment through self-regulation/self-organization is a key component of development. Prior research has shown that self-regulatory skills manifested in childhood portend other indices of positive coping and academic success in early adulthood (National Mental Health Advisory Council, 1996). Good attention regulation appears to be important in the development of competence across multiple domains (Masten & Coatsworth, 1998). Although qualities such as determination and perseverance have been reported by others to be attributes of resilient youths (Bandura, 1989; Werner, 1986), they have not been framed in terms of self-regulation.

Aspinwall and Taylor (1997) argue for the centrality of self-regulation skills in the activation of *proactive* means of coping with stress. Through proactive coping, which entails anticipating potential stressors, analyzing how to prevent them or mute their impact, and planning a course of action, individuals can substantially reduce the amount of stress in their lives, leading to better psychosocial adjustment (Aspinwall & Taylor, 1997). Similarly, Eisenberg, Fabes, and Guthrie (1997) view coping within the framework of regulation and see it as the expression of self-regulatory processes in the context of stress. They differentiate three separate modes of regulation used in coping with stress: (a) the direct regulation of emotion (emotion-focused coping); (b) attempts to regulate the situation (problem-focused coping); and (c) behavioral regulation (attempts to regulate emotionally driven behavior). Based on the research of Block and Block (1980), Eisenberg and Fabes (1992) proposed three general styles of regulation: optimal regulation, underregulation, and highly inhibited regulation. According to Eisenberg et al. (1997), optimal regulation "involves the flexible use of regulatory mechanisms, relatively high use of constructive modes of regulation such as activational control, attentional control (e.g., attention shifting and focusing), planning and problem solving, and moderately high use of inhibitory con-

trol." (p. 47). Underregulation represents the opposite end of the continuum of optimal regulation, whereas highly inhibited regulation is characterized by high levels of inhibition control (Eisenberg et al., 1997). Self-regulatory skills are largely synonymous with executive function capacities involving executive attention, effortful control, and emotion regulation (Posner & Rothbart, 2000). Like Eisenberg et al. (1997) and Aspinwall and Taylor (1997), we believe these skills are essential to effective coping processes, whether proactive or reactive in nature, and predict that they should be better developed in resilient youths.

External resources such as social support also appear to be important in affecting a child's response to stress (Cauce, Felner, & Primavera, 1982; Hirsch & Reischl, 1985; Sandler, 1981; Sandler, Miller, Short, & Wolchik, 1989; Wolchik, Ruhlman, Braver, & Sandler 1989). In particular, a positive relationship with at least one parent, or parent surrogate, appears critical in facilitating a child's adjustment (Masten & Coatsworth, 1998; Werner & Smith, 1992; Wyman et al., 1999). Across studies, a strong supportive relationship is the type of external resource most consistently linked to resilience in children (Masten & Coatsworth, 1998) and adults (Beardslee, 1989). Among children living in poverty, many of whom are in households headed by the mother, the mother-child relationship and the quality of her parenting are likely to be especially salient. Positive parenting practices in which the emotional and instrumental needs of a child are attended to and child behavior is managed with minimal coercion and threats may foster good behavior and reduced aggression in children (Wyman et al., 1999). Skinner and Wellborn (1994) argue the importance of providing structured environments (e.g., clear expectations, consistent rewards and punishments, and assistance when needed) for children in order to ameliorate the effects of stress and promote effective coping. The extent to which a mother monitors the whereabouts and activities of a child is also relevant. Higher levels of parental monitoring have been found to be associated with resilience (Baldwin, Baldwin, & Cole, 1990; Garmezny, 1999; Tiet, Bird, Davies, Hoven, Co-

hen, Jensen, & Goodman, 1998) and to be a deterrent to delinquent behavior and drug use (Dishion & Loeber, 1985; Flannery, Williams, & Vazsonyi, 1999). Strong parental monitoring may be stifling for youths living in relatively safe, middle-class settings but can be warranted for children and adolescents living in dangerous neighborhoods in order to protect their well-being.

Based on prior research as referenced above, we expected that resilient, compared to nonresilient, children would evidence greater cognitive abilities and have higher self-esteem.

We also anticipated that resilient children would receive stronger parental monitoring and have a social network with a greater quantity and better quality of ties that could provide social support. We hypothesized that resilient children will also evidence greater self-regulatory skills, independent of the factors previously mentioned. Hence, in multivariate analyses we expect that a measure of self-regulation will distinguish resilient from nonresilient children, controlling for these other explanatory variables, as well as differences in experiences of adversity. We also sought to determine if any association we might find between self-regulation and resilience varies as a function of gender or age. We do not expect to see any differences between boys and girls in this association. Although some would argue that self-regulatory skills are especially important for younger children, we view them as critical for successful development across the life span and would be surprised to see an association between self-regulation and resilience that is substantially different for younger versus older children.

## Method

### *Study design and background*

Data for this study were gathered using a cross-sectional design in which research participants were administered a comprehensive set of measures at one time point. Participants included 155 youths (aged 8–17 years) and their mothers, who were part of a larger longitudinal investigation of low-income families

in Worcester, MA. The youths in this study ( $n = 155$ ) comprise a portion (68%) of the 228 school-age children assessed during the baseline phase of the larger project and represent those who were successfully retained during the longitudinal phase. In terms of demographic characteristics, the average age of these 155 youths was 12 years, 0 months and 53% were girls. Their racial/ethnic makeup was 35% non-Latino Caucasian, 21% African American, 36% Puerto Rican Latino, and 8% other Latino.

The methodology and sampling of this broader project will briefly be described in order to explain the context of the present study. The Worcester Family Research Project (WFRP) entailed in-depth assessments of low-income families over three time points. Located in the center of the state, Worcester is Massachusetts' second largest city (population approximately 170,000); 15% of its residents live below the poverty line. The project began in 1992 as a case-control study involving 220 sheltered homeless families and 216 low-income housed (never homeless) families. These families were then followed prospectively with follow-up interviews taking place approximately 12 and 24 months after the first (baseline) interview. The predominant goals of the WFRP were to: (a) identify risk and protective factors for family homelessness; (b) examine the impact of homelessness on children; (c) determine the service needs of low-income mothers and children; and (d) describe the course of homelessness and residential instability for poor families.

Study participants in the WFRP were mothers and their children of all ages who were living with them. Fathers were not part of the WFRP due to the fact that in many mid- and large-sized cities in the United States, especially in the Northeast and Midwest, the vast majority of homeless and poor housed families are single parent and female headed. At the inception of the project, homeless mothers were enrolled from all nine family shelters in Worcester. Housed mothers (who had never been homeless) were recruited from the public welfare office when each came for a periodic redetermination of her eligibility for cash assistance. In addition to interview-

ing the mother about herself and her children, direct assessments of the children were also conducted. Findings from the baseline phase of the WFRP, including details of the study's methodology, were reported in previous publications (cf., Bassuk, Buckner, Weinreb, Browne, Bassuk, Dawson, & Perloff, 1997; Bassuk, Weinreb, Buckner, Browne, Salomon, & Bassuk, 1996; Buckner et al., 1999).

The longitudinal phase of the WFRP entailed two waves of follow-up interviewing using a small set of repeated measures. In conjunction with this phase, funding was obtained to collect much more comprehensive mental health-related data (at one time point) that was germane to stress and coping processes and resilience among the school-age children in the Worcester sample (hence, the basis of this report). The development and piloting of this additional assessment protocol took place shortly after the first wave of interviewing had begun for the longitudinal phase of the WFRP. The finalized protocol was administered once to each youth, during either the first ( $n = 52$ , 33%) or second ( $n = 103$ , 67%) longitudinal interview. Although concerted efforts were made to keep all families in the study, the residential mobility of this population made it difficult to successfully track and reinterview all participants. We compared the characteristics of the 155 youths who were successfully followed up for this investigation to those of the 73 who were not retained. Both groups were very similar in terms of age, gender, prior stressful life events, and abuse history, as well as the five criterion mental health and competence measures used in differentiating resilient from nonresilient youths (described later). However, the two groups were different in terms of racial/ethnic status: those who were successfully followed were more likely to be non-Latino Caucasian or African American and less likely to be Puerto Rican Latino than those who dropped out. This may be due to greater difficulties in enrolling and retaining Spanish-speaking families in the study and to patterns of migration between the United States and Puerto Rico for certain Puerto Rican families living in Worcester. Even with

the disproportionate loss of Puerto Rican Latino youths for this study, this group still had the largest representation of the four race/ethnic groupings we differentiated.

Although the WFRP began as a study of sheltered homeless and housed families, at the first longitudinal interview 92% of the homeless families had found housing (the average duration of a homeless episode had been 12 weeks), whereas 8% of the housed families had become homeless. Hence, by the time of the follow-up interviews (and data collection for this study), the initial homeless versus housed distinction had become quite blurred for these families, as both groups were comparable in terms of current housing status. As such, it is most accurate to characterize the 155 youths in this study as coming from extremely poor but housed families with an overrepresentation of youths who had been homeless in the past.

#### *Procedures*

Written informed consent was obtained for all participating mothers, and youths were asked to give assent. As an incentive to participate at each interview, mothers received \$10 vouchers and children received \$5 vouchers redeemable for merchandise at local stores. The interviewers for this study had been with the WFRP since the initial phase of the investigation and were assigned to interview families over multiple time points. All interviewers had bachelors or masters level training in the social sciences. By the time of data collection for this study, the interviewers had seen the youths and their mothers on multiple occasions spanning several years and were typically quite familiar with them. (However, they were unaware as to the child's resilience status, which was determined subsequent to data collection, as explained below.) Interviews were conducted with the mother (about herself and her child) and with the child directly. Data gathered from mothers about themselves included detailed information on demographic characteristics; income, benefits, and other resources; mental health; history of abuse and exposure to violence, both in childhood and

adulthood; and social supports (see Bassuk et al., 1996, 1997, for further details). Mothers were also asked detailed information about their children's background and developmental history. For both mothers and children, instruments were chosen with sensitivity to cultural issues, particularly for Spanish-speaking participants. Existing Spanish versions of instruments were used when available and bilingual and bicultural translators translated other measures into Spanish, which were then reviewed for accuracy. Interviews of mothers and the direct assessments of children were conducted in Spanish when this was the respondent's sole or preferred language.

In the following section we describe the measures and criteria used to objectively and empirically distinguish resilient from nonresilient youths. These instruments draw from different informants (e.g., mother report, youth self-report, and interviewer ratings) and, by and large, have been widely used by other investigators.

#### *Measures used in operationally defining resilience*

The measures we selected in distinguishing resilient from nonresilient youths span the domains of mental health, adaptive functioning, competence, and specific resilience characteristics. The presence of competencies, good adaptive functioning, and lack of significant mental health problems were all required in order for a youth to be deemed resilient.

*Behavior problems.* To measure children's emotional and behavioral problems, the Child Behavior Checklist 4–18 version (CBCL; Achenbach, 1991) was administered to the mother. The CBCL comprises specific syndrome scales and the composite internalizing and externalizing global scores. The internalizing global score combined the anxiety/depression, withdrawn behavior, and somatic complaints syndrome scales. The externalizing score was derived from items belonging to the delinquent behavior and aggressive behavior syndrome scales. Raw scores on the syndrome and global scales can be converted

into *T* scores with the mean set to 50. The CBCL has been shown to have criterion-related validity and high reliability (Achenbach, 1991; Mooney, 1987).

*Mental health symptoms.* Children were administered two self-report instruments to assess symptoms of depression and anxiety. Current depressive symptoms were measured using the 27-item Children's Depression Inventory (CDI; Kovacs, 1985). The CDI has exhibited good reliability and criterion-related validity in distinguishing emotionally distressed from normal school-age children (Helsel & Matson, 1984; Saylor, Finch, Spirito, & Bennett, 1984). Among the 155 youths in this study, coefficient alpha for the CDI total scale was .88. Current symptoms of anxiety were measured using the 37-item Revised Children's Manifest Anxiety Scale (RCMAS; Reynolds & Richmond, 1985). The RCMAS has good internal consistency and test–retest stability and has evidenced convergent validity with similar measures of anxiety (Finch & Rogers, 1984; Reynolds & Richmond, 1985). In this study, coefficient alpha for the total anxiety scale score was .89.

*Level of functioning/adaptation.* The Child Global Assessment Scale (CGAS; Shaffer, Gould, Brasic, Ambrosini, Fisher, Bird, & Aluwahlia, 1983) was completed by the interviewer at the end of data collection for each child to make an overall rating of his or her emotional and behavioral functioning. The CGAS is widely used by researchers and clinicians to quantify, on a scale from 100 to 1 (higher scores are indicative of better functioning), a child's *lowest* level of functioning over the past 6 months. Ten different descriptions of adaptive functioning, each linked to a decile, are used in determining a child's rating. Scores in the 100–70 range suggest excellent to good overall functioning in the past 6 months; if a child experienced any mental health symptoms over this time span, they had no more than a temporary and mild impact. Ratings between 70 and 40 suggest a child experienced some definite problems with mental health which created minor to moder-

ate impairment in functioning (either at home, school, with peers, or in multiple spheres). Scores from 40 to 1 are indicative of significant psychopathology that resulted in serious to extremely impaired functioning.

*Competence.* Resilience is evidenced not only by the absence of significant mental health problems but also by exhibiting competence in the spheres of daily living appropriate to one's developmental status. Due to its widespread use and assessment of multiple domains of competence, we chose the total competence *T* score from the CBCL (Achenbach, 1991) as one of the criteria in distinguishing resilient from nonresilient youths. The total competence score is derived by summing the CBCL Activities, Social, and School scales and then computing the *T* score based on normative data (the mean value is 50 with higher scores indicating greater competence). The Activities scale asks the mother to rate how much time her child spends (compared to other children the same age) engaged in sport, recreation, hobby, and club activities, as well as in jobs or household chores. The Social scale asks how many close friends the child has, how often they get together, and how well the child gets along with siblings, peers, and parents. Ratings of the academic performance of the child and an assessment of school-related problems, such as grade repetition, form the School scale.

#### *Criteria to distinguish resilient versus nonresilient youths*

As previously discussed, we sought to distinguish resilient from nonresilient children by using a robust and multidimensional set of criteria. Our approach follows in the epidemiological tradition of making a "case definition" (i.e., categorical distinction) using an algorithm with well-specified criteria. The five criteria we established were as follows: (a) resilient children should evidence good overall adaptive functioning (as measured by CGAS scores of 65 and higher); (b–d) the absence of significant psychiatric symptomatology (determined by CDI scores lower than 11 and RCMAS scores lower than 13) and behavior

problems (externalizing *T* score from the CBCL below the borderline clinical range of 60); (e) a total competence *T* score of 40 and higher from the CBCL. These measures included external ratings of the youth done by the mother (CBCL) and interviewer (CGAS, CCQ) and children's self-reported mental health (CDI, RCMAS). Because prior research has found an external informant to be a more valid rater of a child's externalizing problems and the child to be a better rater of his or her own internalizing symptomatology (Schwab–Stone et al., 1996), we did not take into account the CBCL internalizing *T* score (based on mother report) in the resilience criteria but deferred instead to the CDI and RCMAS self-report data. Children were categorized as nonresilient if they had one or more of the following mental health symptom scores:  $\geq 11$  on the CDI,  $\geq 13$  on the RCMAS, and  $\geq 60$  on the CBCL externalizing measure. In addition to having at least one elevated mental health symptom measure, nonresilient children had to receive a CGAS rating less than 80. This prevented youths who were functioning quite well from being classified as nonresilient, in spite of some mental health symptomatology.

With the aid of a computer, we then categorized these 155 youths into three groups: resilient ( $n = 45$ ), nonresilient ( $n = 70$ ), or neither ( $n = 40$ ). Youths in the last category were dropped from the analyses that examined resilience as a categorical variable. By virtue of the classification criteria, the 45 youths deemed resilient were free of clinically significant mental health symptoms (both internalizing and externalizing) and evidenced good functioning, whereas the 70 nonresilient youths all evidenced significant mental health problems with at least some difficulties in adaptive functioning.

In order to increase our statistical power and to examine resilience in a complimentary (variable-focused) manner, we also created a continuous-scale measure of resilience whereby all 155 youths in the study were assigned a resilience score. We calculated this resilience score by first computing *z*-scores for the two CBCL measures plus the CDI, RCMAS, and CGAS measures in order to form a common

metric. An average score was then computed, giving equal weight to the five measures (internal consistency = .76.) We should point out that this variable is a composite measure of global adaptation. Due to the fact that the measure is taken from study participants who are at high risk, it can also be considered a global measure of resilience.

#### *Measures used to control on prior adversity*

*Negative life events.* Mothers were asked to report the history of any physical or sexual abuse of their child, for which we created a dichotomous (yes/no) variable: physical/sexual abuse (either/or) history. It is likely that asking mothers resulted in an underreporting of physical abuse. Other life events experienced by a child (or his or her family) in the recent past were assessed using the Life Events Questionnaire (LEQ; Masten, Neemann, & Andenas, 1994), which we modified by including additional stressors (e.g., exposure to violence) experienced by low-income children. Using this modified instrument, youths were asked whether they had experienced any of 40 separate stressors (e.g., death of a friend, serious illness, parent arrested or jailed) in the last year that were outside of their control. This approach is consistent with Masten et al.'s (1994) recommendation to focus on life events that are outside of the child's ability to influence when examining the relationship between stress and adjustment, as well as prior research in which cumulative counts have been used to quantify children's experiences with negative life events (Johnson, 1986). Children were also asked to rate the stressfulness of each event that they reported (ratings were 0 = *not at all stressful*, 1 = *a little stressful*, 2 = *somewhat stressful*, 3 = *very stressful*, and 4 = *very, very stressful*).

We counted all events that the child reported as being at least "a little stressful." We adopted this approach as some ostensibly stressful events do not necessarily register this way for youths and to include them, regardless of the youths' assessment of their impact, can be problematic. Using this threshold, we created a summed count across the 40 uncontrollable life events.

*Chronic strains.* As previously mentioned, discrete negative events only pick up a portion of the adversities in life, especially for children living in poverty, who experience such strains as hunger, cold in the winter, the lack of safety and dangerous persons in the neighborhood, and concerns over the well-being of loved ones on an all too frequent basis. Commonly used measures of life events for children simply do not pick up these dimensions of life experience, which poor children deal with on a routine and, in some cases, daily basis. Although somewhat analogous to measures of "daily hassles" in terms of their more frequent occurrence, chronic strains, at least within the context of children living in poverty, are representations of more serious difficulties. Because no measure of chronic adversities appropriate for children living in poverty existed, questions were written by one of the authors (J. C. B.) to tap 22 separate strains, including those listed above. Framed as "things in your life that may be an ongoing problem or source of stress for you," youths were asked to self-report whether they had experienced a particular strain (e.g., "Do you ever get very hungry because you do not have enough food to eat"; "Do you ever feel the place you are living in is unsafe") and, if so, how frequently (ranging from 0 = *never* to 4 = *every day*). We created a variable representing the sum of frequency scores across these 22 strain items. The theoretical range of this summed score was 0–88. Among the 155 study participants, the variable ranged from 0 to 56, with a mean of 13.2, a median of 13.0, and a standard deviation of 10.1.

#### *Child-centered resources and other determinants*

*Cognitive abilities.* The Kaufman Brief Intelligence Test (K-BIT; Kaufman & Kaufman, 1990) was administered to the children to measure their cognitive abilities. The K-BIT comprises verbal (Vocabulary subtest) and nonverbal (Matrices subtest) measures of intelligence, as well as a composite IQ score derived from the two K-BIT subtests. Raw scores for each K-BIT subtest and an overall K-BIT IQ composite score are computed into

standard scores in accordance with the examinee's age. These scores had a mean of 100 and standard deviation of 15 in the standardization sample. The test-retest stability and criterion-related validity of the instrument are strong (Kaufman & Kaufman, 1990). An important consideration in choosing the K-BIT to assess cognitive abilities was its potential to assess children of different cultural backgrounds in a relatively unbiased manner, especially when using the K-BIT Matrices subtest (Kaufman & Kaufman, 1990).

*Self-esteem.* Self-esteem was measured using the global self-worth scale from the Self-Perception Profile for Children (SPP; Harter, 1985). The SPP consists of six scales measuring different facets of perceived competence and self-acceptance: academic/scholastic competence, social competence/social acceptance, athletic competence, acceptance/happiness with appearance, acceptance/happiness with behavior/conduct, and global self-worth (i.e., self-esteem). Among children in this study, alpha for the global self-worth scale was .77.

#### *Self-regulation skills*

Two separate *Q*-sort instruments, the California Child *Q*-Sort (CCQ; Block, 1978; Block & Block, 1980) and the Haan *Q*-Sort (Haan, 1977, 1982) were used to assess self-regulation skills. The child's interviewer completed the *Q*-Sorts after all other data had been collected. Although interrater reliability data was not obtained for either the CCQ or Haan *Q*-Sorts, the interviewer who did the two *Q*-Sorts knew the child quite well (more so than is typically the case in social science investigations) by virtue of having conducted in-depth interviews with the child, and with the mother about the child, over multiple time points spanning 2–3 years. At the time the interviewers completed the *Q*-Sorts, they had no knowledge of the child's ultimate classification in terms of resilience and did not know which constructs were being assessed with these instruments.

The CCQ is made up of 100 items (cards) representing a broad range of personality and behavioral descriptors that are examined and

placed into nine piles, according to how characteristic each is of the child (9 = *extremely characteristic*, 5 = *neither characteristic/nor uncharacteristic*, 1 = *extremely uncharacteristic*). The CCQ is applicable across a wide age range and has several strengths, including the ability to keep raters unaware of the target constructs and to reduce response biases by requiring that items be sorted into a fixed distribution (Shields & Cicchetti, 1997). The Haan *Q*-Sort, which consists of 60 items describing various adaptive and maladaptive personality processes relevant to stress and coping, provides a useful measure of coping styles (Hauser, Borman, Bowlds, Powers, Jacobsen, Noam, & Knoebber, 1991). Like the CCQ, the Haan items are sorted into nine piles, ranging from extremely uncharacteristic (Pile 1) to extremely characteristic (Pile 9) of a child. Similar to the CCQ, the Haan *Q*-Sort enables an individual child to be characterized in a manner that keeps the rater naive to intended constructs and reduces the potential for response bias. Morrissey (1977) provides a lengthy review of previous research that has successfully used the Haan *Q*-Sort.

Based on the literature on self-regulation cited previously, we identified items from each *Q*-Sort that tapped the executive function (e.g., motivational, executive attention, inhibitory control) and emotion regulation capacities that underlie the self-regulation construct. From the CCQ, 11 items were selected. Eight items tapped executive functions ("Is attentive and able to concentrate," "Gets strongly involved in what s/he does," "Is persistent in activities/does not give up easily," "Is resourceful in initiating activities," "Has high standard of performance," "Is planful; thinks ahead," "Is reflective; thinks and deliberates before speaking and acting," "Is unable to delay gratification; cannot wait for satisfactions"; the last item was reverse coded) and three items measured emotion regulation/emotional reactivity ("Overreacts to minor frustrations; is easily irritated and/or angered," "Is inappropriate in emotive behavior," "Has rapid shifts in mood; is emotionally labile"; all three items were reverse coded). Similarly, from the Haan *Q*-Sort, we selected 16 items that assessed executive function ca-

capacities (e.g., “Can defer decisions in complicated situations,” “Organizes self to complete tasks according to work plans,” “Inhibits his/her reactions for the time being when appropriate,” “Focuses attention and effort on most relevant problems or situations”) and 5 items that measured emotion regulation (e.g., “Regulates expression of feelings proportionate to the situation,” “Expresses feelings in a variety of satisfying, socially tolerated ways”). Scale scores for each measure were computed by averaging the items. Coefficient alpha was very good for each instrument, with the alpha for the 11-item CCQ measure of self-regulation equal to .86 and for the 21-item Haan *Q*-Sort measure equal to .88. These two self-regulation measures were highly correlated with one another ( $r = .79, p < .0001$ ). Likewise, the four underlying subscales (two measuring executive functions and two emotion regulation) all had good internal consistencies ( $\alpha = .79-.84$ ) and were highly correlated with one another ( $r$ s ranging from .55 to .70). Due to their good internal consistencies and strong associations, we combined the four subscales by computing the average (the scales have the same metric). This had the effect of weighting the executive function and emotion regulation items and subscales equally. The coefficient alpha for this combined scale measuring self-regulation was .84.

#### *Family/environment-centered resources and other determinants*

**Social support.** Children completed a short version (7 of 12 vignettes) of My Family and Friends (Reid, Landesman, Treder, & Jaccard, 1989) to ascertain the composition of their social networks. Children are first asked to nominate up to eight persons they see regularly. For each vignette, children are asked whom they would interact with to receive a specific type of support and then probed about the degree of satisfaction with each support. The assessed support functions include emotional, instrumental, informational, and companionship support. We focused on the emotional support data collected from three of the seven vignettes. To simultaneously assess the quality and quantity of a child’s support in one

variable, we took the average of the satisfaction ratings for the three emotional support vignettes given to each network member (to ascertain quality) and then summed these average scores across all network members (to tap quantity).

**Parental monitoring.** We asked questions used in the NIMH Methodological Survey of Child and Adolescent Populations study (Shaffer et al., 1996) to assess mother’s self-reported monitoring and supervision of her child. This parental monitoring subscale, comprised of two items (“How often do you know where your child is when s/he is away from home?” and “How often do you know who your child is with when s/he is away from home?”), evidenced high internal consistency among mothers in the present study ( $\alpha = .87$ ).

#### *Data analyses*

We used chi-square tests for discrete variables and *t* tests for continuous variables to compare resilient and nonresilient youths across a series of measures tapping the characteristics and external resources described above. We then employed hierarchical regression analyses to examine the relation of self-regulation to resilience, controlling for age, gender, adversities, and other psychosocial predictors. We conducted these hierarchical analyses in a parallel fashion, looking first at resilience defined categorically (resilient children were coded “1” and nonresilient “0”) as explained earlier and then as a continuous-scale variable. In each case, the self-regulation variable was entered last. We also explored for two-way interactions between self-regulation and age and gender, respectively.

## **Results**

#### *Descriptive analyses*

Of the 155 youths in the study, 45 (29%) were classified as resilient and 70 (45%) as nonresilient using the categorical approach to defining resilience. Table 1 presents a breakdown of these resilient and nonresilient youths based on the five criteria variables used in selecting

**Table 1.** Means (SD) of variables used to classify resilient and nonresilient youths

| Variable                                    | Resilient<br>( <i>n</i> = 45) | Nonresilient<br>( <i>n</i> = 70) |
|---|-------------------------------|----------------------------------|
| CBCL externalizing<br>global <i>T</i> score | 44.7*** (7.9)                 | 61.0 (12.3)                      |
| CDI   | 3.0*** (2.4)                  | 12.0 (7.8)                       |
| RCMAS                                       | 4.5*** (3.6)                  | 12.1 (6.5)                       |
| CBCL total<br>competence<br><i>T</i> score  | 49.1*** (6.1)                 | 38.5 (7.0)                       |
| CGAS  | 79.5*** (8.6)                 | 59.6 (12.8)                      |

Note: CBCL, Child Behavior Checklist; CDI, Children's Depression Inventory; RCMAS, Revised Children's Manifest Anxiety Scale; CGAS, Child Global Assessment Scale.

\*\*\**p* < .001.

the two groups. The two groups were, of course, quite distinct. Across a range of indices, the mental health, competence, and overall adjustment of the typical resilient youth was quite satisfactory and well within normal limits. Conversely, nonresilient youths reported much higher levels of psychiatric symptoms and were rated as having more externalizing behavior problems, being less competent, and functioning at a lower level than resilient children.

Important demographic and family characteristics of the two groups are presented in Table 2. Resilient and nonresilient youths were comparable in terms of age, gender, race/ethnic status, housing status (both at the start of the WFRP and currently), family composition, and income. Both groups are at high risk in terms of their past histories of homelessness (about 22% for the resilient group and 36% for the nonresilient), lack of sufficient family income, and membership in single-family female-headed households (about 70% of each group).

Table 3 presents the various types of adversity that these youths have experienced. The nonresilient group reported having had more negative, uncontrollable, stressful life events in the past year (5.0 on average compared to 3.5 for the resilient group),  $t(113) = 2.69, p < .01$ . They also reported more chronic strains and had higher rates of abuse. In terms of nonverbal intelligence, both groups were

comparable with the typical score in the average range for each. Resilient youths reported higher self esteem,  $t(113) = -4.51, p < .0001$ , but both groups reported receiving comparable levels of emotional support from their social network. Mothers of resilient youths indicated that they monitor their children's whereabouts and who they are with more than did the mothers of nonresilient children,  $t(113) = -3.29, p < .01$ . Resilient youths were rated appreciably higher in terms of qualities of self-regulation compared to nonresilient youths,  $t(113) = -8.96, p < .0001$ . The typical score of 6.8 for resilient youths would roughly translate to each self-regulation item viewed by the interviewer being, on average, "fairly characteristic or salient" for the child. For nonresilient youths, a score of 5.2 indicates that the items tapping self-regulation skills were, on average, rated in the middle of the 9-point continuum or as "relatively neutral."

#### Hierarchical regression analyses

We computed an intercorrelation matrix of variables to be used in hierarchical regression analyses (see Table 4). Because the zero-order (Pearson) correlations can be compared with the adjusted standardized regression coefficients from the multiple linear regression analyses (described below), we show the intercorrelation matrix with all 155 study participants. Looking at resilience as a continuous scale variable, the findings are quite analogous to Tables 2 and 3, which considered resilience using a categorical approach. In both cases, life events, chronic strains, abuse history, self-esteem, parental monitoring, and self-regulation are correlated with resilience, but age, gender, and emotional support are not. Perhaps due to greater statistical power afforded by the larger sample size, nonverbal intelligence is correlated with the continuous-scale resilience variable but not with the categorical variable as shown in Table 3. The zero-order association of self-regulation and resilience in Table 4 is striking ( $r = .68, p < .0001$ ).

We then took a hierarchical regression approach to examining the question of whether

**Table 2.** Resilient and nonresilient youths:  
Demographic characteristics

| Variable                         | Resilient<br>(n = 45) | Nonresilient<br>(n = 70) |
|----------------------------------|-----------------------|--------------------------|
| Average age (years;months)       | 11;8                  | 12;1                     |
| Gender (% girls)                 | 55.6                  | 58.6                     |
| Racial/ethnic status (%)         |                       |                          |
| Non-Latino Caucasian             | 42.2                  | 37.1                     |
| African American                 | 20.0                  | 24.3                     |
| Puerto Rican Latino              | 28.9                  | 32.9                     |
| Other Latino                     | 8.9                   | 5.7                      |
| Current (initial) housing status |                       |                          |
| Homeless                         | 0 (22.2)              | 0 (35.7)                 |
| Housed                           | 100 (77.8)            | 100 (64.3)               |
| Family composition               |                       |                          |
| Two parent                       | 28.9                  | 30.0                     |
| Single parent                    | 71.1                  | 70.0                     |
| Family annual income (median)    | \$12,500              | \$12,500                 |

\* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .

**Table 3.** Means (SD) of adverse experiences and inner and external resources of resilient and nonresilient youths

| Variable                            | Resilient<br>(n = 45) | Nonresilient<br>(n = 70) |
|-------------------------------------|-----------------------|--------------------------|
| Negative life events                | 3.5** (3.6)           | 5.0 (2.4)                |
| Chronic strain frequencies          | 7.6*** (6.3)          | 17.2 (10.7)              |
| History of physical or sexual abuse | 6.7%***               | 34.3%                    |
| Nonverbal intelligence              | 98.7 (10.8)           | 95.7 (12.4)              |
| Self-esteem                         | 3.6*** (0.4)          | 3.1 (0.8)                |
| Parental monitoring                 | 3.7** (0.6)           | 3.2 (0.9)                |
| Emotional support                   | 256.4 (74.8)          | 242.0 (84.0)             |
| Self-regulation                     | 6.8*** (0.7)          | 5.2 (1.2)                |

\* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .

self-regulation skills would predict resilience above and beyond other explanatory variables. A priori, we decided to control for age and gender as well as other variables that prior research has suggested would correlate with resilience such as intelligence, self-esteem, parental monitoring, and the amount of emotional support received from one's social network. Due to the fact that nonresilient youths had experienced more negative life events and chronic strains in the recent past and had been more frequently abused, we also controlled for these adversity factors as well.

As outlined earlier, we ran the hierarchical analyses in a parallel manner, with resilience defined categorically as the dependent vari-

able in one set of analyses (using multiple logistic regression) and as a continuous scale variable in the other set of analyses (using multiple linear regression). In other words, the first set of analyses distinguishes a group of children deemed resilient (based on criteria defined in the Method section) from a group defined as nonresilient (with a group of youths in neither category excluded from analyses). The second set of analyses, using the same underlying criteria measures as in the dichotomous definition, took a continuous-scale variable approach to operationalizing the construct of resilience. In doing so, every child in the study was assigned a resilience score reflecting greater or lesser degrees

**Table 4.** Zero-order intercorrelations of study variables (N = 155)

| Variable                    | 1       | 2    | 3      | 4       | 5       | 6     | 7      | 8      | 9    | 10     | 11 |
|-----------------------------|---------|------|--------|---------|---------|-------|--------|--------|------|--------|----|
| 1. Age                      | —       |      |        |         |         |       |        |        |      |        |    |
| 2. Gender                   | -.02    | —    |        |         |         |       |        |        |      |        |    |
| 3. Life events              | .09     | -.02 | —      |         |         |       |        |        |      |        |    |
| 4. Strains                  | -.02    | -.02 | .53*** | —       |         |       |        |        |      |        |    |
| 5. Abuse history            | .15     | .02  | .15    | .18*    | —       |       |        |        |      |        |    |
| 6. Nonverbal IQ             | -.02    | -.04 | -.04   | -.13    | .11     | —     |        |        |      |        |    |
| 7. Self-esteem              | -.28*** | .00  | -.18*  | -.34    | -.19*   | .12   | —      |        |      |        |    |
| 8. Parental monitoring      | -.11    | -.03 | .03    | .03     | -.10    | .10   | .11    | —      |      |        |    |
| 9. Emotional support        | -.28*** | .05  | .17*   | .13     | -.04    | -.01  | .26**  | .16*   | —    |        |    |
| 10. Self-regulation         | -.05    | -.10 | -.09   | -.21*   | -.36*** | .12   | .38*** | .32*** | .17* | —      |    |
| 11. Resilience (continuous) | -.12    | .01  | -.23** | -.54*** | -.24**  | .23** | .54*** | .29*** | .15  | .68*** | —  |

\* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .

of resilience and no youths were left out of the hierarchical analyses.

In Step 1 and Step 2 of the hierarchical regression analyses, age and gender respectively were entered into each of the logistic and linear regression models. Neither variable was a significant predictor in these models. In Step 3 we added negative life events, which was significant in both models. Likewise, the measure of chronic strains was a significant predictor in both the logistic and linear regression models (Step 4). For the linear regression model, it accounted for an additional 24% of the variance in resilience above and beyond what had already been explained. History of physical or sexual abuse was entered in Step 5 and, although it was significant in the logistic regression model, it did not explain a significant ( $p < .05$ ) amount of additional variation in the linear model. Just the opposite was the case for nonverbal intelligence (Step 6), which was significant in the linear regression model but not in the logistic model. We found that both self-esteem (Step 7) and parental monitoring (Step 8) explained a statistically significant amount of additional variation in the dependent measure that was not accounted for by variables previously entered in the logistic and linear regression models. In Step 9 we entered emotional support to the respective models, which was not significant in either analysis.

The last main effect variable we entered was the composite measure of self-regulation (Step 10), which we found to be statistically significant in both models. The variables entered in Steps 1–9 of the linear regression model had collectively accounted for 53% of the variation in the resilience outcome measure. The self-regulation variable explained an additional 16% of the variation ( $p < .0001$ ) that had not already been accounted for by these other nine variables. The zero-order association between resilience and self-regulation ( $r = .675$ , as shown in Table 4) indicates that the self-regulation variable alone can account for 45.6% of the variation in the continuous-scale dependent measure. The full linear regression model containing all 10 main effect variables explained a total of 69% of the variation in resilience.

In Steps 11 and 12, we examined whether the association between self-regulation and resilience varied as a function of age or gender. Two-way multiplicative interaction terms were created (Age  $\times$  Self-Regulation and Age  $\times$  Gender), with the continuous scale predictor variable for age centered, following the recommendation of Aiken and West (1991). The outcome of Step 11 reveals that the multiplicative term for age and self-regulation was not statistically significant in either the logistic or linear regression models. Likewise, gender does not appear to alter the resilience–

**Table 5.** Hierarchical regression analyses of predictors of resilience

| Step/Variable                       | Resilience as Categorical Variable<br>( <i>n</i> = 115) |              |                          |              | Resilience as<br>Continuous Variable<br>( <i>n</i> = 155) |                       |
|-------------------------------------|---|--------------|--------------------------|--------------|---|-----------------------|
|                                     | Odds Ratio<br>at Entry                                  | (95% CI)     | Odds Ratio<br>at Step 10 | (95% CI)     | $\Delta R^2$  | $\beta$ at<br>Step 10 |
| 1. Age                              | 0.94  | (0.81, 1.09) | 0.98                     | (0.75, 1.28) | .01   | -.04                  |
| 2. Gender                           | 1.13  | (0.53, 2.40) | 3.87                     | (0.99, 15.2) | .00   | .05                   |
| 3. Negative life events             | 0.85*   | (0.74, 0.98) | 1.06                     | (0.85, 1.32) | .06*  | .05                   |
| 4. Chronic strains                  | 0.84***   | (0.78, 0.91) | 0.86**                   | (0.77, 0.95) | .24***  | -.40***               |
| 5. Abuse history                    | 0.18*   | (0.05, 0.74) | 0.36                     | (0.05, 2.42) | .02   | .04                   |
| 6. Nonverbal IQ                     | 1.01  | (0.97, 1.06) | 0.98                     | (0.93, 1.04) | .03*  | .09                   |
| 7. Self-esteem                      | 5.26**  | (1.68, 16.5) | 4.07                     | (0.99, 16.7) | .11***  | .18**                 |
| 8. Parental monitoring              | 2.60*   | (1.23, 5.53) | 2.04                     | (0.91, 4.6)  | .05**   | .11*                  |
| 9. Emotional support                | 1.00  | (0.99, 1.01) | 0.99                     | (0.98, 1.00) | .00   | .04                   |
| 10. Self-regulation                 | 4.81***   | (2.11, 10.9) | 4.81***                  | (2.11, 10.9) | .16***  | .49***                |
| 11. Self-regulation $\times$ Age    | 0.84  | (0.64, 1.10) | —                        | —            | .00   | —                     |
| 12. Self-regulation $\times$ Gender | 2.24  | (0.43, 11.8) | —                        | —            | .00   | —                     |
| Total $R^2$                         |   |              |                          |              | .69   |                       |
| Overall $F$                         |   |              |                          |              | 31.8***   |                       |

\* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .

self-regulation association in either model (Step 12).

In Table 5, we also list the odds ratios (logistic regression model) and standardized regression coefficients (linear regression model) after all 10 main effect variables have been entered in the model. (The standardized regression coefficients convey the relative importance of the predictor variables in explaining the continuous-scale resilience outcome variable.) For the logistic regression model, self-regulation and chronic strains were the only statistically significant predictors. Both these variables emerged as independent predictors in the linear regression model as well. In addition, for the linear regression model, self-esteem and parental monitoring were also statistically significant predictors, and nonverbal intelligence fell just shy of statistical significance ( $p < .05$ ) as an independent predictor. In both the linear and logistic regression models, self-regulation emerged as the strongest independent predictor, followed by the measure of chronic strains.

As a further check on the robustness of the association between self-regulation and resilience, we compared the unadjusted and adjusted associations among those higher in ad-

versity and among those lower in adversity. We first transformed the life events and chronic strains variables into  $z$  scores and then took the average. Children were then divided into two groups, those at or above the 50th percentile in adversity (“higher adversity”) and those below the 50th percentile (“lower adversity”). Using the continuous-scale measure of resilience (to maximize our statistical power), we reran the hierarchical regression analysis for each of the two groups and computed the zero-order correlation coefficient. The results were equivalent. Among youths who were higher in adversity, the unadjusted association between self-regulation and resilience was  $r = .72$  ( $p < .0001$ ); it fell to  $\beta = .56$  ( $p < .0001$ ) when controlling for age, gender, history of abuse, nonverbal intelligence, self-esteem, parental monitoring, and social support. For youths who were lower in adversity, the unadjusted association was  $r = .66$  ( $p < .0001$ ); it fell to  $\beta = .61$  ( $p < .0001$ ) when controlling for the seven covariates. This indicates that the association between self-regulation and resilience is fairly constant over differing degrees of stressful experiences. We also examined the possible moderating effect of adversity on the self-regulation–resilience

association by creating a multiplicative interaction term. This interaction term was not statistically significant nor were the interaction terms for Parental Monitoring  $\times$  Self-Regulation and Self-Esteem  $\times$  Self-Regulation.

Lastly, given the connection between emotion regulation and internalizing symptoms, we reran both sets of hierarchical regression analyses reported in Table 5 with resilience defined with just the CBCL externalizing and competence scales and the CGAS and leaving out the CDI and RCMAS, which measure symptoms of depression and anxiety, respectively. The findings were comparable to those reported in Table 5. Moreover, the association between self-regulation and the modified resilience status variable actually strengthened in both the logistic (odds ratio = 6.7,  $p < .0001$  at Step 10) and linear ( $\beta = .61$ ,  $p < .0001$  at Step 10) regression analyses as a result of removing the two measures of internalizing symptoms from the definition of resilience.

In sum, we distinguished a group of resilient youths from a group of nonresilient youths based on indices of mental health, competence, and adaptive functioning. The two groups were comparable in terms of demographic characteristics but differed substantially with regard to experiences of adversity: nonresilient youths had encountered more negative life events, chronic strains, and abuse. Self-regulation emerged as the most potent independent predictor of resilience. Also, self-regulation explained additional variation not accounted for by adversity, intelligence, self-esteem, and parental monitoring. The association between self-regulation and resilience did not vary as a function of age, gender, or these other predictors.

## Discussion

Children living in poverty are subjected to environmental circumstances, negative life events, and chronic strains that are detrimental to their mental health and development (Buckner et al., 1999; Buckner & Bassuk, 1997; Duncan et al., 1994; Huston et al., 1994; Luthar, 1999; McLoyd, 1998). Yet, some youths, in-

cluding 29% of the participants in this study, manifest resilience. Despite the adversities in their lives, these youths were functioning well across multiple indices of mental health and competence, some even in an exemplary fashion. In “flipping the coin” on youths who are faced with very challenging life circumstances, we have sought to identify factors that may play a role in helping them achieve these positive outcomes. Such a focus on potential strengths can provide new information on factors that are important in children’s mental health and also identify potentially malleable targets for preventive intervention.

As previously mentioned, resilience is a term connoting positive adaptation in the face of adversity. However, poverty is only a proxy for more specific forms of adversity that individuals who live in impoverished circumstances experience to varying degrees. This is borne out in Table 3, because the children whom we classified as nonresilient had been subjected to significantly more negative life events, chronic strains, and abuse than resilient children. Clearly, these adversities have an impact on the mental health and behavior of children and represent more than just “nuisance” variables for which to statistically control.

Although this research and other similar investigations are a counterpart to studies that identify variables that heighten risk for disorder, they ought not to substitute for, or overshadow, efforts to document (and remedy) the pernicious effects of bad environments on individuals. A compassionate social policy requires the amelioration of adverse circumstances and negative events in the lives of poor children that risk or deficit model studies play a role in identifying. This includes vast reductions in the number of children who become homeless, who are exposed to violence or perceive their environment to be dangerous, and who experience hunger. At the same time, preventive interventions emanating from a “strengths” perspective, which attempt to promote competencies (and/or improve person–environment fit) among at-risk youths, should complement this endeavor and research that seeks to identify determinants of

resilience can provide an empirical foundation for these initiatives.

### *Self-regulation*

Findings from this research strongly supported our main study hypothesis, which is that self-regulation skills would emerge as a predictor of resilience (being more of a characteristic of resilient children), even when accounting for other explanatory variables. This finding was robust in that we found self-regulation to be a powerful independent predictor of resilience when modeled either as a dichotomous categorical variable or as a continuous scale variable; when modeled separately among youths higher and lower in prior adverse experiences; and when the resilience variable was stripped of its internalizing component parts. Furthermore, the self-regulation–resilience association is of comparable magnitude for boys and girls and for children of different ages.

Using the continuous scale variable for purposes of illustration, as shown in Tables 4 and 5, the adjusted association of self-regulation and resilience ( $\beta = .49, p < .0001$ ), while lower than its zero-order correlation ( $r = .68$ ), is still of impressive magnitude. Undoubtedly, other variables known to be associated with resilience are not in the multivariate models shown in Table 5. However, it would be difficult to imagine the existence of any omitted variable that, were it controlled for in the models, would make the self-regulation–resilience association become negligible. The hierarchical regression approach, entering other known predictors of resilience first in the model (including nonverbal intelligence and self-esteem), imposes a sizable hurdle in demonstrating an association between self-regulation and resilience, one that was amply cleared in these analyses. Thus, we have demonstrated a strong association between self-regulation skills and resilience that, although only cross-sectional, is very likely not spurious in nature.

The skills being tapped through our measure of self-regulation are plausibly linked to good adaptive functioning and positive mental

health. Youths who score high on this composite measure of self-regulation evidenced good executive function and emotion regulation skills. The cognitive and coping styles measured by the self-regulation measure derive from higher order cognitive, or executive, function, skills that emanate from the prefrontal cortex (Pennington & Ozonoff, 1996). Executive function skills are required in formulating a plan and executing it from start to finish. Children with good executive function skills are diligent, well organized, disciplined in completing tasks, and strategic in their approach to resolving problems. Furthermore, they are adept at focusing attention, concentrating, and channeling their efforts on the most relevant aspects of an issue; able to consider alternative possibilities; flexible and rationale in their thinking; and able to develop abstract and formal (as opposed to concrete) solutions to problems. Kumpfer (1999) lists these qualities—flexibility in coping style and the ability to create alternative problem-solving strategies—as characteristics of resilient individuals. It should be noted that self-regulation, comprised in part of cognitive functioning elements, contributed to the prediction of resilience in this study over and above nonverbal intelligence, which was statistically controlled prior to the entry of the self-regulation variable. As such, self-regulation explains “new” variation in resilience that is not predicted by intelligence.

Self-regulation also comprises emotion regulation. Youths with good emotion regulation skills are adept in the management of their emotional states. They are unlikely to lash out in anger, are not seen as volatile, and do not have rapid shifts in mood. These children are adept at modulating how strongly they express their feelings, they direct their emotions appropriately, and display their feelings in manners that are easily accepted by others. Emotion regulation is a critical component of adaptive behavior and coping (Cicchetti et al., 1995). Prior research has shown that children who are poorly regulated in their expression of emotions are more likely to develop mood and behavioral disorders (Gross, 1998; Shaw, Keenan, Vondra, Delliquadri, &

Giovannelli, 1997), and this tendency is also likely to adversely impact their social relationships (Eisenberg, Fabes, Murphy, Maszk, Smith, & Karbon, 1995; Shields, Cicchetti, & Ryan, 1994). Alternatively, learning to manage one's negative emotions with appropriate modulation is important in developing social competence and in rebounding from psychological distress (Cicchetti et al., 1991; Thompson & Calkins, 1996).

In order to address the issue of why self-regulatory processes may be important in the manifestation of resilience, it is useful to recall the ideas of Aspinwall and Taylor (1997) and Eisenberg et al. (1997) mentioned earlier. Aspinwall and Taylor (1997) argued that good self-regulation skills are key to effectively coping with stress in a proactive manner. As such, children with good self-regulatory skills may be adept at foreseeing potential stressors, analyzing how to mitigate their impact, and planning an effective strategy to manage them. The result for such children may be not only improved mental health but also objectively fewer, or less severe, stressors and strains with which to negotiate.

Self-regulation skills may also be beneficial in coping with stressors after they have occurred. Eisenberg et al. (1997) proposed that coping (primarily in a reactive manner) can be reframed in terms of self-regulatory processes that an individual implements when undergoing stress. In this view, emotion-focused coping entails emotion regulation processes, particularly the regulation or management of negative emotions. Problem-focused coping involves goal-directed efforts that include behavioral and attention-regulation strategies to resolve the stressful circumstance. In other words, within the Eisenberg et al. (1997) framework, the ability to regulate one's emotions facilitates emotion-focused efforts to adaptively cope with stress, whereas the ability to regulate one's behavior and to shift or focus attention appropriately assists in problem-focused coping. The skills tapped by the Haan and CCQ *Q*-Sort measures hit upon these different dimensions of self-regulation, which may underlie effective emotion-focused and problem-focused coping.

The executive function and emotion regulation skills that comprise the self-regulation construct appear to go hand in hand as indicated by the very good internal consistency of the self-regulation measure we formed, which included both executive function and emotion regulation items. Our findings suggest that children who are good in one area (e.g., executive function skills) are likely to also be adept in the other area (e.g., emotion regulation). The potentially close relation between self-regulation and coping suggests that the popular conceptual separation of problem-focused and emotion-focused coping may be somewhat of an illusion. After all, in the handling of stressful situations that are even moderately complex, most individuals draw upon both problem-focused and emotion-focused coping strategies. Even in instances in which a stressor is quite controllable, it is difficult to imagine that an individual would not be well served by appropriate and modulated emotional expressions. Similarly, uncontrollable stressors may require emotion-focused coping strategies as the primary and most adaptive means of coping, yet aspects of the situation or its aftermath may require thoughtful problem solving. Individuals who deal effectively with stressful situations, whether by proactive or reactive means, may be drawing upon well-honed self-regulatory skills, which help them to be more adept at both problem-focused and emotion-focused coping. Further research on whether problem-focused and emotion-focused coping skills derive from a common higher order construct, namely self-regulation, would be useful, as would research on the role of self-regulation skills in proactive and reactive coping. Although this study cannot directly examine the issue, we believe the relation between self-regulation and resilience is not limited to low-income children. Further research, including study participants from other at-risk groups and those with more advantaged backgrounds, could address this question.

Findings from this study suggest that effective self-regulation skills will serve a child well in coping with a variety of situations, whether they serve in problem- or emotion-

focused coping or a combination and whether the manner of coping is proactive or reactive in nature. Furthermore, to the extent that self-regulation and coping skills are synonymous (Eisenberg, et al., 1997), our results imply that resilient youths are better at emotion-focused coping than nonresilient youths (i.e., they are more adept in regulating their negative emotions) and they possess skills that are important in problem-focused coping efforts (e.g., creativity and flexibility in finding solutions to problems and diligence in resolving them).

The strength of association that we found between self-regulation and resilience might call into question whether our operationalizations of the two constructs are distinct from one another. We were careful to keep mental health signs and symptoms out of the measures of self-regulation. These same signs and symptoms would be found in the nonresilient, but not resilient youths in our study, according to how we distinguished the two groups. Self-regulation skills as we have described them are more narrow in focus than our operationalization of the construct of resilience, which encompasses not only the absence of internalizing and externalizing mental health problems but also the presence of competent behaviors and good overall daily functioning. Our measure of resilience was derived from multiple data sources (mother, child, and interviewer reports), whereas self-regulation was determined by interviewer ratings, thereby reducing the possibility of same source measurement bias.

Nevertheless, although we believe that the two constructs are theoretically and empirically separate from one another, self-regulation is clearly proximal to the outcome variables we incorporated in our definition of resilience. It appears that the skills and attributes that comprise self-regulation are negatively associated with (and protective) against internalizing and externalizing mental health problems. As such, in future research self-regulation may be a useful variable to study as a potential mediator of more distal factors, including environmental risk and protective factors but also other internal characteristics that

may affect the resilience of youths. Put another way, a host of internal and external factors may impact the resilience of youths, in part, by first affecting self-regulation skills.

To a degree, self-regulation skills may reflect temperamental qualities whose origins in a child may have a genetic component. Nonetheless, they are not static traits, and it is likely that many components of self-regulation are malleable and can be taught or improved upon in individuals. The ability to be focused and organized, to generate alternative solutions to problems, and to be flexible in one's thinking are skills that children can learn (Mann, Harmoni, & Powers, 1989) and overlap with skills taught in social problem solving training (cf. Spivack, Platt, & Shure, 1976; Weissberg & Gesten, 1982; Weissberg et al., 1981). Preventive interventions designed either to promote environments that foster children's self-regulation or directly teach them these skills could test the hypothesis that self-regulation skills are a proximal cause of children's resilience.

#### *Additional predictors of resilience*

As with past research, which has shown that there is no single source of resilience (Masten, 2001; National Mental Health Advisory Council, 1996), the resilient youths in this study had several internal factors that distinguished them from nonresilient youths, which were consistent with prior investigations. For example, the most widely reported internal resource predictor of resilience in children is good intellectual functioning (Masten & Coatsworth, 1998), a finding we saw when examining resilience along a continuous scale. Higher levels of intelligence help a child to succeed in important developmental tasks, such as academics, and may foster a broader and more sophisticated repertoire of coping strategies in managing stress. Similar to previous studies, we also found that resilient children evidenced greater self-esteem. Since these attributes could share common variance with self-regulation and with each other, the use of multivariate analyses enables the iden-

tification of independent predictors of resilience.

One variable external to the child, parental monitoring, emerged as an independent predictor of resilience when looked at as a continuous-scale variable. Mothers who scored high on this dimension reported that they almost always knew the whereabouts of their child when s/he was away from home and who was with the child. Parental monitoring is a manifestation of externally induced structure and regulation. Tiet et al. (1988) also found parental monitoring to be associated with resilience. Active monitoring of a child's coming and goings is a prudent parenting practice, especially in settings such as low-income neighborhoods that are unsafe. Parental monitoring in such contexts likely conveys to a child that s/he is cared for and valued. Also, it is a manner of providing structure to children, which is beneficial to the development of effective coping skills (Skinner & Wellborn, 1994). This is also an appropriate target for intervention in terms of building the skills of parents, as well as social policy to make parental supervision more feasible. We should note that the new federal and state work (or community service) requirements that have been imposed on mothers receiving cash assistance as part of the massive reform of the welfare system in America will make the task of parental monitoring more difficult for low-income families. Structured, high-quality after-school activities can help meet the need of working parents for decent child care and supervision and can provide opportunities to enhance children's prosocial behavior.

We were surprised to find no associations between indices of social support and resilience/nonresilience status because we expected that resilient youths would have better and more extensive supports from which to draw. This was not the case because both resilient and nonresilient youths reported comparable ratings of satisfaction with the quality of support received from their social network and the quantity of support was also equivalent. Children in both groups also indicated that emotional support from their network was of similar quality. Although a larger sam-

ple size might have rendered the differences that were found to be statistically significant, they would not be practically meaningful. The instrument that was used was able to detect appreciable variation in children's social support ratings, making restricted range an unlikely reason for the lack of difference between resilient and nonresilient youths.

Although variables centered in the child were more predictive of resilience/nonresilience status than the external variables, factors such as self-regulation are shaped by a child's social relationships and learning history within family and school settings. For example, the extent to which a child is capable of moderating his or her affect is partly determined by parental modeling of emotional expression (Kopp, 1989; Shields et al., 1994) and by a caregiver's ability to control the social environment in which emotional arousal occurs (Calkins, 1994).

#### *Limitations*

The cross-sectional nature of the study renders it difficult to make strong assertions about the causal direction of variables predictive of resilience, including self-regulation. Also, the amalgamation of various outcome variables we used to define resilience may partially obfuscate specific relations between the predictor variables and those that underlie the resilience variable (e.g., depressive symptoms, anxiety, externalizing behavior problems).

The five criteria we used to operationally define resilience, both categorically and on a continuous scale, are not absolutes and should be explored in other research contexts. At the same time, following a view espoused by Cicchetti and Garnezy (1993), we believe our use of multiple measures spanning various domains to distinguish resilient from nonresilient youths in a categorical manner reduced the risk of misclassifying children who might appear resilient on a couple of measures but who would not merit this distinction if other indices were also used. Clearly, the resilience label we placed on children reflects their status at the time of assessment and should not be viewed as a permanent trait. Although the

cross-sectional nature of this study limits a more long-term perspective on the stability of resilience among these youths, children who met these criteria for resilience (and nonresilience) might not have met them in the past and would not necessarily meet them in the future. Despite these limitations, this study makes a contribution to an understanding of factors that may be important in the development of resilience among children living in extreme poverty, a population for whom research on strengths and resilience has been underrepresented.

In conclusion, our findings suggest that self-regulation is a prominent predictor of resilience among youths living in poverty. Resilient youths in this investigation were not possessed of something extraordinary or special. Rather, they appear to be more adept in different facets of self-regulation (e.g., modulation of affect, concentration, and attention) than nonresilient youths; skills that may suit them well, whether in the pursuit of goal-directed activities or in coping with stress. These findings speak to the importance of cer-

tain fundamental, but ordinary, developmental systems, self-regulation being one, that would seem to underpin the manifestation of resilience in at-risk youth (Masten, 2001).

Self-regulation (and perhaps regulation of affect and behavior, more broadly construed) may provide a useful paradigm in which to further explore and describe the internal attributes and coping processes by which resilience develops and is sustained in children. Further research using longitudinal and preventive intervention study designs could refine and clarify the causal nature of these results as well as test other variables. As Masten (1999) states: "A fundamental question for the next generation of researchers is whether naturally occurring resilience can be deliberately and effectively created through intervention" (p. 291). At the same time, although strength-based interventions are sorely needed in responding to the challenges faced by low-income families and youths, the importance of also addressing these issues through public policy changes and communitywide intervention must be remembered.

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