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A Review of Developmental Research on Resilience in Maltreated Children

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Abstract

Research demonstrates that child maltreatment can negatively impact the psychosocial functioning of individuals well beyond the point at which the trauma occurs. Fortunately, there is evidence that many children who are maltreated succeed in overcoming some of the possible consequences that can follow exposure to this particular form of adversity. Those who do are thought to be resilient. What it means to be resilient is an issue that researchers sometimes disagree on, as is reflected by the different definitions they apply to the term and the methods they use to study the phenomenon. In this literature review, we synthesize current findings on resilience and identify areas of congruence, as well as inconsistency in research methods across the reviewed studies. We focus the review exclusively on longitudinal studies to understand the dynamic qualities of resilience. Findings of the review suggests that, while studies appear to conceptualize and measure common domains of resilience (e.g. social, emotional, behavioral functioning), the measures themselves are in some cases notably different, limiting the extent to which results can be systemically compared across studies. The review also shows that few studies, although longitudinal by design, examine resilience over extended periods of development. Consequently, little has actually been learned about how patterns of resilience unfold and are sustained. Of those studies that do examine resilience as a developmental process, the rate of stability in resilience across time is notably low. Implications for future research are discussed.

Keywords

resilience; child maltreatment; longitudinal; literature review

Introduction

The World Health Organization (2010) classifies child maltreatment as a global public health problem. Because systems for collecting data on child maltreatment vary considerably in countries around the world, estimates of the global burden of abuse and neglect remain illusive. In the United States, estimates show that an alarming number of children are victimized on an annual basis (CDC, 2010). For example, statistics provided by the National Child Abuse and Neglect Data System (NCANDS) show that approximately 702,000 children were maltreated in 2009, according to official records (USDHHS, 2010). Numerous other cases of child maltreatment go unreported to authorities and are thus not included in official estimates.

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The developmental consequences of child maltreatment (i.e., physical abuse, sexual abuse, psychological/emotional abuse, neglect) are in some cases severe and long lasting (T. I. Herrenkohl, Sousa, Tajima, Herrenkohl, & Moylan, 2008). For example, evidence from longitudinal studies shows that child maltreatment increases the risk of mental health problems, including depression and anxiety (Collishaw, 2007; Fergusson, Boden, & Horwood, 2008; T. I. Herrenkohl, 2011; Widom, DuMont, & Czaja, 2007), substance abuse (Lansford, Dodge, Pettit, & Bates, 2010; Lo & Cheng, 2007; Widom, Marmorstein, & White, 2006), delinquency and crime (Egeland, Yates, Appleyard, & van Dulmen, 2002; R. C. Herrenkohl, Egolf, & Herrenkohl, 1997; T. I. Herrenkohl, Tajima, Whitney, & Huang, 2005; Klika, Herrenkohl, & Lee, 2012; Mass, Herrenkohl, & Sousa, 2008; Maxfield & Widom, 1996; Smith & Thornberry, 1995; Widom, 1989), and future perpetration of child maltreatment (Berlin, Appleyard, & Dodge, 2011; Dixon, Browne, & Hamilton-Giachritsis, 2009; T. I. Herrenkohl, Klika, Brown, Herrenkohl, & Leeb, under review; Neppl, Conger, Scaramella, & Ontai, 2009; Newcomb & Locke, 2001).

The developmental effects of child maltreatment are costly on many levels. According to one estimate, the lifetime cost of nonfatal child maltreatment incidents exceeds \$ 210,000 per victim when services for law enforcement and child welfare involvement, medical treatment, hospitalizations, and loss of productivity are factored in (Fang, Brown, Florence, & Mercy, in press). Findings on the costs of child maltreatment have been used to argue for policies and programs that adhere to a primary prevention approach. The Nurse Family Partnership developed by Olds and colleagues (2007) is one example. The Positive Parenting Program (Triple P) has also emerged as a promising child maltreatment prevention program, according to recent studies (Prinz, Sanders, Shapiro, Whitaker, & Lutzker, 2009).

While it is understood that child maltreatment is both costly and harmful, there is a growing awareness that child victims are not destined to lives of hardship. Those who fare better than others in the aftermath of abuse and neglect are thought to be resilient (T. I. Herrenkohl, 2011; Luthar & Cicchetti, 2000; Luthar, Cicchetti, & Becker, 2000; Masten, 2001; Masten & Coatsworth, 1998). Early conceptualizations of resilience focused primarily on individual traits and behaviors as protective buffers and indicators of resilient functioning (Anthony & Cohler, 1987). However, more recent conceptualizations appear to attend more to the ways in which resilience can be context- and culturally dependent (Ungar, 2011).

The study of resilience has a long history, and studies have advanced knowledge of the topic in very important ways (Anthony & Cohler, 1987; Garmezy, 1991; Luthar, 1993; Masten, 2001; Rutter, 1985; Werner & Smith, 1982, 1992). Studies of protective and mitigating influences offer important insights into the factors that promote and inhibit resilience and thus represent a related, much needed area of investigation. The value of studying both risk and protective factors is in deriving possible targets for preventive intervention programs, details of which are summarized in various other publications (T. I. Herrenkohl, 2011). Protective factors associated with resilience in maltreated children include characteristics of the individual child (e.g., intelligence, positive temperament, personal agency) and of the child's social environment. Findings show that factors within the domains of family, school, and peer group are highly influential and very important for determining who will, and who will not evidence signs of resilience over time. A detailed account of research findings on protective factors is beyond the scope of this chapter. However, interested readers should avail themselves of other published works, a number of which are referenced in recent articles and books (T. I. Herrenkohl, 2011).

According to several interrelated theories and perspectives of established researchers, resilience is not a fixed quality nor is it a unidimensional construct (Luthar, 1993; Masten,

2001; Mrazek & Mrazek, 1987). While resilience at one point in development is likely to predict a higher likelihood of resilience at a later point, this relationship is by no means fixed or predetermined. Transitions across developmental periods bring about new opportunities (and risks) that play a major role in how an individual will function at the time. Scholars generally agree that to study resilience in a way that is consistent with the complex nature of human development, longitudinal studies are required (T. I. Herrenkohl, 2011; Kinard, 1998). For this reason, the current review is limited to longitudinal studies, an approach that has yet to be utilized in the field. In the review, we seek to investigate the topic of resilience, with a particular focus on how resilience is conceptualized and studied as a developmental process. We focus less on protective factors and correlates of resilience and attend more to the methods and measures used to represent resilient functioning. We include studies that examine resilience during childhood, adolescence, and adulthood to emphasize the ways in which resilience differs as a function of time and developmental life stage. Following our review of studies, we provide several implications and recommendations for future research.

Method

The studies for this review were identified by searching primary databases (i.e., PsycINFO, EBSCO, PubMed, PsychARTICLES) using the following keyword search criteria: resilience, longitudinal, maltreatment, abuse, physical abuse, neglect, emotional abuse, sexual abuse, and psychological abuse. In addition to the computerized database search, we relied on book chapters and published reference lists known to us from our work in the substantive area. Studies were included if they were: (a) longitudinal by design; (b) examined child maltreatment and resilience; and (c) were published in English. We did not include unpublished dissertation research in the current review. Studies were excluded if resilience and child maltreatment were measured cross-sectionally. From our search process, we identified over 30 possible studies, from which 11 (from nine unique datasets) were deemed appropriate for inclusion.

In the body of the review, we provide pertinent information of each study so that readers have a full understanding of the methods and findings of the research. Additional information on the study sample and key findings are provided in Table 1. When information about some aspect of the study design or measurement approach was unavailable, that is noted in the study summary.

Results

Studies of Resilience

Egeland, Carlson, and Sroufe (1993)—Using data from the Minnesota Mother-Child Project, Egeland, Carlson, and Sroufe examined resilience in a group of 267 “high-risk” (i.e., poverty, young maternal age, lack of maternal education, stressful home environment) pregnant women and their children. At birth the children became the focus of this study. Of the original 267 study children, 44 experienced child maltreatment, while the remaining 223 had no indication of maltreatment. The full sample of children was assessed at 3-month intervals during the 1st year of life and at 6-month intervals until the completion of preschool. Children were then assessed after kindergarten, first, second, third, and sixth grade, with additional assessments occurring at ages 13, 16, 17.5, and 18 years (Sroufe, Egeland, Carlson, & Collins, 2005)

At 12 and 18 months, resilience was assessed using the Strange Situation task, an office-based assessment of parent-child attachment quality (Sroufe et al., 2005). At 24 months, resilience was measured using the Bayley Scale of Infant Development, the Tool Problems assessment, a quality of play and problem-solving task, and a measure of maternal assistance

and support. During the assessment of resilience at 42 months, the Barrier Box Situation and a teaching task were utilized to examine how the children were able to tolerate frustration, apply problem-solving skills, and demonstrate persistence and effort with a challenging task. Finally, at the preschool wave, child functioning was assessed using the Preschool Behavioral Questionnaire (I & II), the preschool rating scales, and the California Child Q-Sort, which together assessed issues of self-awareness, socialization, prosocial behavior, compliance, independence, and emotional responsivity. Specific cutoff and scoring criteria for determining resilience at the various assessment points were not provided in the manuscript.

Of the 44 identified children with histories of maltreatment, over half demonstrated patterns of secure attachment (i.e., resilience) at the 12-month assessment, however, this did not ensure resilience at later stages of development. Egeland and colleagues found that, while some children were resilient in single areas of functioning (e.g., behavioral), no maltreated child appeared resilient across all measures of functioning at all assessment periods. Improvements in patterns of functioning over time were observed for some maltreated children; however, improvements were temporary or restricted to a single area of functioning.

Cicchetti and Rogosch (1997)—Cicchetti and Rogosch examined resilience in a sample drawn from a summer day camp for disadvantaged children ($n = 213$). Sixty-two percent ($n = 133$) of the sample had been maltreated, according to substantiated reports. Included in the analysis of resilience were those children who attended the summer camp for at least 3 consecutive years. The age of the study participants at the time of first assessment ranged from 6 to 11 years, therefore, in some cases resilience was assessed during two developmental periods (i.e., childhood and adolescence). Multiple measures were used to assess resilience in this analysis: sociability (highest third of sample), aggressiveness (lowest third of sample), social withdrawal (lowest third of sample), a school risk index (no problems), child self-report of depression (lowest third of sample), internalizing behavior problems (lowest third of sample), and externalizing behavior problems (lowest third of sample). Cicchetti and Rogosch established within- and across-time composite scores of resilience for each child in the sample to assess various patterns of individual functioning (i.e., consistently low functioning, consistently medium functioning, consistently high functioning, improved functioning, declined functioning, and unstable functioning). A high percentage of maltreated children (40.6%) displayed consistently low levels of resilience across the 3 years of assessment, while only 1.5% of maltreated children displayed consistently high levels of resilience across this same time. Of those who were maltreated, 10.5% showed a pattern of improvement, 12% displayed a pattern of decline, while 9.8% had an unstable pattern of resilience across the 3 years of assessment.

Bolger and Patterson (2003)—Bolger and Patterson followed a sample of 107 maltreated children (ages 8 to 10 years) annually from 1986–1989 to understand patterns of resilient functioning. The sample for this analysis was drawn from the Charlottesville Longitudinal Study (CLS) and includes only those individuals with substantiated cases of maltreatment. Results for this analysis do not include comparisons to a comparison group of participants from the larger CLS. To highlight patterns of resilience, the authors measured four domains of functioning: peer acceptance, internalizing behavior, externalizing behavior, and academic achievement. Peer acceptance was measured by peer reports of whether or not the sample participant was “liked” or “disliked.” Internalizing and externalizing behaviors were measured by teachers using an adapted version of the Classroom Adjustment Rating Scale, through peer reports of internalizing and externalizing behavior, as well as through child and youth self-reports using the internalizing and externalizing subscales from the Youth Self-Report version of the Child Behavior Checklist (CBCL) (only during the last two

assessments). Information regarding academic performance was gathered through standardized achievement tests including the Science Research Associates Achievement Series and the Iowa Test of Basic Skills.

Acknowledging that rates of resilience vary depending upon the scoring strategy used to score resilience indicators, Bolger and Patterson utilized two approaches to understand the prevalence of childhood and adolescent resilience within their sample. First, they identified those individuals who were functioning one standard deviation above the sample mean in any one domain of resilient functioning (i.e., peer acceptance, internalizing behavior, externalizing behavior, or academic achievement), while at the same time not functioning one standard deviation below the sample mean in any other resilience domain. By these criteria, Bolger and Patterson found that only nine children (8%) demonstrated resilience during any assessment period, while only one child (< 1%) demonstrated resilience across all assessment periods.

In their second approach to measuring resilience within the sample, Bolger and Patterson created a resilience composite score (using factor analysis) based on indicators from the four domains of functioning previously described. Those children who scored at or above the sample median on the composite measure were considered resilient. By these criteria, 23 children (21%) were considered resilient during at least one assessment, while only 5 children (5%) sustained resilience over all assessment periods.

Jaffee, Caspi, Moffitt, Polo-Tomas, and Taylor (2007)—Jaffee and colleagues studied childhood resilience using a nationally representative sample of 1,116 same-sex twin pairs ($n = 2,232$) in the United Kingdom. Approximately 286 of the study participants had experienced child physical abuse, while the remaining 1,895 had not. Assessments of children and their families occurred at age 5 and approximately 18 months later when the children were 7 years old. At both assessments, teachers assessed child antisocial behavior using the teacher report form of the CBCL. Maltreated children who scored at or below the sample median on the teacher-reported CBCL measure of antisocial behavior at both ages 5 and 7 were considered resilient.

Jaffee and colleagues found that nearly 72 maltreated children (weighted proportion = 3%) were considered resilient at both assessment periods. Of those who were deemed resilient at age 5, nearly 64% were found to be resilient at age 7. Logistic regression models demonstrated that the odds of being resilient at the age 7 assessment increased by a factor of five for those who were resilient at the age 5 assessment.

Herrenkohl, Herrenkohl, and Egolf (1994)—Herrenkohl and colleagues used prospective data from the Lehigh Longitudinal Study to understand continuity of resilient functioning from childhood into adolescence for a sample of children with substantiated cases of child abuse and/or neglect. The original sample of 457 was drawn from child welfare caseloads for abuse and neglect ($n = 249$), and a comparison group ($n = 208$) was sampled from Headstart programs, daycare programs, and from middle-income nursery school programs. During the schoolage assessment when the sample children were between the ages of 6 to 11 years ($n = 345$), the authors examined domains of social, emotional, and cognitive functioning (i.e., physical difficulties, academic excellence, angry/negative, self-respecting/happy, withdrawn/anxious, acting-out/destructive, and affectionate/friendly) using scales from the teacher report version of the CBCL and from coding of school records. Those children who scored in the top 40% of the full sample across all domains of functioning were considered resilient at school age. Within the sample of children from the two child welfare groups, 25 children scored in the top 40% across all domains of functioning and were therefore considered resilient. In adolescence, the sample was

reassessed ($n = 416$), and resilience in adolescence was defined as graduation from high school or being enrolled and actively working toward high school graduation (for those not yet graduated). Of the 25 resilient children from the schoolage assessment, 14 (61%) adolescents had graduated from high school and were thus considered resilient.

Jaffee and Gallop (2007)—Jaffee and Gallop examined both the prevalence and stability of resilience using data from the National Survey of Child and Adolescent Well-Being (NSCAW) study, a nationally representative sample of children in the United States referred to Child Protective Services (CPS). For the current analysis, Jaffee and Gallop only included those individuals who were 8 years or older at the time of the first wave of data collection due to the self-report nature of some of the key resilience measures. Assessments of the study participants occurred at baseline (Wave 1), 12 months (Wave 2), 18 months (Wave 3), and 36 months (Wave 4).¹ In this study, resilience was assessed using the following measures (and standardized scoring cutoffs) of social, emotional, and academic well-being: youth self-reports on the Children's Depression Inventory (CDI; standardized score < 66); Trauma Symptom Checklist (TSCC; standardized score < 65); both parent and teacher reports of internalizing and externalizing behavior using the Child Behavior Checklist (standardized score < 60); youth self-reports of externalizing behavior using the CBCL (standardized score < 60); and youth self-reports on the Youth Risk Behavior Survey Questionnaire. At each wave, individuals were considered resilient if they met criteria on the CDI and TSCC, met criteria for either caregiver or teacher reports on the internalizing scale from the CBCL, met criteria for two out of three reporters (self, caregiver, teacher) on the externalizing scale from the CBCL, and had no self-reported substance use. Resilience in the academic domain was assessed using the Mini Battery of Achievement which is a standardized test that evaluates both reading and math ability. Individuals were resilient in the academic domain if they scored above 100 on either the math or reading subscale while simultaneously scoring above 92.5 on the remaining subscale. Finally, social competence was measured by both teachers and caregivers using the Social Skills Subscale of the Social Skills Rating System (SSRS; standardized score > 84).

Jaffee and Gallop examined resilience in specific domains (i.e., social, emotional, academic) within and across time. The authors found that between 37% and 49% of their sample were functioning in the resilient range during any one of the three assessment periods. Continuity in domain-specific resilience across time was observed in 14% to 22% of cases. Within any one of the assessment periods, only 11% to 14% were demonstrating resilience in all three domains, however only 2% of the sample were resilient across social, emotional, and academic domains at all three assessment periods. Finally, Jaffee and Gallop found that resilience at Wave 1 increased the odds of resilience at subsequent waves (OR: 1.76 – 10.39).

McGloin and Widom (2001)—In adulthood, McGloin and Widom examined resilience for a sample of individuals who, in childhood, were officially determined to be victims of child maltreatment ($n = 676$). The authors compared maltreated individuals with a matched control group of individuals who did not experience maltreatment in childhood ($n = 520$). In this analysis, originally maltreated individuals were considered resilient in adulthood (ages 18 – 41 years) if they met six of the following eight resilience criteria during the adulthood assessment: high school diploma, currently employed (e.g., employed in the past year, less than 3 jobs in the past 5 years), were not and had not been homeless for longer than one month in lifetime, had no mental health diagnosis currently or in lifetime (i.e., Depression,

¹The 12-month assessment (Wave 2) was excluded from the current analysis because not all relevant information was collected during this interview.

Dysthymia, Generalized Anxiety Disorder, Posttraumatic Stress Disorder, Antisocial Personality Disorder), had no current or prior substance use diagnosis (i.e., drug abuse and/or dependence, alcohol abuse and/or dependence), self-reported participation in social activities at least once or twice a week, had not been previously identified as delinquent (lifetime), and reported no delinquency or crime at any point in development. Approximately 22% of the maltreated sample endorsed six or more of these criteria and were therefore considered resilient in adulthood.

DuMont, Widom, and Czaja (2007)—Using the same dataset as did McGloin and Widom (2001), DuMont and colleagues focused on patterns of resilient functioning from adolescence into adulthood, although the criteria used to characterize resilience differed somewhat from the earlier investigation. For example, in this analysis, adolescence resilience was defined by the following indicators: high school education, absence of mental health diagnosis current or remitted (birth to 18 years), no substance use diagnosis current or remitted (birth to 18 years), no official delinquency (birth to 18 years), no self-report delinquency (birth to 18 years). Note that in addition to a number of the resilience criteria being omitted from the adolescent wave (i.e., social activity, homelessness, employment), the timeframe for resilience covered the period from birth to 18 years. By these criteria, nearly 48% percent of the maltreated sample met four out of five resilience criteria and were therefore considered resilient during the adolescent period. In adulthood, the resilience criteria were the same as those used in the analysis of McGloin and Widom, however, most of the resilience criteria in the current analysis spanned the period from 18 years on. Thirty percent of the maltreated sample met six of the eight resilience criteria in adulthood (compared to 22% in the prior analysis), and were therefore deemed resilient during the adulthood years.

After scoring for resilience in adolescence and adulthood, DuMont and colleagues assessed continuity in resilient functioning over these two developmental periods. They found four patterns of resilience in their sample: continuous resilience, adolescence-only resilience, adult-only resilience, and continuous non-resilience. Approximately 46% of maltreated individuals were not resilient; that is, neither resilient in adolescence nor in adulthood. Of those maltreated individuals who *were* resilient during adolescence or adulthood, nearly 24% showed a pattern of continuous resilience from adolescence to adulthood; 24% were only resilient during the adolescent period; and 6% showed adult only resilience.

Mersky and Topitzes (2010)—Mersky and Topitzes examined early adulthood resilience in a sample of adults ($n = 1,539$; ages 18 to 24 years) who were originally recruited in childhood for reasons due to economic disadvantage and minority status. Approximately 14% of the childhood sample had verified cases of child maltreatment, allowing the authors to compare rates of resilience for maltreated ($n = 191$) and non-maltreated children ($n = 1,348$) within their sample. Resilience was defined by the following measures: completion of high school; having attended a 4-year college; having earned \$3,000 in quarterly income (above-average income); having had no incarcerations; having not misused substances; having no self-reported depressive symptoms; and reporting “very good” or “excellent” on a measure of personal life satisfaction in adulthood. The researchers labeled individuals resilient if they met at least five out of seven resilience criteria. Results show that approximately 15% of the maltreated sample met five out of seven resilience criteria in early adulthood compared to 40% of their non-maltreated counterparts. Only 5% of the maltreated sample met six out of seven resilience criteria in early adulthood, compared to 16% of their non-maltreated counterparts.

Banyard, Williams, Siegel, and West (2002)—Banyard et al. examined adulthood resilience in a sample of 206 women (average age = 25.5 years), all of whom were

medically examined in childhood and determined to be victims of sexual abuse. To assess adulthood resilience, Banyard and colleagues created a composite measure of resilience including the following measures: (1) low Trauma Symptom Checklist score, (2) above median on the self-esteem scale of the Middlesex Hospital questionnaire, (3) no history of severe illness or surgery after age 17, (4) no reported current drug or alcohol use, (5) above sample median on a measure of sexual functioning, (6) all biological children living with the participant, (7) no reports to authorities for abuse of children, (8) friendships with women, (9) moderate social activity, (10) no self-report adult arrests, (11) income above sample median, (12) working full time, and (13) friendships/few problems with males. Nearly 29% of the women scored highly on the resilience composite (score of 8 – 9), while 18% of the women were functioning well in nearly all of the assessed domains (score of 10+), which the authors termed “excellent resilience.”

Banyard and Williams (2007)—In a follow-up investigation, Banyard and Williams (2007) examined continuity in resilient functioning at Wave 2 and Wave 3 of the larger study. The sample was assessed during a third wave of data collection (average age = 31.6 years) approximately 7 years after the completion of Wave 2 using the same resilience composite measures used during the Wave 2 assessment.² To assess stability and change in resilience across time, Banyard and Williams subtracted Wave 2 resilience scores from Wave 3 resilience scores and those women with a one standard deviation increase or decrease in scores were considered to have significant change in level of functioning between the two assessment periods. Eight percent of the women showed decreases in resilience scores, 16% showed increases in resilient scores, and approximately 76% demonstrated stability in resilience scores across measurement points.

Discussion

Our review focused on 11 longitudinal studies that investigated resilience in maltreated children. In this review, we sought to understand how resilience is conceptualized and studied as a developmental process. We also examined the methods and measures used in each study to help point to advances as well as remaining gaps in the resilience literature.

Of the 11 studies reviewed, six examined resilience during childhood, five during adolescence, and five during adulthood. Of note, none of the studies included in this review examined resilience during childhood, adolescence, and adulthood. Nearly half of the studies examined resilience within a single developmental period—some at a single time point and others at two or more points in time within a developmental period. For example, Egeland, Carlson, and Sroufe (1993) measured resilience at 12, 18, 24, and 48 months. The decisions for the selection of age periods and measures to assess resilience were guided by an organizational-developmental framework. From this perspective, early competence sets the foundation for later mastery of stage salient developmental tasks. At 12 and 18-months, Egeland and colleagues assessed resilience using the Strange Situation task, a widely used office-based task assessing quality of parent-child relationships. Secure attachment relationships in infancy are thought to promote later developmental milestones such as environmental exploration, problem-solving skills, frustration tolerance, and self-awareness, areas of resilience that Egeland and colleagues measured at subsequent assessment periods. Their assessments showed that none of the children in their study originally thought to be resilient at 12 months remained resilient at the first-grade assessment. Throughout the assessment periods, Egeland and colleagues noted that some children demonstrated short-term improvements in functioning or domain-specific competence (e.g. academic

²For this analysis, the question regarding “friendships/problems with men” was excluded from the determination of resilience in both adolescence and adulthood. The range of the composite measure during adolescence and adulthood was 0 – 12.

competence), but on the whole, no children in their study remained unaffected by child abuse and neglect. These findings lend support to the idea of resilience as a dynamic, developmental process. Even when resilience is studied over a relatively short period of time within a particular developmental period, the relationship between resilience at one point in time and a later point in time is by no means fixed or deterministic.

A number of studies examined resilience in two developmental periods, which allowed researchers to investigate the stability in resilient functioning across key developmental transition periods. During the transition from childhood to adolescence, Bolger and Patterson (2003) found that resilience at a single point in time—measured by indicators of internalizing behavior, externalizing behavior, peer acceptance, and academic achievement -- ranged from 8% to 21%, while resilience across all time points was significantly less common at a rate between 1% and 5%. Similarly, Cicchetti and Rogosch (1997) examined resilience during the transition from childhood to adolescence -- measured by indicators of interpersonal behavior, academics, and psychopathology -- and found that only 1.5% of their sample maintained resilience across all assessment periods. Jaffee and Gallop (2007) found that only 2% of participants maintained levels of resilient functioning over three assessments during the childhood and adolescent years -- measured by indicators of social, emotional, and academic competence.

The apparent lack of stability in resilient functioning over these developmental periods suggests that resilience is indeed dynamic. What accounts for the changes in functioning characteristic of this dynamic quality is a topic of ongoing investigation in the field and requires further study (T. I. Herrenkohl, 2011). Our review of the literature shows that there is relatively little consistency in the way individual researchers approach the measurement of resilience. These inconsistencies are reflected in both the methods and measures included in each study. Even for studies that focus on resilience within a similar developmental timeframe, measures across studies can vary considerably. For example, Jaffee et al. (2007), measured resilience in children at ages 5 and 7 using a measure of antisocial behavior from the Child Behavior Checklist (CBCL). Those children who were maltreated and scored at or below the sample median of non-maltreated children on this measure of antisocial behavior were considered resilient. Assessing resilience within a similar developmental timeframe, Herrenkohl and colleagues (1994) used subscales of the CBCL and coding of school records to create measures of social, emotional, and cognitive functioning (i.e., physical difficulties, academic excellence, angry/negative, self-respecting/happy, withdrawn/anxious, acting-out/destructive, and affectionate/friendly). Those children who scored in the top 40% of the full sample across social, emotional, and cognitive domains of functioning were considered resilient to the effects of child maltreatment during the childhood years. In yet another comparison Herrenkohl et al. (1994) measured resilience during the adolescent period by a single indicator of whether an individual had graduated from high school or was making sufficient progress towards graduation. In the DuMont et al. (2007) study, also an assessment of adolescent resilience, a number of indicators were used to represent resilient functioning, including graduation from high school, absence of a diagnosis for a mental health disorder, absence of a diagnosable substance use problem, and the absence of both official and self-reported delinquency.

Variability in resilience measures, although understandable because of the way that longitudinal studies are designed and executed, reflects a certain lack of uniformity and consensus in understanding the meaning of the term itself. Indeed, resilience is an elusive concept. While there is general agreement about what resilience is (i.e., rebounding or overcoming adversity) and is not (living a life characterized by hardship, loss, and failure), there are seemingly very different ideas about how to capture the phenomena in variable form. Consequently, findings are notably hard to compare and generalize beyond a given

study population as was demonstrated by the studies in this review. While it is highly unlikely that researchers will reach a point of full agreement about how best to measure resilience in its dynamic form, there is undoubtedly a need for more dialogue from the field about this issue. It is difficult to determine precisely how best to measure resilience, however, a general understanding of human development and resilience theories would suggest that broad and multifaceted measures better approximate the general notion of resilience than do simple, unidimensional measures that tap a limited range of behaviors or set of achievements. Additionally, consideration should be given to developing criteria or thresholds of functioning that do not assume that resilient individuals will necessarily function at a consistently high level across all social and behavioral domains indefinitely. Attending to this reality in the operationalization and measurement of resilience is an important future goal.

Limitations

Both a strength and limitation of the current review is the targeted focus on child maltreatment as a risk factor in the study of resilience. This focus provides an opportunity to deeply investigate the previously mentioned issues, but it is important to acknowledge that the study of resilience extends well beyond the topic of child maltreatment. An important next step in evaluating the state of knowledge on the topic of resilience is to broaden the focus of review to other areas, such as resilience in the context of war and trauma (see Boxer & Sloan-Power, this volume; Sousa & Haj-Yahia, this volume).

Conclusions

This review points to the need for ongoing longitudinal studies of resilience that extend over several periods of development and that examine resilience as a multifaceted phenomenon. Greater consistency and clarity in the operationalization and measurement of resilience will help advance the field and further understanding of the ways in which maltreated children rebound from early trauma.

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Critical Findings

- No study examined resilience across childhood, adolescence, and adulthood within the same study. Our understanding of resilience as a life-course process is limited at best.
- Resilient functioning demonstrates great variability over time. Studies within and across developmental periods demonstrate that few individuals sustain resilient functioning across time.
- While researchers generally agree that resilience is multidimensional, the measures used across studies to represent resilient functioning differ to the point of lacking comparability.

Implications for Practice, Policy, and Research

- Longitudinal studies of resilience covering the developmental periods of childhood, adolescence, and adulthood can help further our understanding of resilience as a life-course, dynamic process.
- Further refinement and attention to the methods and measures used to represent resilient functioning will increase our ability to compare findings across research studies.
- Strengthening the measurement of key resilience constructs will allow researchers to explore the modifiable risk and protective factors that are instrumental in the prevention of maltreatment and promotion of well-being.

Table 1

Longitudinal studies of resilience following child maltreatment

Authors	Sample	Developmental Period	Measures	Thresholds	Findings
Jaffee, Caspi, Moffitt, Polo-Tomas, & Taylor, 2007	N = 2,181 (286 maltreated; 1,895 not maltreated)	Childhood	CBCL-antisocial behavior	At or below the sample median of non-maltreated children	Approximately 72 maltreated children were at or below the median of non-maltreated children on measures of antisocial behavior at both ages 5 and 7. Of those who were deemed resilient at age 5, nearly 64% continued to display resilience at age 7. The odds of being resilient at age 7 increased by a factor of 5 for those who were resilient at age 5.
Egeland, Carlson, & Sroufe, 1993	N = 267 (44 maltreated; 223 not maltreated)	Childhood	12-month & 18-month: Strange Situation task; 24-month: Bayley Scale of Infant Development, Tool Problems assessment, quality of play and problem solving task, measure of maternal assistance and support; 42-month: Barrier Box Situation, teaching task; Preschool: Preschool Behavioral Questionnaire (I & II), the preschool rating scales, and the California Child Q-Sort	Not provided in the manuscript	Single domains of competence were observed in the maltreated group, however, no child demonstrated competence in all domains across all the assessment periods. Improvements in functioning were also observed, yet all maltreated children showed dysfunction resulting from experiences of child maltreatment.
Bolger & Patterson, 2003	N = 107 (all maltreated; no comparison group)	Childhood, adolescence	Classroom Adjustment Rating Scale & youth self-report CBCL (internalizing & externalizing behavior); Peer nominations (peer acceptance); Science Research Associates Achievement Series & Iowa Test of Basic Skills (academic achievement)	<i>Approach #1:</i> scoring 1 standard deviation above the mean in at least 1 domain while simultaneously not scoring 1 standard deviation below the mean in any domain; <i>Approach #2:</i> above the sample median on a composite measure of resilience	Approach #1: Nine children (8%) demonstrated competence in at least 1 domain at any 1 assessment point while only 1 child (< 1%) demonstrated competence in at least 1 domain across all assessment periods. Approach #2: Twenty-three children (21%) demonstrated competence on a composite score of resilience at any 1 assessment period while only 5 (5%) showed competence on the composite across all assessment periods.
Jaffee & Gallop, 2007	N = 5,501 (all maltreated; no comparison group)	Childhood, adolescence	Youth self-reports on the Children's Depression Inventory (CDI; standardized score <66); Trauma Symptom Checklist (TSCC; standardized score <65); both parent and teacher reports of internalizing and externalizing behavior using the Child Behavior Checklist (standardized score < 60); youth self-reports of externalizing behavior using the CBCL (standardized score < 60); youth self-reports on the Youth Risk Behavior Survey Questionnaire; Mini Battery of Achievement; Social Skills Subscale of the Social Skills Rating System (SSRS; standardized score > 84)	At each wave, individuals were considered emotionally resilient if they met criteria on the CDI and TSCC. met criteria for either caregiver or teacher reports on the internalizing scale from the CBCL. met criteria for 2 out of 3 reporters (self, caregiver, teacher) on the externalizing scale from the CBCL, and had no self-reported substance use. Individuals were resilient in the academic domain if they scored above 100 on either the math or reading subscale while simultaneously scoring above 92.5 on the remaining subscale. Finally, social competence was measured by both teachers and caregivers using the Social Skills Subscale of the Social Skills Rating	Rates of resilience during single waves of data collection (wave 1, 3, and 5) ranged from 37% – 49%. Across the 3 waves, between 14% – 22% of youth were consistently resilient. At any 1 assessment period, 11% – 14% of youth were resilience across all 3 domains of competence. A small percentage of youth (2%) were resilient in every domain across all 3 assessment periods. Logistic regression showed that resilience at wave 1 increased the odds of being resilient at subsequent waves.

Authors	Sample	Developmental Period	Measures	Thresholds	Findings
Cicchetti & Rogosch, 1997	N = 213 (133 maltreated; 80 not maltreated)	Childhood, adolescence	Children's depression inventory (CDI); Self-esteem inventory (SED); Peabody picture vocabulary test-revised (PPVT-R); Relatedness scales; Peer nominations; Teacher report of the CBCL; Pupil Evaluation Inventory (PEI); California Child Q-Set; Student-Teacher Relationship (STR); behavior ratings; School risk index	System (SSRS; standardized score > 84). Sociability (highest third of sample), aggressiveness (lowest third of sample), social withdrawal (lowest third of sample), a school-risk index (no problems), child self-report of depression (lowest third of sample), internalizing behavior problems (lowest third of sample), and externalizing behavior problems (lowest third of sample)	Maltreated children showed low levels of competence across the 3 years of assessment. A majority of maltreated children (40.6%) displayed consistently low levels of resilience across the 3 years of assessment while only 1.5% of maltreated children displayed consistently high levels of resilience across the 3 years of assessment. Of those who were maltreated, 10.5% showed a pattern of improvement, 12% displayed a pattern of decline, while 9.8% had an unstable pattern of resilience across the 3 years of assessment. Only 9.8% of maltreated children demonstrated "adaptive functioning" at any 1 point during the 3-year assessment period.
Herrenkohl, Herrenkohl, & Egolf, 1994	N = 457 (249 maltreated; 208 not maltreated)	Childhood, adolescence	Teacher report CBCL; School records; Self-report graduation from high school	Top 40% of sample on indicators of social, emotional, and cognitive/academic functioning; Graduation from high school	A group of 25 children (10%) from the 2 child welfare groups were in the top 40% on indicators of social, emotional and cognitive/academic functioning in childhood. Twenty-three of the 25 children originally resilient children were reassessed in adolescence and only 14 had graduated from high school. Sixty-one percent of the original resilient children were deemed resilient in adolescence.
DuMont, Widom, & Czaja, 2007	N = 1,196 (676 maltreated; 520 not maltreated)	Adolescence, adulthood	Self-report graduation from high school; DIS-III (Major Depressive Disorder, Dysthymic Disorder, Generalized Anxiety Disorder, Posttraumatic Stress Disorder, Antisocial Personality Disorder, substance dependence and abuse); DSM-III-R (dependence); Official arrest records; Self-report of delinquency and criminality; Self-report employment; Self-report homelessness; Self-report of social activity	Adolescence: at least 4 out of 5 of the following: high school education, absence of mental health diagnosis current or remitted, no substance use diagnosis current or remitted, no official delinquency, no self-report delinquency; Adulthood: at least 6 out of 8 of the following: employed, no homelessness, high school education, absence of mental health diagnosis current or remitted since age 18, no substance use diagnosis current or remitted since age 18, participation in social activities, no official delinquency since age 18, no self-report delinquency since age 18	Forty-six percent of maltreated individuals were not resilient during adolescence or during adulthood. Of those maltreated individuals who were resilient during adolescence or adulthood, nearly 24% demonstrated a pattern of continuous resilience from adolescence to adulthood; 24% were only resilient during the adolescent period; 6% showed adult only resilience.
McGloin & Widom, 2001	N = 1,196 (676 maltreated; 520 not maltreated)	Adulthood	Self-report graduation from high school; DIS-III (Major Depressive Disorder, Dysthymic Disorder, Generalized Anxiety Disorder, Posttraumatic Stress Disorder, Antisocial Personality Disorder, substance dependence and abuse); DSM-III-R (dependence); Official arrest records; Self-report of delinquency and	At least 6 out of 8 of the following: employed, no homelessness, high school education, absence of mental health diagnosis current or remitted, no substance use diagnosis current or remitted, participation in social activities, no lifetime official	Twenty-two percent of maltreated individuals met criteria for resilience in adulthood (met 6+ resilience criteria).

Authors	Sample	Developmental Period	Measures	Thresholds	Findings
Banyard, Williams, Siegel, & West, 2002	N = 206 (all maltreated; no comparison group)	Adulthood	<p>criminality; Self-report employment; Self-report homelessness; Self-report of social activity</p> <p>Trauma Symptom Checklist, self-esteem scale of the Middlesex Hospital questionnaire, self-report history of severe illness or surgery after age 17, self-reported drug or alcohol use, MAST, CAGE measure of sexual functioning, self-report of biological children living situation, child abuse reports, self-report friendships with women, self-report social activity, self-report adult arrests, self-report income, self-report employment, self-report friendships with males/few problems with males</p>	<p>delinquency, no lifetime self-report delinquency</p> <p>Thirteen-item resilience scale: Resilience = 8 – 9 resilience criteria; Excellent resilience 10+ criteria; below sample median on the Trauma Symptom Checklist, above median on the self-esteem scale of the Middlesex Hospital questionnaire, no history of severe illness or surgery after age 17, no reported current drug or alcohol use, above sample median on an adapted measure of sexual functioning, all biological children living with the participant, no reports to authorities for abuse of children, friendships with women, moderate social activity, no self-report adult arrests, income above sample median, working full time, friendships with males/few problems with males</p>	<p>Forty women (29%) demonstrated high scores on the resilience scale (score between 8 – 9), while 25 women (18%) showed high levels of competence in nearly all assessed areas, termed excellent resilient (score of 10+).</p>
Banyard & Williams, 2007	N = 206 (all maltreated; no comparison group)	Adulthood	<p>Trauma Symptom Checklist, self-esteem scale of the Middlesex Hospital questionnaire, self-report history of severe illness or surgery after age 17, self-reported drug or alcohol use, MAST, CAGE, measure of sexual functioning, self-report of biological children living situation, child abuse reports, self-report friendships with women, self-report social activity, self-report adult arrests, self-report income, self-report employment</p>	<p>Same as above excluding question about relationships with males; Subtracted Wave 2 resilience score from Wave 3 resilience score; 1 standard deviation change indicates a significant change in resilience; Less than 1 standard deviation change demonstrates stability in resilience</p>	<p>Three fourths (75.6%) of the sample showed a pattern of stability in resilient functioning from Wave 2 to Wave 3. Approximately 8.1% of the sample had a 1 standard deviation decrease in their resilience score from Wave 2 to Wave 3, while 16.3% of the sample had an increase of more than 1 standard deviation in their resilience score between waves.</p>
Mersky & Troptizes, 2010	N = 1,539 (191 maltreated; 1,348 not maltreated)	Adulthood	<p>Self-report and official reports of educational attainment; self-report and official reports of income (Illinois Department of Employment); Public records and self-report crime; self-report substance use; Derogatis Brief Symptom Inventory (depression subscale); self-report life satisfaction</p>	<p>Approach #1: 5 out of 7 resilience criteria; Approach #2: 6 out of 7 resilience criteria; High school completion or GED; 4-year college attendance; Above average adulthood income; no adult incarceration; no substance misuse; no depressive symptomology; life satisfaction</p>	<p>Nearly 15% of the maltreated sample met 5 out of 7 resilience criteria in adulthood compared to 40% of their non-maltreated counterparts. Only 5% of maltreated sample met 6 out of 7 resilience criteria in adulthood compared to 16% of their non-maltreated counterparts.</p>