

Earned-Secure Attachment Status in Retrospect and Prospect

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## Abstract

Past research with the Berkeley Adult Attachment Interview demonstrates that retrospectively defined earned-secures (who coherently describe negative childhood experiences) parent as effectively as do continuous-secures (who coherently describe positive childhood experiences) but manifest liabilities in the form of depressive symptomatology. This paper presents data from a 23-year longitudinal study that replicate and extend prior research, testing a key premise that earned-secures so defined actually have a history of insecure attachments that change over time and/or endure consistently harsh or ineffective parenting in their youth. Discrepant with assumptions, retrospective earned-secures were not more likely than continuous-secures to have been anxiously attached in infancy and were observed in childhood and adolescence to have encountered among the most supportive and structured maternal parenting in a high-risk sample. Prospectively defined earned-secures (operationalized using participants' infant attachment classifications) did indeed go on to have success in their close relationships, many without reporting relatively high levels of internalizing distress in adulthood.

## Earned-Secure Attachment Status in Retrospect and Prospect

“I had a weak father, domineering mother, contemptuous teachers, sadistic sergeants, destructive male friendships, emasculating girlfriends, a wonderful wife, and three terrific children.

Where did I go right?” – Jules Feiffer, illustrator and satirist

Although it is becoming increasingly clear that the quality of early parent-child attachments can manifest significant and substantial continuity over time (Hamilton, 2000; Waters, Merrick, Treboux, Crowell, & Albersheim, 2000), empirical evidence suggests also that change is not only possible, but, as Bowlby (1973) envisioned, meaningfully associated with variations in the presence and timing of positive and negative life events (Weinfield, Sroufe, & Egeland, 2000; Thompson, 2000). Of particular interest in the study of change in attachment security are developmental processes by which individuals rise above malevolent parenting histories to break the intergenerational cycle, typically referred to as “earned-security” (Pearson, Cohn, Cowan, & Cowan, 1994; Phelps, Belsky, & Crnic, 1997; Paley, Cox, Burchinal, & Payne, 1999; Sroufe, Carlson, Levy, & Egeland, 1999). Despite the obvious importance of understanding such resilient pathways, however, empirically studying positive changes in individuals’ attachments is quite a methodological challenge, often requiring tentatively accepting speculative findings from cross-sectional research. Few would disagree that, ultimately, prospective data must be brought to bear on the key inferences of such studies, especially those suppositions relevant to the validity of the retrospective assessment of early adversity. As such, this paper presents data drawn from a 23-year longitudinal study designed to replicate and extend pathfinding cross-sectional research on the topic of earned-security (Pearson et al., 1994; Phelps et al., 1997; Paley et al., 1999).

To date, with the exception of a single set of studies described later (Waters, Hamilton, & Weinfield, 2000), all published operationalizations of earned-security have been retrospective, based on variations in the inferred experience ratings of those classified as secure/autonomous in the Berkeley Adult Attachment Interview (AAI; George, Kaplan, & Main, 1985). A widely used and well validated instrument in developmental research (Hesse, 1999), trained coders use the AAI to make inferences about adults' current state of mind regarding earlier attachment experiences with their parents. Coders also typically rate individuals' inferred childhood experiences with five scales of parental behaviors including mother and father's love, rejection, neglect, role reversal, and pressure to achieve. A growing corpus of studies has now demonstrated that adult attachment states of mind can be predicted by earlier parent-child experiences (e.g., Allen & Hauser, 1996; Beckwith, Cohen, & Hamilton, 1999; Roisman, Madsen, Hennighausen, Sroufe, & Collins, 2001) and in turn forecast the quality of individuals' interactions with their own children (van IJzendoorn, 1995a). In contrast, very little is known about the psychometric and retrodictive properties of the inferred experience scales, as it is often assumed that they only bear a limited connection with the "actual" events of childhood (see Pearson, Cohn, Cowan, & Cowan, 1994, for discussion).

In comparison to the "insecure" classifications (preoccupied, dismissing, unresolved), individuals classified as secure/autonomous in the AAI produce coherent accounts of their early experience (Main & Goldwyn, 1998). While many young adults classified as secure/autonomous report about early supportive encounters with parents, some describe negative experiences but nonetheless do so in a coherent and contained manner. Based in part on the observations made by Main and Goldwyn (1998) in their coding manual for the AAI, Pearson, Cohn, Cowan, and Cowan (1994) dubbed this latter group "earned-secure," an implicit assumption being that they

had actually overcome malevolent childhood experiences— either insecure attachments in infancy that changed over time or harsh parenting that might be otherwise associated with insecurity in childhood and/or adolescence<sup>1</sup>.

Following a modest sized sample of mothers and fathers, Pearson and her colleagues (1994) concluded that earned-secures so defined parent as effectively as do continuous-secures but also manifest liabilities in the form of depressive symptomatology, presumably as a function of their early adverse (e.g., insecure) histories. The parenting outcomes in Pearson et al.'s (1994) study were observational in nature, tapping parents' warmth and structure in interaction with their preschoolers. Depressive symptomatology was assessed via self-report with the Center for Epidemiological Studies Depression Scale (CES-D; Radloff, 1977). Importantly, in a follow-up report on earned-security using the Pearson retrospective system of classification, earned-secures in an all female sample were observed to parent as proficiently as did continuous-secures under conditions of high life stress (Phelps, Belsky, & Crnic, 1997). This latter study was important in suggesting key evidence that earned-secures had actually broken the intergenerational cycle in that low life stress was not masking or buffering latent vulnerabilities.

As aforementioned, however, no data have yet been published to substantiate the tentative claim that retrospectively defined earned-secures actually encounter greater adversity than continuous-secures in infancy and/or childhood (but see Bahadur, 1998). Indeed, there is good reason to be cautious about retrospective reports— recollection is clearly a reconstructive process that can be strongly influenced and even distorted by subsequent experiences (Yarrow, Campbell, & Burton, 1970; Henry, Moffitt, Caspi, Langley, & Silva, 1994). Moreover, much research with the AAI is built upon the specific premise that the events described in the interview are not necessarily congruent with what would have been observed by eyewitnesses. Rather,

individuals' current representations of past experiences, as inferred by trained coders who primarily assess the quality (not the content) of discourse produced about childhood memories, are generally viewed by attachment researchers as more accurate indicators of participants' abstracted developmental histories and thus in turn more reliably predict future caregiving (see especially Fox, 1995, and van IJzendoorn, 1995b). Simply stated, the AAI was not designed as a self-report measure of encounters with early adversity or support, a point emphasized in the coding manual for the AAI when Main and Goldwyn (1998) state that the semantic content of the AAI should not be taken as face valid as it is "not presumed that these retrospective interviews can provide a veridical picture of early experiences" (p. 5).

To be sure, Phelps, Belsky, & Crnic (1997) were clearly concerned that, in addition to genuine reports of early harsh experience, the AAI's inferred experience scales might pick up potential depression-related biases toward selectively remembering negative childhood memories as well. This observation is especially concerning because, as discussed earlier, an empirical link has already been demonstrated between earned-security and self-reported depressive symptomatology (Pearson et al., 1994). Given these considerations, Phelps and colleagues cautioned readers "the field still awaits the results of a longitudinal study that can determine whether subjects' actual experiences match their probable experience ratings gathered with the AAI" (Phelps, Belsky, & Crnic, 1997, p. 34). Pearson and her co-authors (1994) were also careful to qualify their claims, emphasizing the retrospective nature of their "diagnosis" of early experience.

Taking these important leads from earlier research, this study presents the first prospective, longitudinal data on the developmental antecedents and consequences of retrospectively assessed earned- and continuous-security. We begin by attempting first to

replicate Pearson and colleagues' (1994) findings demonstrating that retrospective earned-security is associated with depression-related distress in adulthood (age 23). We next extend these analyses backward in time in kindergarten, 1<sup>st</sup> grade, and again at age 16 via maternal and self-report to assess how early in the life course such expected group differences might develop and persevere. In addition, we also examine our participants' mothers' reports of their own depressive symptoms, as it is possible that the depressive symptomatology reported by retrospective earned-secures is partly a function of the across-generation transmission of negative affect. Indeed, a family history of depressive symptomatology could be viewed as forecasting the negative life events and/or depressogenic biases that may account for retrospective earned-secures reporting poorer experiences with parents in the context of the AAI. All of this remains to be clarified.

As presently small sample sizes preclude examining retrospective earned-secures' parenting behaviors, we instead next compare retrospectively defined earned-secures, continuous-secures, and insecure in terms of the observed quality of their romantic relationships in young adulthood, a theoretically analogous domain of relational adaptation. Recent work adopting an organizational perspective on human development (Sroufe & Waters, 1977; Sroufe & Fleeson, 1986; Collins & Sroufe, 1999) strongly suggests that security is associated with higher quality romantic relationships in adulthood (Cohn, Silver, Cowan, Cowan, & Pearson, 1992; Roisman, Madsen, Hennighausen, Sroufe, & Collins, 2001). Furthermore, one recent study has specifically examined the quality of retrospective earned-secures' adult partnerships, finding that both continuous- and earned-secure wives were able to better regulate their affect in interactions with their partners than participants who produced either preoccupied or dismissing

discourse regarding their early childhood experiences in the AAI (Paley, Cox, Burchinal, & Payne, 1999).

After replicating and extending prior work, we go on to test the key premise of the Pearson et al. (1994) retrospective system that earned-secures so defined actually have a history of insecure attachments in infancy that change over time and/or endure harsh or ineffective parenting in their youth. Specifically, we begin by examining whether retrospectively defined earned-secures in a high-risk sample are more likely than continuous-secures to have had been independently assessed as anxiously attached in the Ainsworth and Wittig (1969) Strange Situation at 12 and 18 months. We next compare the security groups on observationally assessed ratings of the maternal parenting they encountered in childhood and adolescence (24 months, 42 months, and 13 years). If retrospective earned-secures indeed overcame pervasively malevolent parenting experiences, they should be more likely than continuous-secures to have been insecurely attached in infancy and/or should have mothers who received significantly poorer ratings in the task-centered observations we conducted in the participants' earlier lives.

This study concludes with the first systematic prospective examination of how change in attachment security from infancy to young adulthood is associated with salient issues in the years of maturity. A recent report with the current sample shows that individuals can be classified into prospective attachment change groups on the basis of their infant attachment histories; individuals who were insecurely attached in infancy but nonetheless produce autonomous/secure discourse in the AAI are classified as prospectively defined earned-secures (Weinfield, Sroufe, & Egeland, 2000; see also Hamilton, 2000). As predicted by attachment theory (e.g., Bowlby, 1973; Sroufe, Carlson, Levy, & Egeland, 1999), our initial study found that prospective earned-secures could be discriminated from other groups in terms of their life histories, evidencing less



maltreatment and higher quality family dynamics at age 13 than did continuous-insecures (insecure infants that produced incoherent attachment-relevant discourse in young adulthood).

Using this prospective classification scheme, we present here complementary data on the consequences of prospectively defined earned-security for adult adaptation. The extant retrospective published reports on earned-security offer that individuals who overcome poor childhood experiences are able to rise above their past in the domain of relationships but also imply that early malevolent experience exacts a toll in terms of increased risk for depressive symptomatology in adulthood. Due to questions about the way in which early negative experience was assessed, however, we cannot be sure that individuals classified as earned-secure in past studies actually encountered pervasive childhood adversity. This study uses a prospective assessment of positive change in attachment security across time (by definition a valid operationalization of earned-security) to examine by comparison the operational validity of retrospectively assessed earned-security, both in terms of its necessary antecedents (harsh early experiences) and its putative developmental consequences (e.g., depressive symptomatology, success in salient adult relationships).

## Method

### Participants

Participants were drawn from an ongoing 23-year longitudinal study of normative and atypical development originally consisting of 267 mothers and their first-born infants. Mothers, many of whom were young and living in conditions of poverty, were recruited between 1975 and 1977 at Minneapolis public health clinics where they were receiving prenatal care (see Egeland & Brunquell, 1979, for an early report). Specifically, however, it is a sub-sample of 170 of their children who have been followed into young adulthood that form the core set of participants for

the current study. Data for this study were drawn from self-reports and videotaped observations of these individuals and their mothers.

Regarding sample attrition, 212 families remained in the study by the time participants were 24 months. Since age 2, 80.2% ( $n = 170$ ) of the remaining sample has been retained. The follow-up sample is racially diverse: 66.5% of the ongoing participants are European American, 17.6% have mixed racial backgrounds (European American, African American, Latino and/or Native American), 10% are African American, 1.8% are Native American or Latino, and 4.1% are unclassifiable due to missing data on their fathers' ethnicity.

### Retrospective Earned-Security Status

#### Procedure

At age 19, 170 participants completed the Adult Attachment Interview (AAI), a semi-structured, semi-clinical assessment used to characterize individuals' current state of mind with respect to past parent-child experiences (George, Kaplan, & Main, 1985; see Weinfield, Sroufe, & Egeland, 2000, for sample specific details). More specifically, the AAI is a 20-question, approximately hour-long interview that requires participants to describe their early relationships with their parents, revisit salient separation episodes, explore instances of perceived childhood rejection, recall encounters with loss, and speculate about their future feelings and expectations regarding raising their own child. According to established protocol, AAI's were transcribed verbatim and all identifying information was removed from the transcripts before they were coded by judges trained through and reliable with the lab of Dr. Mary Main.

In preparation for making an overall judgment regarding participants' primary adult attachment classification, coders assessed several "state of mind" scales including the narrative coherence of each transcript along a nine-point rating scale entitled "coherence of mind" ( $\rho_1 =$

.71,  $p < .001$ ). Violations of any of Grice's (1975) maxims of conversation (quality, quantity, relation, and manner) in addition to the "nature of the subjects' apparent belief systems in comparison to the judge's own assessment of reality" are considered in rating participants' coherence of mind, viewed theoretically as the single best indicator of security in the AAI (Main & Goldwyn, 1998, p. 108). Although inferred experience scales were not systematically codified in the initial data reduction effort of the AAI transcripts, "state of mind" scales (including derogation, idealization, involving anger, passivity, etc.) were rated by judges who took into account participants' self-reported childhood experiences with parents (e.g., to detect narrative discrepancies indicative of idealization).

Ultimately, transcripts received primary attachment classifications of 'secure/autonomous' (F), 'insecure/dismissing' (Ds), 'insecure/preoccupied' (E), or 'unresolved' (U) according to the criteria outlined by Main and Goldwyn (1998) in their coding manual for the AAI. Narratives coded as secure showed evidence of an autonomous state of mind with respect to attachment. These participants explored their thoughts and feelings about earlier parent-child experiences, whether described as good or ill, in an open, contained, and above all coherent manner. Narratives coded as insecure in contrast provided strong evidence of dismissing, preoccupied, or unresolved states of mind with respect to attachment. These participants idealized/minimized attachment relationships, seemed currently entangled/enmeshed in their relationships with parents, or their discourse became disorganized when describing loss or abuse events, respectively. Percent agreement for the secure/insecure designation was 87.8% ( $\kappa = .72$ ,  $p < .001$ ). Keeping with previous work with the retrospective earned-security classification (e.g., Phelps, Belsky, & Crnic, 1997), unresolved participants whose secondary attachment classification was secure/autonomous (F) were dropped from further analysis as their

discourse could not be unambiguously described as indicative of either a secure or insecure state of mind regarding attachment.

Earned- and Continuous-Secure Groups. After identifying secure ( $n = 46$ ) and insecure ( $n = 107$ ) transcripts<sup>2</sup>, the secure/autonomous group was further sub-divided into retrospectively defined earned- and continuous-secures by scrupulously following a procedure developed by Pearson, Cohn, Cowan, and Cowan (1992) (see also Phelps, Belsky, & Crnic, 1997). In order to follow this procedure, all secure transcripts as well as a sub-set of randomly chosen insecure transcripts ( $n = 25$ ) were rated on several nine-point scales designed to measure participants' inferred childhood experiences by classification-blind coders trained through the lab of Mary Main. These scales included mother and father's love, rejection, neglect, and pressure to achieve. As described in the Introduction, these ratings are meant to provide an overall depiction of participants' experiences with their primary caregivers in childhood. Intraclass reliabilities for these scales ( $\rho_1$ 's) were adequate to excellent, ranging from .77 to .92 ( $p$ 's < .001). All ratings were double coded for the secure cases and scores were averaged to increase reliability.

As in the Pearson et al. (1994) study, an initial attempt was made to define earned-security by examining secure/autonomous transcripts with the following sub-classifications: F1, F2, F3b, F4, and F5, codes assigned on the basis of high narrative coherence in combination with a negative inferred developmental history (Main & Goldwyn, 1998). Upon careful inspection of the childhood experience scores of these transcripts, however, it was discovered that some of these participants described only somewhat difficult childhoods that did not suggest the same degree of hardship encountered by insecure and others designated as earned-secure. Transcripts containing only weak evidence for difficult early experiences were coded as continuous-secure.

As in previous research on earned security (e.g., Pearson et al., 1994; Phelps et al., 1997), earned-secures were thus ultimately defined as participants who produced coherent (e.g., secure) discourse during the AAI but whose mother and/or father received low scores on the loving scale and whose mother and/or father received a high rating either on the rejecting or neglecting inferred experience scales. For the purposes of this study, ratings below the midpoint ('5') on the inferred childhood experience scales were defined as "low" and ratings above the midpoint on the scales were considered "high." The final group of earned-secures ( $n = 24$ ) consisted of participants with the following F codes: F1, F2, F3b, F4, F5, and F other. Continuous-secures ( $n = 22$ ) had the following sub-classifications: F2, F3a, and F4 (primarily F4a). Note that one transcript was designated earned-secure due to low loving scores combined with marked role-reversal on the part of the participant's mother (as well as sub-threshold rejection and neglect). In two cases, the profile of ratings between coders resulted in discrepancies about whether the case should be regarded as earned- or continuous-secure. As such, a third coder rated these cases and group designation (earned- or continuous-secure) was decided on the basis of agreement between two of the three coders.

Before moving forward with analyses, a set of planned comparisons was conducted to examine empirically whether earned-secures had significantly poorer childhood experience ratings than continuous-secures and a significantly higher coherence rating than insecure as is required by the design of this study. Consistent with previous research using the Pearson et al. (1994) method of retrospectively operationalizing earned- versus continuous-security, results of planned comparisons provided robust evidence that the Pearson system appropriately differentiated the three security groups with respect to the inferred early experience and narrative coherence ratings. Specifically, t-tests revealed that retrospectively defined earned-secures had

significantly poorer experience ratings than continuous-secures (see Table 1;  $t [38] = 2.39, p < .05$  for mother loving;  $t [44] = 8.38, p < .001$  for father loving;  $t [28] = 2.66, p < .05$  for mother rejecting;  $t [33] = 6.29, p < .001$  for father rejecting;  $t [24] = 3.88, p < .001$  for mother neglecting; and  $t [44] = 8.90, p < .001$  for father neglecting) and were scored as significantly more coherent than insecure (  $t [31] = 11.56, p < .001$ )<sup>3</sup>. Note that, with the exception of the father loving and neglecting analyses, the statistics reported here do not assume equal variances across groups as Levene's test of homogeneity of variances was significant for these analyses.

In addition, data from the randomly chosen sub-sample of insecure transcripts coded for inferred childhood experiences ( $n = 25$ ) revealed that their inferred experience means, as expected, were similar to those of the earned-secures (see Table 1;  $t [47] = 1.75, p = .09$  for mother loving;  $t [44] = 2.19, p < .05$  for father loving;  $t [42] = .95, p = .35$  for mother rejecting;  $t [38] = 4.68, p < .001$  for father rejecting;  $t [44] = 1.68, p = .10$  for mother neglecting; and  $t [31] = 4.23, p < .001$  for father neglecting)<sup>4</sup>. In fact, the only significant differences observed between these two groups revealed that earned-secures indicated significantly greater rejection and neglect as well as less love by their fathers than did insecure (a finding with precedent in Paley et al., 1999). Only one analysis intimated that earned-secures' experience ratings might not be comparable to or worse than insecure: Echoing data presented in Phelps et al. (1997) and Paley et al. (1999), earned-secures had a higher group mean on mother loving than did insecure, although this difference was marginally significant. It should be emphasized as a counterpoint, however, that earned-secures were also rated as experiencing marginally more neglect from mothers than did insecure.

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Insert table 1 about here

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In addition to the Pearson et al. (1994) method of operationalizing earned-security, an attempt was made to sort participants into retrospectively defined earned- and continuous-security groups by following the more conservative criteria advocated for by Main and Goldwyn (1998) in the most recent edition of the AAI coding manual. Specifically, earned-secures are now defined in the AAI manual as secure/autonomous participants who receive loving scores lower than 2.5 for both mother and father figures and continuous-secures are secure/autonomous participants whose parents' average loving scores are 6.5 or greater. Main and Goldwyn suggest that participants classified as autonomous who fail to meet either of these criteria should be set aside from analyses.

A quick look at the inferred experience ratings for this cohort revealed that only three participants met Main and Goldwyn's (1998) stringent standard for retrospectively operationalizing earned-security (ten participants met criteria for continuous-security). As it would be statistically inappropriate to report a set of analyses complementary to those presented for the Pearson et al. (1994) system given the small earned-secure group  $n$ , no analyses using the Main and Goldwyn (1998) retrospective classification criteria are reported here.

#### Prospective Earned-Security Status

Prospectively defined earned- and continuous-secure groups were created on the basis of the observed infant attachment histories of participants who produced autonomous discourse in the AAI. Specifically, at 12 and 18 months, participants and their mothers completed the well-validated Strange Situation (SS) behavioral assessment of attachment security (Ainsworth, Blehar, Waters, & Wall, 1979). At both ages, mother-child dyads received one of three primary

attachment classifications (secure, avoidant, or resistant) based on the infants' responses during separation and reunion from their primary caregivers. Dyads were coded as 'secure' when the infant used the parent as a secure base from which to explore— upon reunion, these infants' interactions with their caregivers served to alleviate separation distress. In non-secure dyads, the infants did not use parents as a secure base— infants either avoided the caregiver upon reunion ('avoidant') or displayed distress that was not effectively alleviated ('resistant'). For the purposes of this study, all non-secure dyads were coded as insecure.

Following precedent established in a previous study with the current data set (Weinfield, Sroufe, & Egeland, 2000), two groups were created by cross-classifying attachment security status in infancy and adulthood: continuous-secure (secure in SS-secure in AAI) and earned-secure (insecure in SS-secure in AAI). Two separate variables were created: security change status from 12 months to adulthood ( $n = 26$  continuous-secure,  $n = 19$  earned-secure) and security change status from 18 months to adulthood ( $n = 31$  continuous-secure,  $n = 11$  earned-secure). Participants who produced insecure discourse in the AAI (irrespective of their infant attachment history) formed the comparison group for analyses ( $n = 107$ ; 58 secure in 12-month SS, 55 secure in 18-month SS).

### Earned-Security: Developmental Antecedents

#### Overview

All variables described below are grouped into theoretically relevant categories key to examining the operational validity of the retrospective earned-security system developed by Pearson et al. (1994). Measures of internalizing distress are discussed first. Next we describe the three observational assessments of maternal parenting conducted with our participants in early childhood and adolescence.



### Depressive Symptomatology

Child Behavior Checklist/Youth Self-Report. Mothers of our participants completed the commonly used and well-validated Child Behavior Checklist (CBCL) to describe their children's problem behaviors, adaptive functioning, and school performance when participants were in kindergarten, grade 1, and again at age 16 (see Achenbach, 1991a, 1991b for details). At age 16, participants themselves completed the parallel form of the CBCL known as the Youth Self-Report (YSR). Both the CBCL and YSR were normed on a large, representative national sample of non-referred children and have adequate psychometric properties including excellent test-retest reliability, discriminant validity for the sub-scales, and criterion-related validity (e.g., the measures distinguish between referred and non-referred children). For the present study, the internalizing factor, containing items that tap behaviors relating to anxiety/depression, social withdrawal, and somatic complaints, were used in analyses. Raw scores were converted to standardized T-scores: Mother-report data from kindergarten and 1<sup>st</sup> grade were composited to create a single variable for analyses; age 16 CBCL and YSR internalizing scores were examined separately by informant.

CES-D. Mothers were asked questions regarding their own depressive symptomatology when their children were 42 months with the 20-item Center for Epidemiological Studies Depression Scale (CES-D; Radloff, 1977). The CES-D has acceptable psychometric properties including adequate convergent validity (e.g., with the Bradburn Negative Affect Scales; Bradburn, 1969) and criterion validity (e.g., it discriminates between the general population and

inpatient populations). CES-D scores of 16 and above are considered clinically significant (Radloff, 1977).

### Observed Quality of Parenting Experiences: Childhood and Adolescence

Maternal support and structure at age 2. At 24 months, participants and their mothers completed a set of “tool tasks” adapted from the ethological research of Bill Charlesworth (see Matas, Arend, & Sroufe, 1978). These tasks, requiring the 2-year-olds to complete four problem-solving exercises, increased in complexity, ultimately becoming too difficult for the child to complete on his/her own. Assessments were videotaped and subsequently coded for mother’s supportive presence, quality of assistance, and limit setting during a cleanup task that preceded the tool problems. These assessments were independently coded by two graduate research assistants yielding an average interrater  $r = .87$ . As in a prior study with the current dataset (Aguilar, Sroufe, Egeland, & Carlson, 2000), the quality of mothers’ provision of support and structure was quantified by standardizing and averaging two variables: “limit setting” during cleanup and the “overall mother rating” on the tool tasks (see Appendix).

Maternal support and structure in preschool. At 42 months, participants and their mothers completed a set of four “teaching tasks” adapted from a procedure developed by Block and Block (1980). As in the tool tasks, the teaching task exercises required the joint attention of mothers and their preschoolers for their successful completion. Specifically, problem solving tasks consisted of block design, object naming, matrix sorting, and Etch-a-Sketch drawing. Paralleling the 24-month tool task, this assessment was videotaped and a set of mother behavior ratings was scored by two independent raters (the average interrater Pearson correlation was .76). In accord with a previous compositing strategy used by this research project (Aguilar et al.,

2000), four of the mother behavior scales (respect for autonomy + structuring and limit setting + supportive presence - hostility) were composited and standardized to create a preschool index of maternal support and structure ( $\alpha = .83$ ; see Appendix).

Quality of mother-adolescent relationship. At age 13, participants completed a videotaped protocol with their primary caregiver. Tasks involved creating an anti-smoking campaign, completing a puzzle with the caregiver blindfolded, discussing results of imaginary events, and collaborating on a Q-Sort of the ideal person. Graduate research assistants coded videotapes of the parent-child interactions using eleven dyadic rating scales of behavior and affect (J. Sroufe, 1991). These rating scales included Anger, Conflict, Conflict Resolution, Confrontive-Attacking, Emotional Engagement, Hostility, Negative Affect, Positive Affect, and three “Balance” scales that that focused on the degree to which relationships served to promote the expression of individual ideas, scaffold personal development, as well as help individuals meet task demands. Intraclass correlations ( $\rho_I$ 's) were adequate, ranging from .60 to .70 ( $p$ 's < .001). Several additional rating scales reported elsewhere (cf. Aguilar et al., 2000) rating “generational boundary violations” were excluded from analysis here as they are not regarded by the project as mother-child relationship quality measures per se.

A previous study with the current sample has shown that security in the AAI is associated with higher quality parent-adolescent interactions in participants' earlier lives, assessed using a composite measure of “mother-child process,” derived from a principal components analysis of the rating scales mentioned above (see Roisman, Madsen, Hennighausen, Sroufe, & Collins, 2001). Specifically, the composite rating is a standardized average of the Balance I, Balance III, Emotional Engagement, and Positive Affect scales ( $\alpha = .83$ , see Appendix). Mother-child process was used as a measure of the quality of mother-child relationships at age 13 in order to

explore retrospective earned-secures' parenting experiences in comparison to continuous-secures and insecure.

### Earned-Security: Young Adult Sequelae

#### Overview

Previous research suggests that retrospectively defined earned-security is associated with high quality relationships (Pearson et al., 1994; Phelps et al., 1997; Paley et al., 1999) and depressive symptomatology (Pearson et al., 1994) in adulthood. The measures described below were used to replicate and extend prior research within the framework of a longitudinal study.

#### Internalizing Distress

Young Adult Self-Report. At age 23 as part of a larger follow-up assessment of adaptation in young adulthood, participants completed the Young Adult Self-Report (YASR), the adult form of the Child Behavior Checklist (Achenbach, 1997). Analyses for this study were focused on a sub-set of the YASR probes that load on an internalizing factor, containing items related to both depression/anxiety and social withdrawal. Raw scores were converted to standardized T-scores for analyses. Note that T-scores of 60 and above are considered clinically significant (Achenbach, 1997).

#### Observed Quality of Romantic Relationship

Romantic relationship assessment. At age 20-21, participants were invited to complete a romantic relationship assessment with their partners of four months or longer. Tasks included discussing a couple-identified problem and collaborating on an ideal couple Q-sort. Seventy-three participants (36 male participants with their girlfriends and 37 female participants with

their boyfriends) completed the entire assessment, 61 of whom had earlier completed the AAI at age 19. Note that the demographics of the participants in this sub-sample are comparable to those of the full follow-up longitudinal sample (Hennighausen, 1999).

Graduate research assistants coded videotapes of the couple interactions using ten dyadic rating scales of behavior and affect developed to parallel parent-child ratings used previously by the project when participants were age 13 (Aguilar, Christian, Collins, Cook, Hennighausen, Hyson, Levy, Meyer, Roisman, Ruh, Sesma, & Vogeler-Knopp, 1997). These scales included Anger, Conflict Resolution, Dyadic Negative Affect, Hostility, Overall Quality, Secure Base, Shared Positive Affect, and three “Balance” scales that paralleled conceptually those used in the age 13 mother-child assessment described earlier ( $\rho_1$ 's ranged from .81 to .95,  $p$ 's < .001). Coders were blind to the identity of the original participants within the couples.

Romantic relationship quality has been previously operationalized in this research project using a composite measure of “romantic relationship process” derived from a principal components analysis of the rating scales mentioned above (Roisman, Madsen, Hennighausen, Sroufe, & Collins, 2001). This quality measure is a standardized average of the Balance I, Balance II, Conflict Resolution, Overall Quality, Secure Base, and Shared Positive Affect rating scales ( $\alpha = .95$ , see Appendix). Previously reported analyses have shown that participants coded as secure at age 19 were involved in higher quality romantic relationships at age 20-21 than insecure (Roisman et al., 2001). The romantic relationship process composite variable is used in the current study to determine whether retrospective earned-secures are involved in adult romantic relationships of comparable quality to continuous-secures and of higher quality than insecure, a finding expected on the basis of previous research (e.g., Paley et al., 1999).

## Results

### Analytic Plan

With the exception of cross-tabulations examining whether retrospectively and prospectively defined earned- and continuous-secure groups were equivalent, all analyses described below are planned comparisons. Employing the analytic template of prior research on earned-security (e.g., Pearson et al., 1994), planned comparisons were used here as they are ideal in protecting against Type II error (e.g., they eliminate the need for omnibus F-tests). Although ANOVAs with post hoc follow-ups are to be preferred in exploratory research (in which Type I error rates are conservatively minimized), planned comparisons should be used when focusing on a well defined set of a priori contrasts of interest, as was the case here (see Hays, 1988).

As a maximum of  $k-1$  comparisons can be completed per outcome variable using planned comparisons (where  $k$  is defined as the number of levels in the independent variable), each set of analyses described below contrasts the earned-secures with the other two security groups (e.g., earned-secures versus continuous-secures, earned-secures versus insecure). Two-tailed significance values are reported for all analyses; in addition, one-tailed  $p$ -values are indicated when directional hypotheses were explicitly articulated a priori (e.g., for mother and child internalizing distress and romantic relationship quality replication analyses). In addition to  $t$ -statistics and their associated  $p$ -values, standardized differences between means (Cohen's  $d$ ; effect sizes) were calculated and are indicated for all contrasts. We adopted Cohen's (1992) criteria in interpreting  $d$  (small effect = .2, medium effect = .5, and large effect = .8 +) so that marginally significant differences could be considered in relation to their effect size in determining the substantive significance of findings (cf. Cohen, 1994). In prior research on earned-security (Phelps et al., 1997),  $d$ 's  $\geq .50$  were considered meaningful effects. Note finally that  $n$ 's vary across analysis to maximize data available from each assessment (see Tables 2-5).

### Prospective versus Retrospective Earned-Secure Attachment Status.

We begin by emphasizing that the prospective and retrospective assessments of earned-security did not converge: Two crosstabulations of the retrospective operationalization of earned-versus continuous-security by each of the two prospective operationalizations revealed that the Pearson et al. (1994) retrospective system had both extremely low sensitivity and specificity in accurately categorizing which participants actually had insecure attachments in infancy that changed over time and which participants had secure attachments in infancy and again at 19 years of age (see Table 2). Specifically, kappas for both analyses were negative, though non-significant (12-month Strange Situation prospectively defined secure groups by retrospectively defined secure groups percent agreement = 44.4%; 18-month Strange Situation prospectively defined secure groups by retrospectively defined secure groups percent agreement = 47.6%).

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Insert table 2 about here

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### Attachment classifications by sex

When earned security was operationalized prospectively on the basis of infant Strange Situation classifications, no sex differences emerged. In contrast, a marginally significant chi-square revealed that the distribution of retrospectively defined earned- and continuous-secures differed as a function of participants' sex. Inspection of the cross-tabulations revealed that female participants were more likely than males to be coded retrospectively defined earned-secure and males were more likely than females to be coded continuous-secure in this sample (see Table 3).

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Insert table 3 about here

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### Retrospectively Defined Earned-Security: Young Adult Sequelae

Observed Quality of Romantic Relationship. As expected, retrospectively defined earned-secures were rated as involved in higher quality romantic relationships at age 20-21 than insecure (a large effect,  $t [58] = 2.04$ ,  $p = .07$  [ $p < .05$  one-tailed];  $d = .79$ ). Means for the earned-secure and continuous-secure groups on romantic relationship quality were not discriminable ( $t [58] = .11$ ,  $p = .91$ ;  $d = .05$ ; see Table 4).

Internalizing Distress in Adulthood. Planned comparisons revealed that earned-secures reported marginally more distress at age 23 than did continuous-secures (a medium sized, meaningful effect;  $t [38] = 1.67$ ,  $p = .10$  [ $p < .10$  one-tailed];  $d = .51$ ). The earned-secure and insecure group means did not differ significantly ( $t [34] = .16$ ,  $p = .87$ ;  $d = .04$ ). Note also that as Levene's test was marginally significant for this set of analyses, the  $t$  statistics reported do not assume equal variances across groups. See Table 4 for means and standard deviations.

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Insert table 4 about here

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### Retrospectively Defined Earned-Security: Developmental Antecedents

Depressive Symptomatology. Analyses presented in Table 5 reveal a predictable pattern of higher mother- and self-reported levels of internalizing distress in childhood and adolescence among earned-secures relative to other groups. Specifically, in kindergarten/grade 1, mothers reported that earned-secures had the highest levels of internalizing distress of any security group;



contrasts revealed significant differences between retrospective earned-secures and both insecure ( $t [143] = 2.09, p < .05; d = .51$ ) and continuous-secures ( $t [143] = 2.14, p < .05; d = .64$ ). Similar though somewhat less consistent results obtained in adolescence. At age 16, while mothers of earned-secures rated their adolescents as more distressed on average than insecure and continuous-secures, these differences were marginally significant only when considering one-tailed significance levels, though the effect size was medium for the earned-secure versus continuous-secure contrast (earned-secures v. insecure:  $t [141] = 1.57, p = .12 [p < .10$  one-tailed];  $d = .36$ ; earned-secure v. continuous-secure:  $t [141] = 1.38, p = .17 [p < .10$  one-tailed];  $d = .48$ ). Likewise, retrospectively defined earned-secure participants rated themselves as the most distressed group in adolescence, marginally more so than insecure ( $t [142] = 1.87, p = .06 [p < .05$  one-tailed];  $d = .41$ ) and continuous-secures ( $t [142] = 1.53, p = .13 [p < .10$  one-tailed];  $d = .48$ ). Effect sizes for these analyses approached medium by Cohen's (1992) criteria. Lastly, group comparisons of mothers' reports of their own depressive symptomatology revealed that, when their children were 42 months, mothers of retrospective earned-secures indicated significantly more distress than mothers of insecure ( $t [140] = 2.23, p < .05; d = .49$ ) and continuous-secures ( $t [140] = 2.02, p < .05; d = .61$ ).

Observed Quality of Parenting Experiences. Table 5 reveals that earned-secures were consistently rated as having encountered among the highest quality maternal parenting relative to other security groups. Specifically, at 24 months, earned-secures were observed to have received the best support and structure of any group, significantly more so than insecure ( $t [122] = 2.31, p < .05; d = .60$ ) and marginally more so than continuous-secures (a meaningful effect,  $t [122] = 1.65, p = .10; d = .52$ ). Although no group differences emerged at 42 months, the earned-secure mean remained above the sample average ( $d$ 's indicated small effects). Finally, at age 13 earned-

secures had a significantly higher group mean on the mother-child relationship quality rating than insecurities ( $t [141] = 2.90, p < .01; d = .66$ ). Retrospective earned- and continuous-secure group means were not discriminable and the effect size for this contrast was small to medium ( $t [141] = 1.22, p = .23; d = .38$ ).

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Insert table 5 about here

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### Prospectively Defined Earned-Security: Young Adult Sequelae

Observed Quality of Romantic Relationship. Consistent with the results of retrospective analyses, prospectively defined earned-secures (12-month operationalization) were rated as involved in romantic relationships of higher quality than insecurities (a large effect;  $t [57] = 1.96, p = .06 [p < .05 \text{ one-tailed}]; d = .76$ ) and of comparable quality to continuous-secures ( $t [57] = .60, p = .55; d = .26$ ). Note that while a similar pattern of differences emerged with respect to groups derived from the 18-month prospective operationalization of earned-security, the number of earned-secures in this analysis ( $n = 2$ ) precluded meaningful group comparisons (see Table 4).

Internalizing Distress. No group differences emerged with respect to internalizing distress at age 23 using either the 12- or 18-month prospective operationalization of earned-security (see Table 4). Effect sizes were also small, ranging from .09 to .18. Moreover, post hoc follow-ups revealed no significant differences in terms of the proportion of clinically significant cases of distress among prospective earned-secures relative to continuous-secures or insecurities.

### Discussion

This study was designed with a targeted purpose: to replicate, extend, and provide added conceptual clarity to the literature on earned-security, defined as the processes by which individuals overcome malevolent parenting experiences. In doing so, our main success, we hope,

has been in demonstrating the incredible complexity of measuring, analyzing, and, perhaps most elusive, truly understanding the nature of positive change in the quality of attachments across time. This discussion begins by briefly reorienting readers to the principal results of the present study and goes on to speculate about their significance for understanding resilience processes more generally.

As predicted, this study replicated the results of groundbreaking research on earned-security by Pearson, Cohn, Cowan, and Cowan (1994), finding that retrospectively defined earned-secures (who coherently described negative childhood experiences) reported marginally more internalizing distress in adulthood than did continuous-secures (who coherently described positive childhood experiences). This paper is the first to extend such analyses backward in time through childhood, finding a similar pattern of results since at least kindergarten and through adolescence via maternal and self-report. Analyses of participants' mothers' reports of their own depressive symptomatology when their children were 42 months old also revealed elevated levels of distress among parents of participants who would be later retrospectively categorized as earned-secure. Note that while sample size restrictions produced somewhat under-powered analyses when adopting more conservative two-tailed critical  $t$ -values, effect sizes were typically 'medium' by Cohen's (1992) standards and therefore encouraged an interpretation that group differences on internalizing distress were indeed meaningful. We caution readers, however, that effects for self- and maternal reports of adolescents' distress were often marginally significant both in terms of their two-tailed  $p$ -values and Cohen's  $d$ , although group differences were consistently in the predicted direction.

Despite manifesting depressive liabilities, but also in line with previous research on retrospectively defined earned-security, we found that earned-secures enjoy success in their close

relationships in adulthood (Pearson et al., 1994; Phelps et al., 1997; Paley et al., 1999). Specifically, this study replicated findings that earned-secures (retrospectively and prospectively defined) have high quality adult romantic relationships; at age 20-21 earned-secures were observed to have been engaged in romantic relationships of comparable quality to continuous-secures and higher quality than insecure (see Paley et al., 1999). We emphasize further that the difference between insecure and earned-secures should be considered large and meaningful as  $d$ 's approached .8.

Having gained confidence that we had identified a group with the distinctive profile of participants labeled earned-secure in previous cross-sectional work, we went on in the context of this longitudinal study to examine the key issue of whether retrospectively defined earned-secures actually encounter significantly greater adversity in childhood than continuous-secures. To be sure, participants coded as earned-secure on the basis of Pearson, Cohn, Cowan, and Cowan's (1994) retrospective system report as adults having experienced greater childhood parenting-specific adversity than other secure/autonomous participants. Nevertheless, the data presented herein call into question the assumption that retrospectively defined earned-secures actually encountered greater parental adversity in childhood than continuous-secures. Using the Pearson et al. (1994) system of operationalizing earned-security, the longitudinal, prospective data presented in this paper revealed instead that earned-secures were the beneficiaries of among the most supportive maternal care in a high-risk sample (effect sizes were medium; for independent replication see also Bahadur, 1998). We also emphasize to readers that, critically, retrospectively assessed earned-secures were no more likely than continuous-secures to have had anxious infant attachment histories: in this study, the Pearson et al. (1994) guidelines failed to

discriminate secure adults with insecure infant attachment histories (e.g., prospective earned-secures) from participants with secure attachments in both infancy and adulthood.

Clearly, lacking father-child observational data on the majority of our participants (who did not have a stable male figure in the home), we can not know with certainty whether the supportive maternal care we observed among earned-secures took place within the context of a more generally supportive family dynamic in childhood or if it was compensatory, leaving open the possibility that retrospectively defined earned-secures actually do experience poorer relationships with male figures in childhood relative to their continuous-secure counterparts. In addition, no observations of parent-child relationships were conducted between the ages of four and twelve, a time that is emphasized in the AAI assessment of childhood memories. As a counterpoint, however, given the family and personal history of depressive symptomatology in the lives of the retrospective earned-secures uncovered in this and the Pearson et al. (1994) study, we can also not rule out the possibility that self-described differences in early experience between retrospectively defined earned- and continuous-secures are primarily a function of positive and/or negative reporting biases (e.g., negative attentional biases associated with depression<sup>5</sup>).

Although the possibility remains that the retrospectively defined earned-secures of this study actually struggled with unmeasured forms of adversity in childhood, the foregoing findings squarely emphasize that it should not be assumed that they experience either insecure attachments in infancy or pervasively malevolent experiences with parents in childhood. To be sure, Pearson and her colleagues (1994) by no means presupposed that their system for operationalizing earned- versus continuous-security would provide a veridical window on any adult's infant attachment history. However, it is fair to say that the Pearson system is meant to

provide an overall and generally applicable depiction of participants' actual encounters with harsh parenting in childhood. Moreover, viewed through the lens of the findings of this paper, the fact that retrospectively defined earned-secures have been shown in prior research to parent as effectively as do continuous-secures (and more capably than insecure) is not necessarily remarkable—this study suggests that their parenting skill may simply be a natural extension of the supportive care from which they benefited in their own childhood (Pearson et al., 1994; Phelps et al., 1997). Note, however, that these findings do not call into question the validity of the AAI. Rather, our results underscore the major premise of the instrument that it is not the content of early memories but rather the coherence with which they are described that provides an accurate depiction of states of mind indicative of earlier supportive and malevolent childhood experiences.

Although not the central focus of this study, the results of prospective analyses regarding the consequences of change in attachment security across time advocate for modifying the prevalent view of earned-security as necessarily linked with depressive symptomatology in adulthood (Pearson et al., 1994). When operationalized on the basis of observed change in attachment security from infancy, this study did not find that prospectively defined earned-secures were at any significantly greater risk for internalizing distress in adulthood relative to other security groups. This result stands in stark contrast to research using retrospective operationalizations of earned-security, which, if taken at face value, imply that those who overcome insecure attachments in infancy or pervasively malevolent parenting experiences in childhood are more likely to be distressed than other secure adults (see Pearson et al., 1994; Phelps et al., 1997).

More generally, the results of this study have potentially significant implications for how developmentalists conceptualize resilience processes (for an excellent review see Luthar, Cicchetti, & Becker, 2000). Our view, rooted in an organizational framework, is that resilience is an emergent property of a hierarchically organized set of protective systems that cumulatively buffer the effects of adversity and can therefore rarely, if ever, be regarded as an intrinsic property of individuals (Egeland, Carlson, & Sroufe, 1993). Our data are striking on this subject: we consistently find that competent functioning in the context of adversity is a predictable outcome of earlier successful adaptation with respect to stage salient issues whose roots lie in earlier supportive care (cf. Egeland, Jacobvitz, & Sroufe, 1988; Sroufe, Egeland, & Kreutzer, 1990). Using the specific case illustrated in this report, for example, earned-secures (whether retrospectively or prospectively defined) appear able to talk about early distressing events coherently because of either consistent or ameliorative support in childhood (see also Weinfield et al., 2000). Earned-secures do not rise above malevolent parenting through sheer will; rather, their success is scaffolded by caring adults, their security is a natural extension of a supportive (though not necessarily ideal) past. Said another way, individuals who overcome and successfully integrate turbulent pasts can indeed be identified. Our thesis is simply that the processes implicated in overcoming such adversity necessarily involve current and often long-standing developmental supports.

Still, questions do remain regarding our finding that, at roughly the same time, mothers of retrospectively defined earned secures were rated as highly capable caregivers yet self-reported both high levels of distress themselves and, a few years later, in their children. This finding is intriguing, but not anomalous: indeed, Pearson et al. (1994) were the first to show evidence that a sub-set of parents (e.g., retrospectively defined earned-secures) were effective caregivers despite

reporting relatively high levels of depressive symptomatology. Reflecting on the Pearson et al. (1994) and our own findings, one might speculate that secure states of mind regarding earlier attachment experiences function as relational “buffers” or protective factors, moderating (e.g., attenuating) the very reliable and robust associations typically observed between maternal depression and sub-optimal parenting.

This research owes a great deal to prior studies focused on the developing construct of earned-security (Pearson et al., 1994; Phelps et al., 1997, Paley et al., 1999). Nevertheless, the findings of this study do indeed clearly call into question the operational validity of retrospective systems that require a self-reported “diagnosis” of early adversity for assessing change in the quality of early attachments. This position in no way seeks to draw attention away from Pearson and colleague’s (1994) earned-secure group— there is no doubt much to be learned still about why certain autonomous participants report more harsh childhood experiences than other secure adults in the AAI, as well as the role played by childhood and maternal depression in the early development of these individuals. We do recommend on the basis of these data, however, that the term “earned-secure” should be reserved for describing individuals whose encounters with adversity can be operationalized prospectively, preferably on the basis of observational data demonstrating positive change in insecure attachments over time. This issue is evidently nontrivial: the analyses presented here demonstrate empirically that differing operationalizations of earned-security can change our understanding of the nature of the construct itself, both in terms of its childhood antecedents and consequences in adulthood.

One further caveat is in order: As is emphasized throughout this report, earned-security was defined here retrospectively on the basis of a system articulated first by Pearson et al. (1994) and as developed in the writings of Phelps et al. (1997) and Paley et al. (1999). Both the inferred



experience group means (see Table 1) as well as the findings presented herein vis-à-vis depressive symptomatology and relational adaptation in adulthood (see Table 4) bear a striking similarity to those described in these seminal studies, implying fidelity with the operational definition used in prior work. In further applying this standard operationalization, we found no evidence that earned-secures so defined experience either a higher rate of infant insecurity compared to retrospective continuous-secures or pervasively malevolent early experiences in their formative relationships. Nonetheless, we recognize that it is still possible that a retrospective criterion might be developed for earned- and continuous-security that appropriately differentiates groups in terms of their earlier childhood experiences. It should be pointed out, however, that our presently limited data suggest that this may prove to be difficult: A reviewer of this article was concerned that, in this study, earned-secures' reported experiences with maternal love fell above the midpoint on the scale (a robust finding in the earned-security literature; see Phelps et al., 1997; Paley et al, 1999 [for female participants]). As such, in supplementary analyses we removed individuals from the earned-secure group whose scores on the "mother loving" scale fell above the midpoint. Even in adopting this more conservative criterion, however, retrospectively defined earned- and continuous-security status still failed to differentiate participants in terms of their 12- and 18-month attachment histories.

We hope this paper will be regarded as a new beginning in the study of earned-security, with a focus on prospectively assessed positive change in representational models of attachment from childhood to adulthood. To be sure, much remains unknown about those who rise above harsh or ineffective parenting experiences. For example, though the results of this study indicate that those who overcome insecure attachments in infancy do not necessarily report high levels of depressive symptomatology in adulthood, it may be that such individuals nevertheless carry with

them other (as yet unspecified) liabilities as well as strengths. We look forward eagerly to future research both to expand the boundaries of our understanding of earned-security as well as to attempt replication of the analyses presented here (see Bahadur, 1998, however, for preliminary confirmation). Given the paucity of long-term prospective studies of attachment security, it falls to the few extant longitudinal studies of more normative risk cohorts to ultimately fulfill this promise (e.g., Waters, Merrick, et al., 2000; Hamilton, 2000).

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## Appendix

### Brief description of rating scales that compose each relationship quality/parenting measure

#### Maternal Support and Structure (24 months)

- I. Overall Quality: Overall rating of quality of support for problem solving
- II. Structuring and Limit Setting (Cleanup): Clarity and effectiveness of boundary setting

#### Maternal Support and Structure (42 months)

- I. Hostility: Mother's expression of anger, discounting, or rejection of child
- II. Respect for Autonomy: Degree to which mother supports child's exploration
- III. Structuring and Limit Setting: Clarity and effectiveness of boundary setting
- IV. Supportive Presence: Mother's expression of positive regard and emotional support

#### Mother-Child Quality of Process (13 years)

- I. Balance I: Degree of willingness to express individual ideas freely
- II. Balance III: Ability of the parent-child dyad to meet task demands
- III. Emotional Engagement: Level of emotional connectedness
- IV. Positive Affect: Amount of reciprocal personal regard and pleasure

#### Romantic Relationship Quality of Process (20-21 years)

- I. Balance I: Degree of willingness to express individual ideas freely
- II. Balance II: Degree to which the relationship serves individual development
- III. Conflict Resolution: Ability to resolve conflict in a way that leads to mutual satisfaction
- IV. Overall Quality: Global rating of mutual caring, emotional investment, and trust
- V. Secure Base: Ability to seek or provide care in a timely, contingent manner
- VI. Shared Positive Affect: Amount of reciprocal personal regard and pleasure

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## Footnotes

<sup>1</sup> Note that Main and Goldwyn (1998) advocate for extremely stringent criteria in the retrospective determination of earned- versus continuous/originally-secure status. However, as no researchers have as yet adopted these stringent criteria, the present study uses as a point of departure the more liberal standard developed by Pearson et al. (1994). See Methods section for further exploration of Main and Goldwyn's recent operationalization of earned-security.

<sup>2</sup> Ten transcripts could not be classified, half due to equipment failures. An additional seven U/F transcripts were dropped from analysis.

<sup>3</sup> It should be noted that continuous-secures were rated as marginally more coherent than earned-secures ( $t [44] = 2.00, p = .05$ ), a finding with precedent in Phelps et al. (1997). As the two secure groups were rated above the midpoint on the coherence of mind scale and had significantly higher coherence of mind means than insecure, however, both earned- and continuous-secures can be regarded as producing qualitatively "coherent" discourse in absolute terms as well as relative to insecure.

<sup>4</sup> Degrees of freedom vary in analyses regarding experience scales as in several cases individuals were assigned "cannot rate" codes and therefore dropped from analysis. Note also that statistics for the father rejecting and neglecting scales do not assume equal variances across groups as Levene's test was significant for these analyses. In all cases estimated degrees of freedom in such analyses are rounded to the nearest whole number.

<sup>5</sup> Given the sizable correlation between externalizing and internalizing symptoms, it might be argued that earned-secures' elevated distress actually reflects higher levels of aggression relative to other security groups. In fact, post hoc analyses revealed no differences between earned-secures and other security groups on externalizing symptoms in either

kindergarten/grade 1 (mother-report) or at age 16 (self- or mother-report). We thank an anonymous reviewer for encouraging this rigorous test of symptom specificity.

Table 1

Retrospectively defined security group inferred experience and coherence of mind means and standard deviations

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<u>AAI Scale</u>	<u>Insecure</u>	<u>Earned-Secure</u>	<u>Continuous-Secure</u>
Loving-M	4.60 (1.61)	5.46 (1.82)	6.50 (1.06)
Loving-F	3.41 (1.40)	2.56 (1.22)	5.73 (1.34)
Rejecting-M	2.00 (1.49)	2.52 (2.03)	1.36 (.62)
Rejecting-F	2.13 (1.75)	5.35 (2.61)	1.61 (1.23)
Neglecting-M	1.95 (1.62)	2.98 (2.40)	1.07 (.23)
Neglecting-F	3.00 (3.09)	6.54 (2.18)	1.82 (1.26)
Coherence of Mind	3.07 (.87)	5.71 (1.04)	6.36 (1.18)

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Note. Scales range from 1 (characteristic absent) to 9 (characteristic pervasive). Standard deviations are in parentheses. M: Mother; F: Father. Experience scale means for the insecure group are based on a random sampling of 25 cases. All other values represent the means for the entire group.

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Table 2

Retrospective by prospective security status

	<u>Retrospective Operationalization</u>	
	<u>Earned-Secure</u>	<u>Continuous-Secure</u>
<u>Prospective Operationalization (12 mo.)</u>		
Earned-Secure	9	10
Continuous-Secure	15	11
<u>Prospective Operationalization (18 mo.)</u>		
Earned-Secure	5	6
Continuous-Secure	16	15

Note. Retrospective classification uses AAI data only (state of mind information and inferred experience ratings), prospective classifications use cross-tabulation of infant Strange Situation data and AAI state of mind information.  $\kappa = -.10$ ,  $p = .49$  for retrospective operationalization by 12-month Strange Situation prospective operationalization;  $\kappa = -.05$ ,  $p = .73$  for retrospective operationalization by 18-month Strange Situation prospective operationalization.

Table 3

Retrospective and prospective security classifications by sex

	<u>Insecure</u>	<u>Earned-Secure</u>	<u>Continuous-Secure</u>
<u>Retrospective Operationalization</u>			
Male	60	9	14
Female	47	15	8
<u>Prospective Operationalization (12 mo.)</u>			
Male	60	11	12
Female	47	8	14
<u>Prospective Operationalization (18 mo.)</u>			
Male	60	5	18
Female	47	6	13

Note.  $\chi^2(1) = 3.14$ ,  $p = .08$  for retrospective operationalization (secure groups only).  $\chi^2(1) = .61$ ,  $p = .44$  for prospective operationalization based on 12-month Strange Situation and  $\chi^2(1) = .52$ ,  $p = .47$  for prospective operationalization based on 18-month Strange Situation (secure groups only).



Table 4

Young Adult Sequelae: Self-reported internalizing distress (23 yrs.) and observed romantic relationship quality (20-21 yrs.) means and standard deviations by retrospectively and prospectively defined security group

	<u>Insecure</u>	<u>Earned-Secure</u>	<u>Continuous-Secure</u>
<u>Retrospective Operationalization</u>			
YASR Internalizing Distress	48.53 (10.61) 92	48.91 (9.74) 22	44.62 (6.95) 21
Romantic Relationship Quality	-.27 (.96) 40	.43 (.80) 8	.38 (1.21) 13
<u>Prospective Operationalization (12 mo.)</u>			
YASR Internalizing Distress	48.53 (10.61) 92	46.72 (9.23) 18	47.50 (8.02) 24
Romantic Relationship Quality	-.27 (.96) 40	.53 (1.13) 7	.25 (1.03) 13
<u>Prospective Operationalization (18 mo.)</u>			
YASR Internalizing Distress	48.53 (10.61) 92	47.60 (9.08) 10	46.77 (8.58) 30
Romantic Relationship Quality	-.27 (.96) 40	1.17 (.52) 2	.26 (1.09) 17

Note. YASR data are reported using average T-values; Romantic relationship observational group data are mean z-scores. Standard deviations are in parentheses. Group n's appear below means and standard deviations. YASR: Young Adult Self-Report.

Table 5

Antecedent Depressive Symptomatology and Parenting: Mother- and self-report of participants' internalizing distress, mothers' self-report of depressive symptomatology, and observations of maternal parenting means and standard deviations by retrospectively defined security group

	<u>Insecure</u>	<u>Earned-Secure</u>	<u>Continuous-Secure</u>
<u>Internalizing Distress (Participant)</u>			
CBCL, kindergarten/grade 1	55.94 (8.56) 101	60.07 (7.46) 23	54.61 (9.50) 22
CBCL, 16 yrs.	50.57 (11.12) 99	54.39 (10.25) 23	50.05 (7.63) 22
YSR, 16 yrs.	51.54 (9.30) 100	55.48 (9.83) 23	51.32 (7.42) 22
<u>Depressive Symptomatology (Mother)</u>			
CES-D, 42 mo.	13.95 (10.62) 100	19.55 (12.01) 22	12.95 (9.40) 21
<u>Antecedent Maternal Parenting</u>			
Support and Structure, 24 mo.	-.11 (.95) 91	.47 (.98) 19	-.10 (1.19) 15
Support and Structure, 42 mo.	-.09 (1.03) 104	.17 (.70) 20	.31 (.68) 21
Relationship Quality, 13 yrs.	-.18 (1.02) 98	.47 (.95) 24	.12 (.89) 22

Note. CBCL and YSR data are reported using average T-values; parenting observational group data are mean z-scores. Standard deviations are in parentheses. Group *n*'s appear below means and standard deviations. CBCL: Child Behavior Checklist; YSR: Youth Self-Report; CES-D: Center for Epidemiological Studies Depression Scale.