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Roots of Adult Attachment: Maternal Caregiving at 18 Months Predicts Adult Peer and Partner Attachment

Vivian Zayas[1], Walter Mischel[2], Yuichi Shoda[3], and J. Lawrence Aber[4]

Abstract

It is widely assumed that, within the context of a stable developmental environment, relationship experiences in early life influence later ones. To date, however, there has been no longitudinal empirical evidence for the hypothesis that early maternal caregiving predicts adult attachment dynamics with peers and partners. The present longitudinal study shows that quality of maternal caregiving experienced at 18 months of age predicted the extent to which the same participants more than 20 years later (age $M = 22$) were uncomfortable relying on partners and peers (avoidance) and experienced relational worries with partners (anxiety). These findings provide new empirical support that early maternal caregiving predicts later adult attachment patterns with peers and partners. Moreover, consistent with attachment theory, they suggest that the influence of maternal caregiving experienced in early life is not limited to this first attachment relationship but operates more generally in other attachment relationships.

Keywords

adult attachment, development, continuity, individual differences

It is commonly believed that no single relationship shapes a person's well-being, personality, and life outcomes more than his or her first attachment relationship. According to attachment theory (e.g., Bowlby, 1969) as well as other classic theories of human development (e.g., Freud, 1931), repeated interactions with primary caregivers (typically mothers) are hypothesized to influence adult attachment relationships with partners and friends (e.g., Hazan & Shaver, 1987), particularly within a stable developmental environment. Infant attachment security has been shown to relate to the coherence with which individuals, in adulthood, represent their childhood experiences with parents (e.g., Fraley, 2002), and one study links infant attachment security to the coherence of adult attachment representations with romantic partners (Roisman, Collins, Sroufe, & Egeland, 2005). However, surprisingly, to date, there is no longitudinal evidence that adult attachment dynamics with partners and peers—conceptualized in hundreds of empirical studies as people's unwillingness to depend on attachment figures (avoidance) and their anxiety and concerns about being abandoned (anxiety; e.g., Mikulincer & Shaver, 2007)—are rooted in the quality of caregiving experienced within the first 2 years of life. To address this important gap, we used data from a longitudinal study spanning two decades to investigate the relations between maternal caregiving when participants were 18 months old and their adult attachment to romantic partners, best friends, mothers, and fathers and across all close relationships approximately 20 years later.

Two Traditions in Attachment Research: Developmental and Social/Personality

The absence of longitudinal empirical support linking quality of early life maternal caregiving with attachment dynamics with romantic partners and peers in adulthood is not as unexpected when one considers the history of attachment research (e.g., Bartholomew & Shaver, 1998; Shaver, Belsky, & Brennan, 2000). Although the study of infant and child attachment has deep roots in the developmental tradition, the study of adult romantic and peer attachment has more recent roots in social and personality psychology. Despite shared theoretical underpinnings in attachment theory (Bowlby, 1969), the two traditions have developed relatively independently from one another, each differing in focus (infant and child attachment with caregivers vs. adult attachment with partners and friends), methodologies (behavioral and interview methodologies vs.

[1] Cornell University, Ithaca, NY, USA
[2] Columbia University, New York, NY, USA
[3] University of Washington, Seattle, WA, USA
[4] New York University, New York, NY, USA

Corresponding Author:
Vivian Zayas, Cornell University, Department of Psychology, 240 Uris Hall, Ithaca, NY 14853
Email: vz29@cornell.edu

self-report measures), level of analysis (coherence of representations vs. affective, cognitive, and behavioral dynamics), and body of empirical findings. Until recently, there has been little cross-fertilization between the two traditions. In the section that follows, we summarize the main findings from both traditions regarding the role of early maternal caregiving on child and adult attachment.

Maternal Caregiving and Infant and Child Attachment: Findings From Developmental Psychology

Developmental work has provided compelling evidence that the quality of maternal caregiving experienced shapes infants' attachment style, that is, how they organize their attachment behaviors (e.g., proximity seeking, separation distress) toward the caregiver (Ainsworth, Blehar, Waters, & Wall, 1978). Responsive and sensitive caregiving has been linked to the development of a secure attachment style, controlling (e.g., intrusive, excessively stimulating) maternal caregiving has been linked with the development of an avoidant style, and, unresponsive, underinvolved, or inconsistent caregiving has been linked to the development of an anxious-ambivalent attachment style (e.g., Belsky, Rovine, & Taylor, 1984). Although initial work (e.g., Ainsworth et al., 1978) was correlational, a meta-analysis of randomized interventions provides support for the causal role of caregiving on infants' attachment (Bakermans-Kranenburg, Van IJzendoorn, & Juffer, 2003); interventions aimed at enhancing parental sensitivity significantly increased infants' attachment security. Moreover, twin studies have shown that approximately 52% of the variance of attachment style is attributable to shared environmental experiences (e.g., Bokhorst et al., 2003).

The question of whether an infant's attachment style in early life should remain stable or be subject to lawful discontinuity throughout life has been debated (see Fraley & Shaver, 2000). Nonetheless, considerable work in the developmental tradition has examined the extent to which infants' attachment style predicts attachment representations in adulthood as measured by the Adult Attachment Interview (AAI; George, Kaplan, & Main, 1985). The AAI captures the extent to which individuals have coherent representations of their childhood experiences with their parents by analyzing the verbal as well as nonverbal tones with which participants describe these experiences (e.g., Crowell, Fraley, & Shaver, 1999; Roisman, 2009). This body of work provides some support for the continuity of attachment representations across the life span (e.g., Roisman et al., 2005; Waters, Merrick, Treboux, Crowell, & Albersheim, 2000; Weinfield, Sroufe, & Egeland, 1998) but also points to discontinuities in the presence of life stresses (e.g., Zimmermann, Fremmer-Bombik, Spangler, & Grossmann, 2002; for a review, see Fraley, 2002). Other work (Roisman et al., 2005) provides evidence that infant attachment style is associated with partnership representations as assessed with Current Relationship Interview (CRI; Crowell & Owens, 1996). Similar to the AAI after which it was modeled, the CRI assesses the coherence of representations with regard to a current romantic relationship.

Although several studies have investigated the link between infants' attachment style and the coherence of their later attachment representations, less focus has been given to the role of early maternal caregiving on later attachment-related outcomes. Exceptions are two developmental studies (Beckwith, Cohen, & Hamilton, 1999; Grossmann, Grossmann, Winter, & Zimmermann, 2002) finding that early maternal caregiving predicts adults' representations of early childhood experiences assessed by the AAI.

Maternal Caregiving and Adult Attachment Dynamics With Partners and Peers: Findings From Social and Personality Psychology

In contrast to developmental psychologists' focus on infant and child attachment with caregivers, social and personality psychologists have focused on adult attachment patterns with peers and romantic partners. A key idea of adult attachment theory (e.g., Hazan & Shaver, 1987) is that the attachment bond between adult romantic partners, and to a lesser extent peers, bears resemblance to the emotional bond between infants and their primary caregiver. According to the *prototype hypothesis*, caregiving experiences in early life shape attachment representations; once formed, they serve as prototypic mental models of attachment relationships and influence adult attachment patterns with romantic partners and peers, at least to the extent that the caregiving environment remains stable (e.g., Fraley & Shaver, 2000). Most relevant to the present research is the idea that with maturation, individuals transfer attachment-related functions from parents to peers (best friends and romantic partners) in a sequential manner (e.g., Fraley & Davis, 1997; Hazan & Zeifman, 1994; Mayseless, 2004). For example, around 10 to 14 years of age, attachment behaviors, such as proximity maintenance (desire to be physically close) and safe haven (relying on a person for comfort), that were once directed toward parents become directed toward peers (Hazan & Zeifman, 1994). By late adolescence, the transfer of attachment functions from parents to peers is observed in secure base functions (increased exploration when peers vs. parents are present) and greater separation distress (distressed as a result of separation from peers vs. parents), and both of these attachment-related behaviors are more likely to be observed with romantic partners than with peers (Hazan & Zeifman, 1994).

In addition to focusing on adult attachment with partners and peers, social and personality psychologists use self-report measures to assess attachment dynamics. Adult attachment measures are distinct from interview methodologies, such as the AAI or CRI, not just in format but also in the content assessed. They assess attachment at the level of affect, cognition, and behavioral *dynamics* with regard to peers and partners, specifically one's unease about relying on attachment figures (referred to as *avoidance*) and one's anxiety about

relational concerns (referred to as *anxiety*; Brennan, Clark, & Shaver, 1998). These two dimensions have been hypothesized to underlie individual differences in both adult and infant attachment patterns (see Mikulincer & Shaver, 2007). In contrast, the AAI and CRI assess attachment at the level of *representations* with regard to caregivers and partners, respectively. Indeed, measures of adult attachment and AAI are only weakly related to one another (e.g., Crowell et al., 1999; Roisman, 2009; Roisman et al., 2007), providing further evidence that they assess different aspects of attachment functioning in adulthood.

According to adult attachment theory, within the context of a stable home environment, caregiving experiences within the first two years of life are expected to influence adult attachment dynamics with peers and partners. However, to date, there is no longitudinal empirical support clearly linking the two. Considerable work has been done with animals (e.g., Suomi, 1999) to experimentally investigate the developmental trajectories associated with different early life caregiving experiences. For example, in rhesus monkeys, whose attachment system and behaviors are highly similar to those of humans, caregiving received within the first 6 months of life profoundly affects interactions with peers in later life (e.g., Suomi, 2000). In correlational studies directly focusing on attachment in humans, adult attachment style relates to explicit recollections of maternal support (e.g., Hazan & Shaver, 1987; Levy, Blatt, & Shaver, 1998); however, retrospective and reconstructed accounts are highly fallible (e.g., Newcombe, Drummey, Fox, Lie, & Ottinger-Alberts, 2000) and do not necessarily accurately reflect early maternal caregiving. Adult attachment to partners has also been shown to relate to implicit attitudes of mother as supportive (Zayas & Shoda, 2005), which are generally considered to be less susceptible to conscious biases and self-reporting tendencies; however, all measures were assessed concurrently in adulthood, not affording a test of the developmental hypothesis.

Present Research

Despite extensive research in both the developmental and social traditions, the key question remains, does early maternal caregiving predict adult attachment dynamics? In the present study, we investigated whether maternal caregiving at 18 months predicts adult attachment to each parent. Furthermore, given past work on the transfer of attachment functions from parents to peers, we investigated whether maternal caregiving at 18 months predicts adult attachment to a close friend and partner. In addition, we also examined the extent to which maternal caregiving at 18 months relates to abstract, generalized knowledge structures in adulthood reflected in one's general (i.e., across all close relationships) adult attachment orientation.

Method

Participants

Participants were 36 individuals (20 females) who were, on average, 18 months old ($SD = 3.83$ months) when maternal caregiving was assessed and, on average, 22 years old ($SD = 2.56$ years) when their adult attachment across various relationships was assessed. Of these, 15 individuals were involved in a romantic relationship (relationship length $M = 22$ months, range = 2–60 months). Participants were Caucasians from middle- to upper-middle-class, urban, educated households (Aber & Baker, 1990) and were part of an ongoing project (Mischel, Shoda, & Rodriguez, 1989).[1]

Measures

Maternal caregiving at 18 months of age. Various measures of maternal caregiving exist (see Dewolf & van IJzendoorn, 1997). The present study used the Child Adult Relationship Experimental Index (CARE-Index; Crittenden, 1988) to assess quality of mothers' caregiving on three dimensions (*sensitive*, *controlling*, *unresponsive*) during semistructured play with their child. Past work (Crittenden, 1988) has provided evidence for the construct validity of the CARE-Index; mothers exhibiting sensitive caregiving tended to have secure children, controlling mothers tended to have avoidant–ambivalent children, and unresponsive mothers had anxious–ambivalent children. Moreover, the CARE-Index discriminated among abusing, abusing–neglecting, neglecting, marginally maltreating, and adequate mothers of children 24 months or younger (Crittenden, 1988). Further evidence for the construct validity of the CARE-Index as a measure of maternal caregiving was obtained in the present sample from two prior follow-up studies (Sethi, Mischel, Aber, Shoda, & Rodriguez, 2000; Zayas, Ayduk, Mischel, Shoda, & Aber, 2010). When participants were adolescents, the CARE-Index predicted self-reported perceptions of the quality of relationships with parents such as greater feelings of trust and higher quality of communication and less feelings of alienation and anger. Thus, past findings in other samples as well as observations of the current sample provide empirical support for the construct validity of the CARE-Index as a measure of maternal caregiving.

The study took place in a playroom (23 feet × 15 feet) filled with toys, allowing the child opportunities to play near and far away from the mother. Interactions were videotaped from behind a one-way mirror during two play episodes lasting 5 minutes and 3 minutes. Mothers were instructed to play with their child "as if they were at home," and their behavior was coded on seven aspects: (a) facial expression, (b) vocal expression, (c) position and body contact, (d) expression of affection, (e) pacing of turns, (f) control, and (g) choice of activity. For each of the seven aspects of behaviors, there were three types of adult descriptors—*sensitive*, *controlling*, and *unresponsive*. The online supplementary materials are available at http://spp.sagepub.com/supplemental. For each episode, coders were instructed to make categorical judgments of whether the mother exhibited *sensitive*, *controlling*, or *unresponsive* patterns of behavior by checking the descriptor that best described each aspect of the mother's behavior. Each descriptor endorsed by a coder received one point. If a behavior was typified by two descriptors, each received a half point. A given behavior could

Table 1. Descriptive Statistics (Mean, Standard Deviation, Cronbach's Alpha) and Intercorrelations among Measures of Adult Attachment Assessed at 22 Years

	Avoidance					Anxiety				
	General	Mother	Father	Friend	Partner	General	Mother	Father	Friend	Partner
N	36	36	35	35	15	36	36	35	35	15
M	3.28	2.98	3.28	2.06	1.98	3.02	1.76	1.90	1.81	1.85
SD	1.35	1.48	1.58	0.88	1.13	1.41	0.91	1.12	1.00	0.86
α	.81	.86	.83	.56	.69	.85	.69	.76	.78	.65
Avoidance										
General		.23	.27	.51***	.58*	.31†	.20	.12	.15	.68***
Mother			.32†	.22	.12	–.02	.48***	.16	–.03	–.01
Father				.33†	.23	.39*	.09	.67****	.06*	.37
Friend					.48†	.42*	.22	.06	.53****	.74***
Partner						.19	–.09	–.06	.53*	.59*
Anxiety										
General							.19	.45**	.72****	.66**
Mother								.16	.23	.004
Father									.08	.17
Friend										.74***
Partner										

† $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .005$. **** $p < .001$.

not be typified by all three descriptors. For each play episode, maternal sensitivity was computed by summing the points for all the descriptors reflecting sensitive maternal caregiving, maternal control was computed by summing the points for all the descriptors reflecting maternal control, and finally maternal unresponsiveness was computed by summing the points for all the descriptors reflecting unresponsiveness. Accordingly, for each dimension, the range of possible scores was 0 to 7. Finally, we averaged scores for the same dimension across the two play episodes to compute maternal sensitivity ($M = 3.10$, $SD = 0.91$), controlling ($M = 0.67$, $SD = 0.89$), and unresponsiveness ($M = 0.23$, $SD = 0.41$).

The interaction tapes were coded by six trained and closely supervised undergraduate coders. At least two coders overlapped, coding one of every five interaction tapes. The mean percentage agreement, which was computed for each of the seven aspects of behavior, was 85% or better; this is likely to be a more conservative estimate of reliability than the reliability for the scale scores of sensitivity, controlling, and unresponsiveness, which are based on these individual aspects of behavior.

Adult attachment at 22 years of age. Participants were sent questionnaires in the mail to assess adult attachment and self-regulation. Only the adult attachment measures are discussed here. The Experiences in Close Relationships–Revised (ECR-R; Fraley, Waller, & Brennan, 2000) questionnaire assessed concerns about rejection (*anxiety*) and unwillingness to rely on others (*avoidance*). The full ECR-R consists of two 18-item scales. However, to not burden participants with repeated measures and because the wording of some items were not appropriate for nonromantic relationships, 10 items (5 from each scale) that were appropriate across the various relationships were administered (see the supplementary materials). All participants completed the 10-item version of the ECR-R for five different target persons in the following order: general orientation (across all close relationships), mothers, fathers, closest friends, and current romantic partners. Descriptive statistics, Cronbach's alphas, and correlations among attachment scales are reported in Table 1.[2]

Results

Predicting Adult Attachment From Quality of Early Maternal Caregiving

As shown in Table 2, greater maternal sensitivity experienced when participants were 18 months old predicted lower avoidance to friends in adulthood ($r = –.49$, $p < .003$).[3] In addition, maternal controlling caregiving predicted greater adult avoidance to friends ($r = .37$, $p < .03$). For individuals involved in a romantic relationship, maternal sensitivity predicted less avoidance ($r = –.73$, $p < .002$) and less anxiety to partners ($r = –.75$, $p < .001$).[4] In addition, maternal control predicted greater avoidance to partners ($r = .52$, $p < .05$) as well as greater anxiety to partners ($r = .70$, $p < .001$).[5] There were no other statistically significant ($p < .05$) correlations.

To compare the correlations across the five relationships, we performed planned comparisons. Most notable, maternal sensitivity predicted avoidance to friends and partners to a significantly ($p < .05$) greater extent than avoidance to mothers, maternal control predicted avoidance to friends significantly ($p < .05$) more strongly than avoidance to mothers, and maternal control predicted anxiety to partners significantly ($p < .05$) more strongly than anxiety to friends and fathers.

Table 2. Correlations Between Maternal Caregiving Toward Toddler (Participant) at 18 months and Participants' Self-Reports of Attachment Across Different Relationships

	Maternal caregiving		
	Sensitivity	Controlling	Unresponsive
Avoidance			
General	$-.23_{a,b}$	$.14_{a,b}$	$.21_{a}$
Mother	$.20_{a}$	$-.19_{a}$	$-.03_{a}$
Father ($n = 35$)	$-.18_{a,b}$	$.12_{a,b}$	$.12_{a}$
Friend ($n = 35$)	$-.49^{***}{}_{b}$	$.37^{*}{}_{b}$	$.27_{a}$
Partner ($n = 15$)	$-.73^{***}{}_{b}$	$.52^{*}{}_{a,b}$	$.34_{a}$
Anxiety			
General	$-.17_{a,b}$	$.13_{a,b}$	$.10_{a}$
Mother	$-.01_{a}$	$.07_{a,b}$	$-.13_{a}$
Father ($n = 35$)	$.07_{a}$	$-.02_{a}$	$-.11_{a}$
Friend ($n = 35$)	$-.19_{a}$	$-.09_{a}$	$.22_{a}$
Partner ($n = 15$)	$-.75^{****}{}_{b}$	$.70^{****}{}_{b}$	$.09_{a}$

Note: $N = 36$. Within each column and for each attachment dimension, correlations with different subscripts differ significantly from one another at $p < .05$. * $p < .05$. *** $p < .005$. **** $p < .001$.

Given that the avoidance and anxiety scales are correlated with each other (see Table 1), is it possible that quality of maternal caregiving predicts *general* feelings of insecurity with partners rather than anxiety and avoidance per se? To investigate this possibility, we computed partial correlations between each CARE index and each ECR-R scale (e.g., anxiety with partner), statistically controlling for the other ECR-R scale (e.g., avoidance with partner). All partial correlations were highly similar to the zero-order correlations reported in Table 2, except that maternal control no longer significantly predicted avoidance with partner (*partial r* = .19, *ns*). Thus, overall, the data suggest that maternal caregiving is related to both the avoidance and anxiety dimensions of adult attachment rather than general feelings of insecurity with romantic partners.

Estimating Statistical Significance

What is the probability of observing the present *set* of results, or more extreme, by chance given that we computed a total of 30 correlations (3 CARE indices × 5 relationships × 2 adult attachment dimensions)? To estimate the statistical significance of the set of nonindependent correlations while guarding against alpha-level inflation, we followed the permutation procedure described by Westfall and Young (1993). This computationally intensive procedure estimates the sampling distribution of the entire set of correlations rather than that of a single correlation. Moreover, it takes into account that the correlations are nonindependent (Norman & Streiner, 2008; Stürzebecher, Cebulla, & Elberling, 2005).

We first recoded the controlling and unresponsiveness index (by multiplying each by –1) so that for all three indices higher numbers reflected higher quality maternal caregiving. Using data from participants with no missing values on all maternal caregiving and adult attachment measures, we performed 100,000 permutations in which each participant's maternal indices were linked with another, randomly chosen, participant's adult attachment indices. Next, we determined the proportion of the 100,000 permutations that found a set of correlations equal or more extreme to the set observed in the present study. Specifically, we first estimated the proportion of permutations that found six or more correlations equal or more extreme than the smallest statistically significant correlation reported in Table 2. This was the –.37 correlation between maternal control (reverse scored) in toddlerhood and avoidance to friends. The permutation probability (i.e., probability under the null hypothesis of no relationship between the CARE indices and adult attachment variables) of obtaining at least six correlations of –.37 or more extreme is .01527. We repeated the above mentioned procedures to assess the probability under the null hypothesis of obtaining at least five correlations equal or more extreme than the next smallest statistically significant correlation reported in Table 2. This was the –.49 correlation between maternal sensitivity in toddlerhood and avoidance to friends. The permutation probability under the null hypothesis of obtaining at least five correlations of –.49 or more extreme is .00176. When these analyses were repeated to assess the probability of obtaining four or more correlations of –.52 or more extreme, the probability under the null hypothesis was .00505. Finally, the permutation probability of obtaining three or more correlations of –.70 or more extreme, as was observed in the present study, was .00037.

These analyses indicate that the present set of results is unlikely to be simply the result of chance. Instead, the results support the theoretical expectation that quality of maternal caregiving at 18 months meaningfully predicts adult attachment with partners and peers at 22 years of age.

Discussion

The link between early life caregiving experiences and adult attachment dynamics to partners and peers has long been discussed. Yet direct longitudinal tests of this claim are strikingly absent. The present research provides the first empirical support for the hypothesis that adult attachment dynamics with both romantic partners and peers—conceptualized, conceptualized as avoidance (i.e., unease about depending on attachment figures) and attachment anxiety (i.e., concerns about rejection and abandonment)—are rooted in early caregiving experiences.

Specifically, sensitive maternal caregiving and an absence of controlling caregiving at 18 months of age predicted less avoidance to friends and partners and less anxiety to partners when the same individuals were 22 years old. These results suggest that the influence of maternal caregiving in early life is not limited to the first attachment relationship but operates in attachment relationships more generally, such as with peers and partners. Indeed, attachment behaviors, such as greater proximity seeking and "safe haven" behaviors, become

increasingly directed toward peers and partners in adulthood (e.g., Hazan & Zeifman, 1994). It is worth noting that maternal caregiving experienced at 18 months predicted anxiety with regard to partners but not to peers. This pattern is consistent with past research (e.g., Hazan & Zeifman, 1994) that romantic relationships are more likely than peer relationships to develop into full-fledged attachment bonds that can elicit separation anxiety.

Most interesting, early maternal caregiving did not significantly predict adult attachment to either parent. Does this mean that attachment to mothers and fathers in young adulthood is unimportant? This is unlikely. Although attachment behaviors become increasingly directed toward peers starting in early adolescence and in some cases peers even replace parents as the primary person serving key attachment functions, parents continue to provide a source of attachment security well into young adulthood (Hazan & Zeifman, 1994). For example, Beckwith et al. (1999) find that maternal caregiving predicts adult attachment *representations* as assessed with AAI, which reflects the extent to which individuals have coherent representations of their childhood relationships with parents. The absence of a clear link between maternal caregiving in toddlerhood and attachment to mothers and fathers in early adulthood in the present study likely reflects the fact that adult attachment measures tap into affect, cognition, and behavioral *dynamics* of the attachment system, such as safe haven behaviors (i.e., turning to attachment figures for support), which are more likely to be directed to partners and friends in adulthood. To illustrate, an individual who experienced high-quality maternal caregiving at 18 months may feel secure in the presence of her or his mother in adulthood yet may turn to a peer (rather than a parent) for emotional support. As a result, maternal caregiving at 18 months is more likely to become manifested in attachment-related dynamics with peers than with parents. Thus, the absence of a link between quality of early maternal caregiving and later adult attachment to each parent does not mean that parents are not attachment figures able to confer feelings of security. Instead, it reflects that individuals in early adulthood are not necessarily relying, behaviorally, on parents to the same extent as they rely on peers and partners.

It is also worth noting that maternal unresponsiveness experienced at 18 months did not reliably predict adult attachment. Although unresponsive maternal caregiving has been linked with insecure attachment in infancy (e.g., Belsky et al., 1984), the absence of reliable relationships may be that unresponsiveness was not frequently observed among the mothers in the present sample. Of the three CARE indices, unresponsiveness had the lowest mean and the lowest variability. The low occurrence of unresponsive behaviors may have been in part the result of the relatively stress-free play situation. It is possible that unresponsive behaviors may be more frequently observed in distressing situations, such as comforting toddlers after a brief maternal separation, and indeed predict aspects of adult attachment functioning. Nonetheless, in the present study, the restriction in range and extreme skewness may have hindered the ability to detect associations.

The overall results are consistent with basic propositions of attachment theory regarding the role of early maternal care on the cognitive, emotional, and behavioral responses of the attachment behavioral system (e.g., Bowlby, 1969; Hazan & Shaver, 1987). However, because of the correlational nature of longitudinal designs, the findings do not speak to the mechanisms by which these long-term continuities may have occurred. Any number of the following pathways may be involved. Maternal caregiving assessed at 18 months of age may reflect continuous exposure to high-quality maternal caregiving over two decades of development, not just the quality experienced in toddlerhood. In addition, to the extent that mothers who were more sensitive and less controlling were securely attached themselves (e.g., van IJzendoorn, 1995) and possess particular psychological characteristics (e.g., Belsky, Fish, & Isabella, 1991), they may have been more likely to model effective emotion regulation strategies (e.g., Mikulincer & Shaver, 2007) as well as more secure attachment behaviors in their own relationships (e.g., Feeney & Noller, 1990). Furthermore, attachment as well as caregiving behaviors may have a genetic component (e.g., Gillath, Shaver, Baek, & Chun, 2008) that is shared by mother and child, and a child's temperament may influence the maternal caregiving received, as well as vice versa. Such factors may also play a role in the link between quality of maternal caregiving and security in adult attachment relationships, either directly by promoting secure adult attachment or indirectly by contributing to higher quality maternal caregiving, which in turn gives rise to adult attachment security (e.g., Belsky et al., 1991).

The present findings raise several questions that warrant further investigation. First, the sample was relatively homogenous; participants were Caucasians from middle- to upper-middle-class, urban, educated households. Individuals from lower socioeconomic households may experience a higher frequency, and more extreme, stressors. From an ecological perspective, which emphasizes the importance of social and contextual factors in which the child–parent relationship exists, sources of stress as well as support may moderate the predictive ability of maternal caregiving on adult attachment. Given the homogeneity of the sample coupled with the small sample size, it was not possible to identify mediators and moderators. Future research focusing on mediational or moderational processes may illuminate whether, for example, continuity in the caregiving environment may be a mechanism by which early caregiving experience comes to predict later adult attachment as well as the conditions that may reduce prediction. Moreover, although the present research indicates that maternal caregiving is reliably related to adult attachment to peers and partners, the small sample size decreases the precision of the estimate. Thus, future studies with larger sample sizes, or ultimately meta-analyses once further work has been done, will more precisely estimate the magnitude of the effect.

Four decades ago, Bowlby (1969) wrote that attachment characterizes ''human beings from the cradle to the grave.'' But evidence linking early maternal caregiving to feelings, thoughts, and behaviors in adult romantic and peer attachment relationships has been remarkably absent. The present research shows that adult attachment patterns to partners and friends early in the third decade of life are indeed related to experiences within one's first attachment relationship, and, most important, it identifies quality of early maternal care as a predictor of that long-term continuity.

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Notes

1. The present sample did not differ significantly from previous samples from the Barnard Longitudinal Study on the three CARE-indices of maternal caregiving (*p*s > .38).
2. Cronbach's alphas for the 10-item Experiences in Close Relationships–Revised (ECR-R) are within the range expected given a two thirds reduction in items of the full scale; each item of the 10-item version taps into the attachment dimensions approximately to the same degree as items of the 36-item measure. Indeed, correlational analyses performed on another data set showed strong relations (*r*s > .88) between the 10-item measure and the 36-item ECR-R, both assessing romantic attachment. Moreover, the scale with the lowest alpha assesses avoidance with a close friend; these items have been used in prior work and have high face validity.
3. There were no main effects of, or interactions with, participants' sex on any of the variables of interest.
4. Neither involvement in nor length of romantic relationship correlated with maternal caregiving or adult attachment. None of the results differed as a function of whether individuals were involved in a romantic relationship.
5. Although a small sample size does not increase the probability of Type I errors, it is inversely related to the precision of the estimates of the magnitude of the effect. However, our conclusion is that there is a statistically significant nonzero relation between maternal caregiving and adult attachment. Our conclusion does not involve a specific estimate of the magnitude of the effect. Even assuming a low value, the effect is clearly above zero.

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Bios

Vivian Zayas is an assistant professor of psychology at Cornell University. Her research examines the cognitive-affective processes that regulate behaviors within interpersonal contexts and that have implications for mental and physical health. She has been an investigator in the Barnard Toddler Longitudinal Project since 2003.

Walter Mischel is the Robert Johnston Niven Professor of Humane Letters in the Department of Psychology at Columbia University. He is a world-renowned expert on self-regulation and personality, and has been involved in the Barnard Toddler Longitudinal Project since its inception.

Yuichi Shoda received his PhD from Columbia University in 1990. He is currently a professor of psychology at the University of Washington. His research focuses on personality coherence and self-regulation.

J. Lawrence Aber is Distinguished Professor of Applied Psychology and Public Policy at New York University where he also serves as Board Chair of NYU's Institute for Human Development and Social Change. From 1989-1993, he served as Director of the Barnard College Toddler Center where the data for this study was collected.