

The Longitudinal Role of Breastfeeding in Mothers' and Fathers' Relationship Quality Trajectories

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Abstract

Background: Guided by a family systems perspective, this study investigated whether breastfeeding plays a role in the quality of the mother–father intimate relationship over the course of child development.

Methods: Using a prospective, longitudinal design, and data drawn from the National Institute of Child Health and Human Development Study of Early Child Care and Youth Development ($n=986$ couples), the present study examined the predictive role of breastfeeding in the first 3 years of life (for up to 4 months and for 5 months or longer, relative to never breastfeeding) in maternal and paternal trajectories of intimate relationship quality. The outcome variable of interest was emotional intimacy, rated by mothers and fathers when children were 54 months of age, in Grades 1, 3, 5, and 6, and 15 years of age.

Results: Multivariate hierarchical linear modeling, which appropriately handled dyadic data and accounted for effects of demographic covariates and earlier relationship quality, indicated that breastfeeding uniquely predicted increases in mothers' (but not fathers') marital quality levels over time. There was no difference in the strength of the positive associations for shorter versus longer breastfeeding duration. The findings suggest that improved intimate relationship quality may be another psychosocial benefit experienced by breastfeeding mothers.

Conclusion: The findings underscore the importance of considering breastfeeding in the context of intimate relationships and may be of interest to women weighing the decision to breastfeed, their partners, and healthcare providers.

Introduction

IT IS WELL DOCUMENTED that breastfeeding is associated with a host of improved outcomes for children, covering domains from fine motor skills, communication, and intelligence to improved immunology and mortality.^{1–3} Although this aspect is less commonly studied, research has shown that breastfeeding also confers emotional and physical advantages to mothers.^{4,5} Similarly, mother–child bonding and attachment may benefit from breastfeeding.⁶ Breastfeeding clearly occurs between a mother and child, yet whether and how it affects other family members and relationships within the family has received scant attention. Following the family systems perspective,⁷ fully understanding breastfeeding that occurs in a family context requires testing hypothesized effects on other family members and subsystems, particularly on the father and his relationship with the mother.⁸ To address these gaps, the current study sought to understand whether initiation and duration of mother–child breastfeeding predicted trajectories of mothers' and fathers' partner relationship quality across the course of child development.

Breastfeeding and the intimate relationship context

The dyadic nature of breastfeeding has been noted through mothers' reporting that their partners provide a significant and unique source of emotional and instrumental support, especially during the early weeks of breastfeeding.⁹ Moreover, mothers with higher levels of marital satisfaction following their child's birth were more likely to breastfeed as planned throughout the first year.⁹ Sullivan et al.¹⁰ found that maternal perceptions of marital relationship distress (e.g., thoughts of ending the relationship, desire for change in the relationship) were marginally linked to early breastfeeding cessation. Another study reported that coder-rated relationship quality did not predict whether breastfeeding ended before 4 months postpartum but was associated with higher levels of father breastfeeding support and infant caregiving involvement.¹¹ A recent study based on analysis of the Fragile Families and Child Wellbeing Survey found that fathers' emotional support (rated by mothers) emerged as a marginal predictor of breastfeeding initiation but that relationship quality was not associated with breastfeeding at 6 months

postpartum.¹² In all, the unique contributions of fathers as individuals in supporting the initiation and continuation of breastfeeding have been recognized,¹³ yet little work has focused on whether the quality of the mother–father partnership is affected, particularly from the father’s perspective. The current study addresses these questions using a longitudinal design, dyadic data analysis, and a wide range of demographic covariates.

Selection bias

Investigation of linkages between breastfeeding and intimate relationship quality should address selection bias, or the possibility that mothers who choose to breastfeed may be positively or negatively selected on (unmeasured or confounding) demographic characteristics that also bear on their partner relationship.¹⁴ Past work has found that, in general, mothers who are married, older, more educated, and more financially secure are more likely to breastfeed and to continue breastfeeding;^{12,15} higher socioeconomic conditions and being married also typically correlate with better relationship functioning.¹⁶ In addition, race and ethnicity have emerged as consistent covariates, with African American mothers having a lower tendency to start breastfeeding than European American or Latina mothers.¹⁵ Child characteristics have been understudied with respect to parental relationship functioning and breastfeeding behavior, with one study finding girls to be breastfed longer than boys¹⁴ and studies documenting inconsistent results with regard to birth order and breastfeeding behavior.^{14,17} Reports of child effects on marital relationship quality are scant. Nevertheless, accounting for these characteristics in current statistical models helped to minimize a potential bias in the association between breastfeeding and intimate relationship quality.

The current study

Drawing on family systems theory, which posits mutual influences of family processes both *within* an individual family member (e.g., maternal breastfeeding may affect a mother’s functioning as a marital partner) and *between* multiple family members (e.g., maternal breastfeeding may affect the marital functioning of the mother’s partner),⁷ breastfeeding following the birth of a child was expected to be associated with mothers’ and fathers’ ratings of intimate relationship quality over time. Given the positive outcomes in other domains for breastfeeding mothers and children, the linkage was predicted to be positive in nature. The association was expected to be stronger for mothers than for fathers, in part because mothers play a more central role in breastfeeding, but also because breastfeeding in the context of an intimate relationship may contribute to mothers’ having multiple roles in the family, which could promote overall happiness and well-being, including higher levels of intimate relationship satisfaction.¹⁸ Following previous work distinguishing between shorter versus longer durations of breastfeeding,¹⁰ breastfeeding longer in duration was predicted to have a more persistent link with marital quality, although this hypothesis remained tentative in light of the possibility that longer breastfeeding might alternatively be more disruptive to intimate relationship functioning. For example, some evidence suggests that longer breastfeeding might actually hamper relationship quality

because of greater strain placed on the mother’s body or disruptions in the couple’s intimacy.^{19,20}

These hypotheses were tested using multivariate hierarchical linear modeling, a quantitative analytic approach that accommodates the interdependent data collected from mothers’ and their relationship partners. The analyses also accounted for a wide range of demographic covariates as outlined above to rule out the possibility that characteristics associated with breastfeeding, rather than breastfeeding itself, predicted the course of mothers’ and fathers’ relationship quality over time. Furthermore, when testing whether breastfeeding (from birth through age 3 years) predicted trajectories of relationship quality (across 54 months through age 15 years), analyses included earlier marital quality as a covariate, thereby strengthening the predictive test of the role of breastfeeding in the longitudinal course of relationship quality.

Subjects and Methods

Study design and participants

Participants for this study were a subset of families drawn from all four phases of the National Institute of Child Health and Human Development (NICHD) Study of Early Child Care and Youth Development (SECCYD), a longitudinal sample of 1,364 children born at 31 hospitals near 10 U.S. research sites during 1991.²¹ The original 1,364 families were selected following a conditional random-sampling plan designed to ensure that the participants reflected the economic, educational, and ethnic diversity of each research site. The NICHD SECCYD is the most comprehensive study to date of variations in childcare experiences and children’s developmental outcomes; detailed information is available on the study website (secc.rti.org). In addition to studying multiple domains of child health and well-being, including the breastfeeding variables of interest here, the SECCYD obtained information on parental relationships, providing the unique opportunity to examine the interplay between child processes and parental development over time.

The SECCYD maintained high retention, with over 1,000 (>70%) of the children and families followed through age 15 years. The present study used data from 986 families (72.3% of the 1,364 enrolled in the study at birth), who contributed data on partner relationship quality (in Phases II, III, and IV; between 54 months and age 15 years), breastfeeding duration (in Phase I, between 1 month and age 3 years), and demographic and background characteristics (in Phase I). Attrition analyses investigated differences between the present study’s participants ($n=986$) and non-participants ($n=378$) on demographic characteristics collected when children were 1 month old, including maternal race and ethnicity, age, education, and partner status, family financial resources (i.e., an income-to-needs ratio, calculated by dividing the total family income by the U.S. poverty threshold for the appropriate family size), and child sex and birth order. Participants showed several differences compared with those who started the study but were excluded because of missing data or attrition. Specifically, participating mothers compared with non-participating mothers were older (mean = 28.76 vs. 26.42 years) [$t(650.28) = 2.34, p < 0.001$], had more education (mean = 14.53 vs. 13.47) [$t(1,361) = 7.05, p < 0.001$], and were more likely to be cohabiting or married (64.29% vs. 93.61%) [$\chi^2(1, n = 1,364) = 189.36,$

$p < 0.001$]. Participating families had higher financial resources (mean = 3.08 vs. 2.11) [$t(1,271) = 5.58, p < 0.001$]. Also, a smaller portion of participating mothers compared with non-participating mothers was African American (9.43% vs. 21.43%) [$\chi^2(1, n = 1,364) = 35.33, p < 0.001$].

Measures

Demographic and background characteristics. Demographic covariates were obtained from the assessment when children were 1 month old.

Breastfeeding initiation and duration. Breastfeeding was reported by mothers via a series of questions administered in Phase I. During the 1-month interview, mothers were asked if the child was ever breastfed. Mothers responding "no" were coded as "never breastfed," and mothers responding "yes" were asked how old, in weeks, their baby was when breastfeeding had ended. At 6 months, mothers who had indicated breastfeeding at 1 month were asked if they were currently breastfeeding. Those responding "no" were asked how old, in months, their baby was when breastfeeding had ended. These questions were repeated until the mother reported that breastfeeding had ceased or through age 3 years. The resultant data were used to create three categories reflecting mothers' initiation and duration of breastfeeding: Those who never breastfed (26.8%), those who breastfed up to 4 months (36.3%), and those who breastfed for 5 months or longer (36.9%). Thus, the breastfeeding predictor variables in subsequent analyses consisted of two dichotomous variables: Breastfeeding in the first 3 years of life for up to 4 months (relative to never breastfeeding) and breastfeeding in the first 3 years of life for 5 months or longer (relative to never breastfeeding). Breastfeeding duration was not modeled as a continuous variable because going from never breastfeeding to any length of breastfeeding was suspected to be different than other 1-point increases. The cut-point of 4 months was chosen on the basis of World Health Organization guidelines²² at the time of the study.

Intimate relationship quality. Mothers who were living with a spouse or partner (referred to as fathers) rated intimate relationship quality at each assessment using the emotional intimacy subscale of the Personal Assessment of Intimacy in Relationships.²³ Fathers were also asked to complete the measure. This subscale includes six items that tap feelings of emotional closeness and support (e.g., "I can state my feelings without him/her getting defensive"). The current study's trajectories of intimate relationship quality are based on ratings obtained at six assessments (when children were 54 months of age, in Grades 1, 3, 5, and 6, and 15 years of age). It is notable 77.2% of mothers and 69% of fathers contributed three or more ratings of relationship quality to the trajectories. Phase I maternal relationship quality scores were averaged to provide a covariate of earlier relationship functioning.

Data analysis

Hypotheses were tested with multivariate hierarchical linear modeling, a type of multilevel modeling that accommodates partner-level data by simultaneously estimating effects for mothers and fathers,²⁴ and Hierarchical Linear Modeling 6 software.²⁵ In the present study, multilevel

modeling-derived parameters from repeated measurements of relationship quality collected from each mother and father over time (in Level 1), which were averaged across all participants and related to breastfeeding and demographic/study covariates (in Level 2). Specifically, models estimated longitudinal trajectories (i.e., intercept, slope, and quadratic parameters) of marital quality for mothers and fathers as predicted by child age and age squared for each participating family and then related these averaged trajectories to breastfeeding initiation/duration and covariates. In addition, multilevel modeling offers the advantages of allowing uneven spacing between assessments and accommodating individually varying numbers of data points.^{26,27} All available data were used because of maximum likelihood estimation.²⁸

Results

Sample descriptives

Table 1 presents demographic and background characteristics for the entire sample of mothers, for mothers who never breastfed compared with mothers who initiated breastfeeding, and for mothers who breastfed for 4 months or less compared with mothers who breastfed for 5 months or more. Consistent with previous research,^{12,15,29} mothers in the current sample who initiated breastfeeding compared with those who did not were significantly more likely to be Hispanic ethnicity, white, and married or living with their partner; breastfeeding mothers were less likely to be black. Mothers who breastfed were also older and reported higher levels of education and financial resources. Child birth order was also associated with breastfeeding initiation, with mothers of first-born children significantly more likely to breastfeed than mothers of later-born children (see Table 1). Breastfeeding initiation was not associated with child sex or early marital quality levels. Among mothers who initiated breastfeeding, mothers who were white or married or living with their partner were significantly more likely to breastfeed longer. Mothers who breastfed for a longer duration (i.e., 5 months or longer) were also older and reported higher levels of education and financial resources relative to mothers who breastfed for a shorter duration (i.e., up to 4 months). Mothers who were black or had a later-born child were more likely to breastfeed for a shorter versus longer duration (see Table 1).

Mothers' and fathers' intimate relationship quality trajectories

An unconditional dyadic growth curve model examined the longitudinal course of mothers' and fathers' marital quality levels predicted in Level 1 by child age (to test for linear change) and age squared (to test for quadratic change). As explained by Raudenbush et al.,²⁴ dummy variables entered in Level 1 permit outcomes for matched pairs (i.e., mothers and fathers) to be modeled simultaneously. This dyadic model estimated three growth parameters for mothers and fathers: An intercept, indicating marital quality scores when the child was 54 months; a slope, indicating the linear growth rate of marital quality; and a quadratic term, showing the degree of curvature, or acceleration or deceleration, in the linear growth rate over time. Results of this model are presented in Table 2 and indicate that mothers' marital quality increased across child development and showed significantly

TABLE 1. DEMOGRAPHIC AND BACKGROUND CHARACTERISTICS OF FAMILIES: OVERALL SAMPLE AND BY BREASTFEEDING INITIATION AND DURATION

Demographic and background characteristics	Breastfeeding initiation and duration				Sample (n=986)
	Never breastfed (n=234)	Initiated (n=752)	≤ 4 months (n=388)	≥ 5 months (n=364)	
% mother is					
Hispanic ^a	2.1	4.9	5.4	4.4	4.3
White ^{a,b}	72.6	90.8	88.4	93.4	86.5
Black ^{a,b}	25.6	4.4	6.2	2.5	9.4
Another race ^a	1.7	4.8	5.4	4.1	4.1
Maternal education (in years) ^{a,b}	13.04 (2.23)	14.99 (2.35)	14.48 (2.30)	15.53 (2.28)	14.53 (2.46)
Maternal age (in years) ^{a,b}	26.29 (5.58)	29.5 (5.18)	28.29 (5.16)	30.84 (4.86)	28.76 (5.45)
Family income-to-needs ratio ^{a,b}	2.12 (1.97)	3.38 (2.76)	3.09 (2.82)	3.70 (2.65)	3.08 (2.65)
% mother is married/cohabiting ^{a,b}	85.0	96.3	94.1	98.6	93.6
% child is male	51.3	50.7	52.6	48.6	50.8
% child is first-born ^{a,b}	37.2	45.5	49.5	41.2	43.5
Early relationship quality (averaged maternal reports, 1 month–age 3 years)	4.60 (0.93)	4.55 (0.87)	4.50 (0.89)	4.60 (0.86)	4.56 (0.89)

Means and SDs are presented for continuous variables; percentages are presented for dichotomous variables. Mothers who initiated breastfeeding comprise mothers described as breastfeeding for up to 4 months and for 5 months or longer.

^aCharacteristics of mothers who never breastfed and those who did significantly differ ($p < 0.05$).

^bCharacteristics of mothers who breastfed for up to 4 months and those who breastfed for 5 months or longer significantly differ ($p < 0.05$).

slower growth over time, whereas fathers' marital quality levels did not demonstrate reliable change over time (all p values > 0.05). In addition, there was significant variability in individual mothers' and fathers' trajectories of marital quality over time (all growth parameter p values < 0.001), thus encouraging examination of a conditional model (that includes Level 2 predictors) to explain this variability as a function of breastfeeding initiation and duration and covariates. The study's central analysis (described next) retained analogous curves with intercept, slope, and quadratic terms for mothers and fathers.

Does breastfeeding predict intimate relationship quality trajectories?

The conditional model included dummy codes in Level 2 to test effects of breastfeeding for up to 4 months (compared with never breastfeeding) and breastfeeding for 5 months or longer (compared with never breastfeeding) on mothers' and fathers' marital quality trajectories over time. Covariates were also entered in Level 2 to account for possible selection bias

and study controls. Specifically, the conditional model included the following as covariates of all dyadic growth parameters: data collection site (1–9), maternal ethnicity (0 = not Hispanic, 1 = Hispanic), maternal age (in years, grand-mean centered), maternal education (in years, grand-mean centered), marital status (0 = single, 1 = married/cohabiting), child sex (0 = girl, 1 = boy), maternal race (0 = not black, 1 = black), child birth order (0 = later-born, 1 = first-born), early marital quality (average of maternal reports at the 1-month, 6-month, 1.25-year, 2-year, and 3-year assessments, grand-mean centered), and the family income-to-needs ratio (grand-mean centered). Thus, outcomes of interest reveal the unique associations between breastfeeding for up to 4 months (compared with never breastfeeding) and breastfeeding for 5 months or longer (compared with never breastfeeding) and maternal and paternal marital quality over time, accounting for study controls, maternal demographics, and child characteristics.

Results from this multivariate hierarchical linear model indicate that breastfeeding was associated with mothers' lower relationship quality levels at 54 months (Table 3).

TABLE 2. MULTIVARIATE HIERARCHICAL LINEAR MODEL RESULTS: UNCONDITIONAL GROWTH CURVES OF INTIMATE RELATIONSHIP QUALITY

$y = \text{marital quality}$	Mothers				Fathers			
	Estimate	SE	95% CI	p	Estimate	SE	95% CI	p
Level (centered at 54 months of age)								
Intercept	3.822	0.030	3.76, 3.88	< 0.001	3.922	0.030	3.86, 3.98	< 0.001
Slope								
Intercept	0.025	0.010	0.006, 0.04	0.010	0.009	0.010	-0.01, 0.03	0.366
Quadratic								
Intercept	-0.003	0.001	-0.035, -0.032	< 0.001	-0.001	0.001	-0.003, 0.0004	0.145

$n = 986$ couples. $df = 985$ for all tests.

CI, confidence interval.

TABLE 3. MULTIVARIATE HIERARCHICAL LINEAR MODEL RESULTS: CONDITIONAL GROWTH CURVES OF INTIMATE RELATIONSHIP QUALITY PREDICTED BY BREASTFEEDING

<i>y</i> = marital quality	Mothers				Fathers			
	Estimate	SE	95% CI	p	Estimate	SE	95% CI	p
Level (centered at 54 months of age)								
Intercept	3.631	0.176	3.29, 3.98	<0.001	3.595	0.223	3.16, 4.03	<0.001
Breastfeeding ≤ 4 months	-0.179	0.070	-0.32, -0.04	0.011	0.006	0.082	-0.16, 0.17	0.946
Breastfeeding ≥ 5 months	-0.159	0.074	-0.31, -0.01	0.033	0.049	0.087	-0.12, 0.22	0.574
Slope								
Intercept	0.095	0.062	-0.03, 0.22	0.129	0.128	0.075	-0.02, 0.27	0.087
Breastfeeding ≤ 4 months	0.059	0.028	0.004, 0.11	0.034	-0.017	0.028	-0.07, 0.04	0.537
Breastfeeding ≥ 5 months	0.059	0.029	0.001, 0.12	0.045	-0.035	0.028	-0.09, 0.02	0.220
Quadratic								
Intercept	-0.010	0.005	-0.02, 0.0006	0.065	-0.011	0.006	-0.02, 0.0007	0.065
Breastfeeding ≤ 4 months	-0.005	0.003	-0.010, 0.0005	0.075	0.001	0.003	-0.004, 0.006	0.644
Breastfeeding ≥ 5 months	-0.004	0.003	-0.010, 0.0009	0.103	0.003	0.003	-0.003, 0.008	0.329

n = 986 couples. *df* = 973 for all tests. Covariates in the model include study site, maternal race and ethnicity, maternal age, maternal education, maternal partner status at 1 month, family income-to-needs ratio at 1 month, child sex and birth order, and early relationship quality levels.

In addition, breastfeeding for up to 4 months and for 5 months or longer (relative to never breastfeeding) both uniquely predicted increases in mothers' relationship quality over time (see Table 3). Furthermore, hypothesis tests in multivariate hierarchical linear modeling tested the effect of breastfeeding for up to 4 months versus breastfeeding for 5 or more months on mothers' relationship quality trajectories (i.e., intercepts, slopes, and quadratic terms) and showed no significant differences (all *p* values > 0.05). Results from the multivariate hierarchical linear model indicate that breastfeeding was not associated with the course of fathers' intimate relationship quality (all *p* values > 0.05) (see Table 3).

Testing the plausibility of an alternate model

Given the lack of experimental data, it is not possible to make causal statements regarding linkages between breastfeeding and intimate relationship quality. Nonetheless, to test the possibility that breastfeeding was chosen by mothers who were in happier partnerships to begin with, intimate relationship quality scores from the 1-month assessment for mothers in the current sample who had initiated breastfeeding (mean = 5.66, SD = 1.06) and those who had not (mean = 5.61, SD = 1.01) were compared. No reliable difference emerged [*t*(972) = 0.70, *p* = 0.482], lending further support to the predictive role of breastfeeding in improving maternal marital quality levels over the course of child development.

Discussion

This study is among the first to investigate the role of mother-child breastfeeding initiation and duration in the context of mothers' and fathers' intimate relationships. Specifically, multivariate hierarchical linear models tested the predictive role of breastfeeding in mothers' and fathers' relationship quality trajectories over the course of child development. Results indicated that breastfeeding for up to 4 months and breastfeeding for 5 months or longer (relative to never breastfeeding) predicted increases in mothers' marital quality levels, but not fathers', over time. There was no difference in the strength of the positive associations for shorter

versus longer duration. Future research based on more intensive measurements of breastfeeding duration (e.g., daily or weekly reports) could examine the effect of continuous change on family processes.

Although trajectories over time were largely the focus of the study, it was surprising that breastfeeding was associated with lower levels of marital quality at the intercept of maternal trajectories (i.e., when children were 54 months of age). However, post hoc analyses revealed no significant differences in mothers' or fathers' marital quality levels as a function of breastfeeding for up to 4 months (relative to never breastfeeding) and breastfeeding for 5 months or longer (relative to never breastfeeding) at any of the subsequent assessments (i.e., through age 15 years, all *p* values > 0.05). The current findings build upon the existing literature on the beneficial outcomes documented among breastfeeding mothers and children and encourage future investigations of breastfeeding initiation and duration in contexts of partner relationships and family systems.

It is important that the present analyses controlled for a host of demographic and background covariates. Previous work has shown that maternal characteristics such as being older, more educated, and more financially secure are associated with an increased likelihood that breastfeeding occurs as well as a longer continuity of breastfeeding.^{12,15} In addition, consistently lower rates of initiation and duration of breastfeeding have been documented among African American mothers. By accounting for these factors, the current results attempted to limit potential selection bias in testing the association between breastfeeding and intimate relationship quality. However, a limited range of demographic diversity precluded tests based on subsamples of participants or examination of specific characteristics that have been shown to matter in previous work, such as marital status.³⁰ In predicting the longitudinal course of maternal and paternal relationship quality from breastfeeding, model tests further accounted for earlier marital quality, increasing confidence in the current results. Nevertheless, the results support an associational rather than a causal interpretation of the findings. Future research with samples of more demographically

diverse families could build on the present study to examine whether certain demographic and relational characteristics moderate (i.e., strengthen or weaken) the linkages between breastfeeding and relationship functioning among parents.

This study also establishes a foundation for future research to adopt a process-oriented approach when testing the interplay between breastfeeding and intimate relationship functioning. For example, questions could address what might explain the linkage between breastfeeding and marital quality, including parental attitudes, confidence, and feeding intentions.³¹ Such tests might elucidate differences in pathways among mothers and fathers, thus overcoming the limited scope of the present work in this regard. For example, whereas the current study identified a direct association between breastfeeding and intimate relationship quality trajectories for mothers, future work might detect an indirect linkage for fathers through the impact breastfeeding has on relational communication or sexual intimacy. In addition, future models should more fully incorporate characteristics of maternal and parental adjustment and development, including psychological distress³² and employment/work status.³³

Conclusions

As current public health efforts and policies encourage more women to breastfeed their children and to breastfeed through the first year of life,^{34,35} it will be increasingly important to understand how breastfeeding affects women and those close to them. The current study encourages consideration of breastfeeding in contexts of family relationships, particularly the interparental dyad, which has been identified as one of the key indicators of parents' and children's well-being and development. The current findings may hold implications for women weighing the decision to breastfeed and their partners. In addition, healthcare professionals, including lactation consultants, should consider including the findings in their descriptions of the multiple domains in which mothers and children potentially benefit from the initiation and maintenance of breastfeeding.

Acknowledgments

This study was conducted by the Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD) Early Child Care Research Network supported by the NICHD through a cooperative agreement that calls for scientific collaboration between the grantees and the NICHD staff. L.M.P. gratefully acknowledges the use of the NICHD Study of Early Child Care and Youth Development data and expresses her appreciation to the study investigators and personnel, including those who facilitated the 2004 American Psychological Association Advanced Training Institute on using large-scale databases, and the study participants. This research was supported by grant RO3 HD057346 to L.M.P.

Disclosure Statement

No competing financial interests exist.

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