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The Legacy of Early Abuse and Neglect for Social and Academic Competence From Childhood to Adulthood

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This study used data from the Minnesota Longitudinal Study of Risk and Adaptation (N = 267) to investigate whether abuse and neglect experiences during the first 5 years of life have fading or enduring consequences for social and academic competence over the next 3 decades of life. Experiencing early abuse and neglect was consistently associated with more interpersonal problems and lower academic achievement from childhood through adulthood (32–34 years). The predictive significance of early abuse and neglect was not attributable to the stability of developmental competence over time, nor to abuse and neglect occurring later in childhood. Early abuse and neglect had enduring associations with social (but not academic) competence after controlling for potential demographic confounds and early sensitive caregiving.

Over the last several decades, there has been growing recognition that child abuse and neglect represent a serious threat to the health and well-being of individuals, families, and societies (Butchart, Harvey, Mian, & Furniss, 2006; Gilbert et al., 2009). Research on this topic has often focused on experiences of physical abuse (the intentional use of physical force against a child that results in or has the potential to result in physical injury), sexual abuse (intentional sexual acts with, contact with, or exploitation of a child), and neglect (the failure to provide for a child's basic needs or to protect a child from harm or potential harm; Leeb, Paulozzi, Melanson, Simon, & Arias, 2008). Worldwide, approximately 23% of individuals report experiencing physical abuse, 13% report experiencing sexual abuse, and 16% report being physically neglected (Stoltenborgh, Bakermans-Kranenburg, Alink, & Van IJzendoorn, 2015). Within the United States, more than one third of adolescents (aged 14–17 years) report experiencing at least one type of maltreatment in their lifetime (Finkelhor, Turner, Shattuck, & Hamby, 2015). These self-reported frequencies are higher than the number of cases identified by child protection agencies, which suggests that many children who experience abuse and/or neglect do not receive relevant family services (for a discussion, see Gilbert et al., 2009).

These prevalence estimates are concerning because experiencing childhood abuse and neglect is associated with problematic adaptation during childhood and adolescence. For example, children who have been abused or neglected are more likely to behave aggressively toward peers or to withdraw from peer interactions altogether, to be disliked and rejected by peers, to struggle to form friendships, and to experience more conflict and less satisfaction with friends than nonmaltreated children (Cicchetti & Toth, 2016; Gilbert et al., 2009; Widom, 2014). In the academic domain, children

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with histories of abuse or neglect tend to earn lower grades, to perform worse on standardized tests of academic achievement, to be less engaged at school, to miss school more often, and to be more likely to receive special education than non-maltreated children (e.g., Lansford et al., 2002; Leiter, 2007; Shonk & Cicchetti, 2001).

Abuse and neglect experiences during the first few years of life are believed to be especially disruptive to children's developmental trajectories. For example, the organizational perspective of development (Cicchetti, 1993; Sroufe & Rutter, 1984) proposes that early maltreatment experiences undermine successful negotiation of the salient developmental tasks of infancy and early childhood (e.g., formation of secure attachment relationships, mastery of objects in the environment, and effective self-regulation). Although these early developmental outcomes may reflect conditional adaptations to challenging family relationships, they are nonetheless thought to compromise individuals' adjustment to later developmental tasks, such as establishing peer relationships and functioning at school. In addition, developmental neuroscience perspectives suggest that neurobiological systems involved in stress reactivity and self-regulation may be especially malleable during early development and therefore susceptible to disruption by adverse caregiving experiences (Belsky & de Haan, 2011; Gunnar & Quevedo, 2007; Shonkoff, Boyce, & McEwen, 2009).

In contrast to research focused on social and academic difficulties during childhood and adolescence, there is substantially less prospective, longitudinal evidence regarding whether early abuse and neglect have long-term consequences that persist into adulthood. Educational attainment and healthy involvement with romantic relationships represent developmentally appropriate markers of academic and social competence, respectively, during adulthood (Masten et al., 1995; Roisman, Masten, Coatsworth, & Tellegen, 2004). Nearly all the existing investigations of child maltreatment's implications for educational attainment and romantic relationship functioning during adulthood have depended on adults' retrospective reports of experiencing childhood abuse and neglect (e.g., Boden, Horwood, & Fegusson, 2007). These retrospective measures are limited by their susceptibility to several cognitive and motivational factors, including difficulty remembering childhood events, differential interpretation of childhood caregiving experiences, desires to avoid personal distress or protect parents, and current mood and circumstances (Widom, Raphael, & DuMont, 2004). Indeed, there appears to be only modest agreement between prospectively gathered measures of childhood maltreatment and adults' retrospective reports (Reuben et al., 2016; Shaffer, Huston, & Egeland, 2008).

Perhaps more importantly, there is a critical lack of evidence regarding whether the overall magnitude of the effects of early abuse and neglect remain stable or weaken as individuals develop. As formally demonstrated by Fraley, Roisman, and Haltigan (2013), it is necessary to examine associations between early caregiving experiences and adjustment at three or more time points in order to evaluate whether the consequences of those experiences are persistent or attenuate with time. This is noteworthy because most published reports focus on child maltreatment's sequelae at only one or two ages. Thus, even the handful of studies demonstrating longitudinal associations between prospective measures of child maltreatment and maladaptive functioning during adulthood (e.g., Colman & Widom, 2004; Currie & Widom, 2010; Henry, Thornberry, & Lee, 2015; Mersky & Topitzes, 2010) do not represent clear evidence that the harmful effects of early abuse and neglect are stable across development.

Examination of how the associations between early abuse and neglect and functioning are structured across time can also provide insights regarding the developmental mechanisms that underlie the legacy of early abuse and neglect. As discussed by Fraley et al. (2013; see also Fraley & Roisman, 2015; Roisman & Fraley, 2013), there are two competing accounts of the significance of early relationship experiences for later developmental adaptation. According to the *revisionist* model of development, early caregiving experiences—including experiences of abuse and neglect—have a direct influence only on children's concurrent functioning. Critically, the *revisionist effects* model allows for the possibility that early experiences of abuse and neglect may be associated with more problematic functioning at later ages, including during adulthood. However, these longitudinal effects are thought to be fully mediated by the stability in adaptation across time. As a result, the revisionist model anticipates that the predictive effects of early abuse and neglect will weaken with time, eventually approaching zero as the temporal lag increases (Bruer, 2002; Clarke & Clarke, 2000; Kagan, 1996). In contrast, the *enduring effects* model of development posits that early caregiving experiences not only directly influence children's functioning during

early development, but also shape a set of mechanisms that are consolidated during early childhood and exert a persistent influence on adaptation throughout the life span (Owens et al., 1995; Sroufe, Egeland, & Kreutzer, 1990). In other words, the enduring effects model proposes that early abuse and neglect both initiate and maintain a problematic developmental trajectory via mechanisms that are carried forward across time. One implication of this model is that the overall magnitude of the predictive effects of early abuse and neglect and later outcomes should be relatively stable across development.

Thus, the fundamental difference between the revisionist and enduring effects perspectives is not their predictions regarding the *magnitude* of the association between early relationship experiences and functioning at a single subsequent time point, but rather their predictions regarding the *pattern of associations* between early relationship experiences and developmental adaptation across time. One way to formally evaluate these competing theoretical ideas is by testing the relative fit of the different structural path models described by Fraley et al. (2013). As depicted in Figure 1, both the revisionist and the enduring effects perspectives anticipate that early caregiving experiences directly shape early developmental outcomes (path *a*). Moreover, both theoretical perspectives assume that the skills acquired during one development period provide a foundation for adaptation at the next age, resulting in rank order stability in adjustment over time (*c* paths). The enduring effects model further predicts that early abuse and neglect experiences continue to directly predict adaptation at each subsequent age (*b* paths), whereas the revisionist model assumes that early caregiving experiences are not directly related to later outcomes once the stability of adaptation is taken into account (i.e., *b* paths = 0).

To date, these analytic models have been used to investigate whether early caregiving experiences within the normative range have enduring or diminishing effects on development. For example, in an initial study using data from the Study of Early Child Care and Youth Development, Fraley et al. (2013) reported that the associations between maternal sensitivity during the first 3 years and children's subsequent social and academic competence through midadolescence were consistent with the enduring effects model of development. Recently, Raby, Roisman, Fraley, and Simpson (2015) replicated and extended these findings using data from the Minnesota Longitudinal Study of Risk and Adaptation (MLSRA; Sroufe, Egeland, Carlson, & Collins, 2005) cohort. Within the MLSRA, early maternal sensitivity had enduring implications not only for competence with peers and academic performance during childhood and adolescence, but also for romantic relationship functioning and educational attainment during adulthood. Moreover, sensitive caregiving's enduring associations with academic competence (but not social competence) within the MLSRA were robust to controlling for potential demographic confounds.

The current study represents the third installment of a programmatic effort to investigate whether early relationship experiences have enduring or revisionist implications for individuals' functioning in social and academic domains. This study extends the prior analyses of the MLSRA by investigating the predictive significance of more adverse

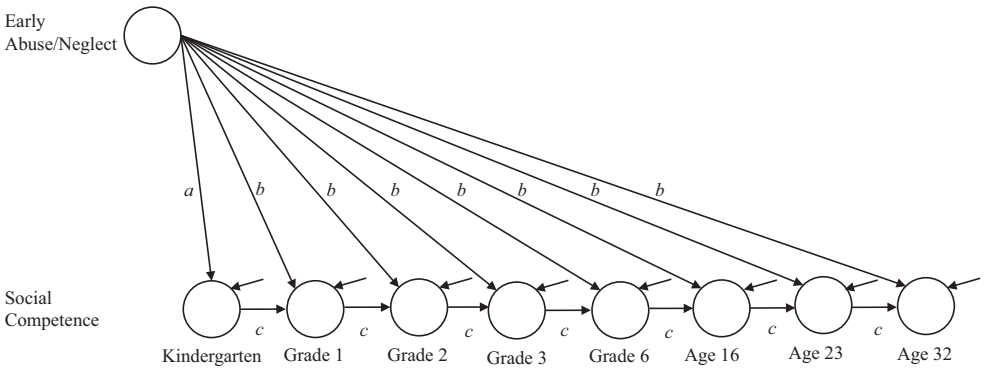

Figure 1. The basic structural model used to evaluate the legacy of early abuse and neglect experiences. This model assumes that early abuse and neglect experiences exert an ongoing influence on individuals' social competence from childhood to adulthood after accounting for the stability of social functioning across development. The model predicting academic competence included assessments during Grades 1, 2, 3, and 6 and ages 16, 23, 26, 28, 32, and 34 years.

early caregiving experiences, namely childhood abuse and neglect. The current analyses focus on the same indices of social and academic competence as the prior investigation of early maternal sensitivity (Raby et al., 2015). In this way, the present study provides a straightforward comparison of the predictive significance of early maternal sensitivity and early abuse and neglect, and provides information about whether the previously reported enduring effects are specific to early maternal sensitivity or whether they extend to children's experiences of abuse and neglect.

Our first goal was to test the basic question of whether early abuse and neglect have persisting or diminishing associations with social and academic competence across childhood, adolescence, and adulthood. Our second goal was to test the robustness of any enduring associations by evaluating whether they were still observed under a more complex set of assumptions. The first extension of the basic model involves examining whether the enduring implications of early abuse and neglect are due to the predictive significance of abuse and neglect during middle childhood and adolescence (see Figure 2). These models allowed us to clarify whether *early* abuse and neglect have a unique role in shaping later developmental adaptation or whether any enduring associations are simply due to the stability of adverse caregiving experiences across development, as some scholars have argued (e.g., Lamb, Thompson, Gardner, & Charnov, 1985; Lewis, Feiring, & Rosenthal, 2000). These extended models also provided information about whether abuse and neglect experiences during later developmental periods have enduring associations with social and academic outcomes during adolescence and adulthood.

The second extension involves testing whether the enduring significance of early abuse and neglect is accounted for by early socioeconomic conditions, children's ethnicity, and children's biological sex (see Figure 3). These variables are associated with both the likelihood of experiencing child maltreatment (Gilbert et al., 2009) and children's developmental outcomes (Bradley & Corwyn, 2002; Magnuson, 2007). Indeed, Raby et al. (2015) reported that early maternal education and children's biological sex have enduring associations with social and academic outcomes within the MLSRA. Thus, in order to strengthen inferences regarding the potential unique contributions of early abuse and neglect, we also considered the predictive significance of these key covariates in the current analyses. Early maternal sensitivity was included as an additional covariate in the current study, as this allowed us to evaluate whether the predictive significance of early abuse and neglect was independent of the previously reported enduring associations between early maternal sensitivity and developmental adaptation within the MLSRA (Raby et al., 2015).

The third extension involves evaluating the potential enduring consequences of early abuse and neglect after accounting for potential transactional dynamics between children and their environments (see Figure 4). A central tenet of modern developmental perspectives is that children actively shape their own development by creating or evoking responses from their environments, which in turn shape children's subsequent behaviors (e.g., Gottlieb, 2007; Sameroff, 2010). In this way, the consequences of early abuse and neglect may be explained by initial effects on early functioning that are perpetuated via bidirectional influences between

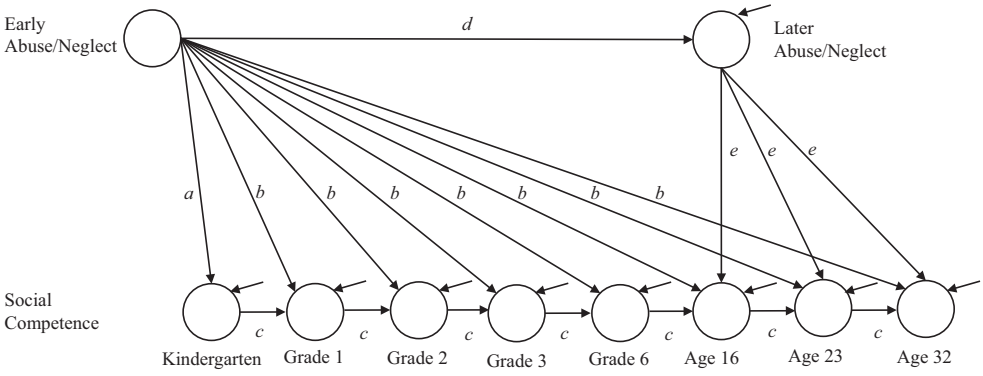

Figure 2. An extension of the basic model that also considers the influence of abuse and neglect during childhood and adolescence for social competence during adulthood. The model predicting academic competence included assessments during Grades 1, 2, 3, and 6 and ages 16, 23, 26, 28, 32, and 34 years.

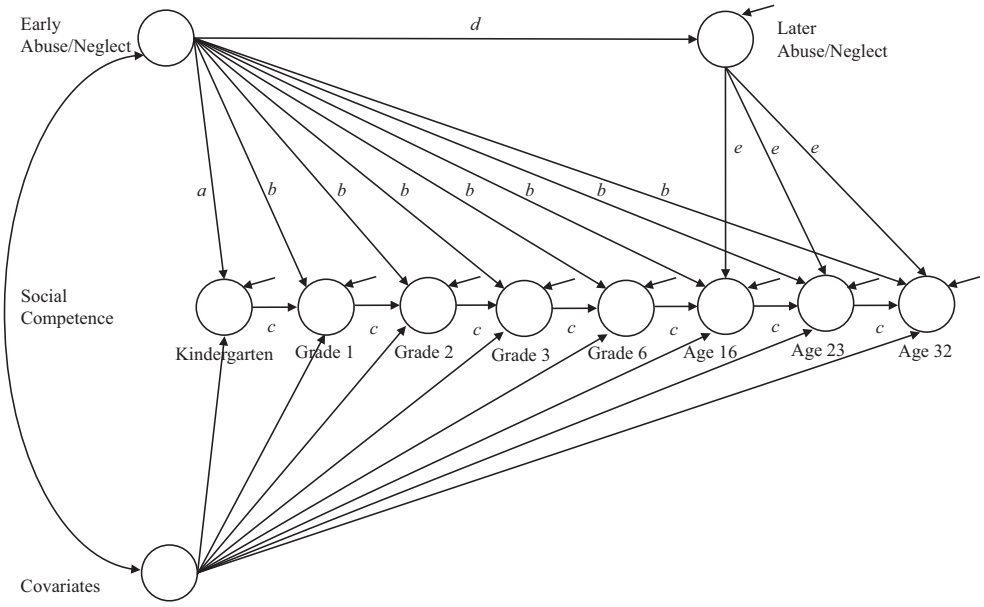

Figure 3. An extension of the basic model that also considers the influence of abuse and neglect during childhood and adolescence for social competence during adulthood as well as the potential enduring effects of children's sex, children's ethnicity, early maternal education, early socioeconomic status, and early maternal sensitivity. The model predicting academic competence included assessments during Grades 1, 2, 3, and 6 and ages 16, 23, 26, 28, 32, and 34 years.

children and their environments. These transactional processes can be captured within the context of structural models with second-order stability paths that reflect the possibility that competence at time one influences competence at time three via mechanisms other than just the stability through competence at time two. As discussed by Roisman, Fraley, Haltigan, Cauffman, and Booth-LaForce (2016), these paths offer an omnibus method for detecting any transactional processes that may operate through a variety of unmeasured environmental mechanisms.

Method

Participants

Between 1975 and 1977, 267 pregnant mothers who were living below the poverty line and receiving prenatal services through the local health department in Minneapolis, MN were recruited to participate in the MLSRA. All mothers were having their first child. At the time of childbirth, 48% of the mothers were teenagers, 65% were single, and 42% had completed less than a high school education. Approximately 79% of the mothers were White/non-Hispanic, 15% were African American, and 7% were Native American, Hispanic, or Asian American. Sixty-five percent of the children were White/non-Hispanic, 17% were multiracial, 14% were African American, and 4% were Native American, Hispanic, or Asian American. Information about the child participants was collected at multiple ages from birth to adulthood, and these individuals are the focal participants in the current study.

Measures

Adverse Caregiving: Abuse and Neglect

As described in Raby, Labella, Martin, Carlson, and Roisman (2017), the MLSRA uses the rubric *childhood experiences of adverse caregiving* as an umbrella term to refer to a variety of atypical parent–child experiences that were prospectively measured in the MLSRA cohort and are believed to be harmful to children's development. The current study focused exclusively on information collected about MLSRA participants' adverse caregiving experiences of physical abuse, sexual abuse, and neglect. This information was recoded to apply contemporaneous definitions of abuse and neglect, to identify the specific perpetrator and ages of the abuse and neglect experiences, and to assess the reliability of those coding decisions. Coding criteria were based on definitions developed by the Centers for Disease Control and Prevention (CDC) in order to "promote consistent terminology and data

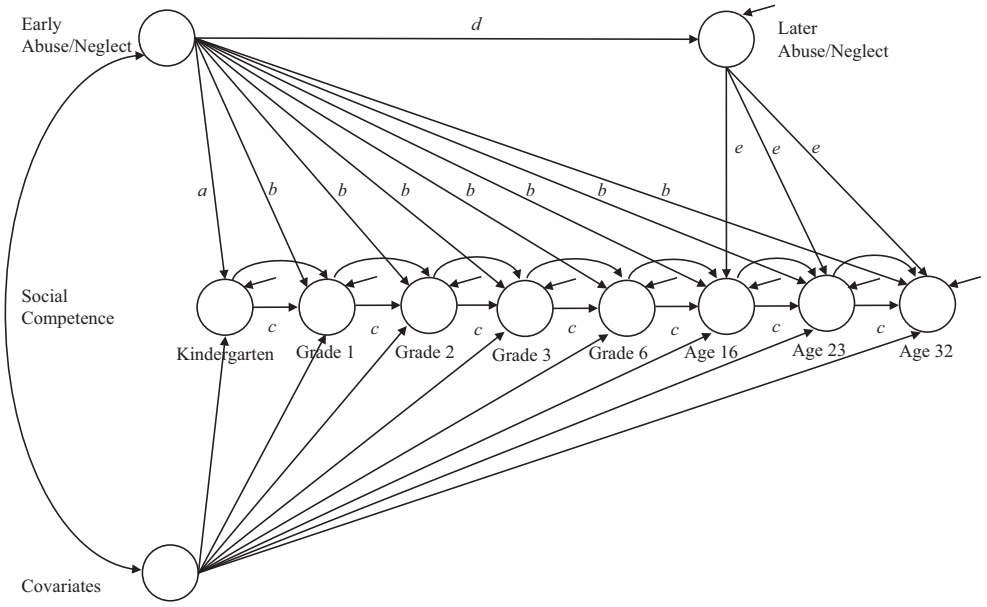

Figure 4. An extension of the basic model that also includes the influence of abuse and neglect during childhood and adolescence for social competence during adulthood; the enduring effects of children's biological sex, children's ethnicity, early maternal education, early socioeconomic status, and early maternal sensitivity; and second-order stability paths that reflect potential transactional mechanisms. The model predicting academic competence included assessments during Grades 1, 2, 3, and 6 and ages 16, 23, 26, 28, 32, and 34 years.

collection related to child maltreatment" (Leeb et al., 2008, p. 4). The coding included: (a) neglect of a child's basic physical or cognitive needs, defined as a caregiver's failure to provide adequate hygiene, shelter, clothing, medical care, supervision, or education; (b) physical abuse, defined as a caregiver's "intentional use of physical force against a child that results, or has the potential to result in, physical injury" (Leeb et al., 2008, p. 14); and (c) sexual abuse, defined as sexual contact (e.g., molestation, rape) or noncontact exploitation (e.g., intentional exposure of child to pornography) by a custodial caregiver or by a perpetrator 5 or more years older than the target child. Although the CDC criteria address only sexual abuse perpetrated by a caregiver, the inclusion of noncaregiving perpetrators and the use of a 5-year cutoff are consistent with other research in this area (e.g., Stoltenborgh, Van IJzendoorn, Euser, & Bakermans-Kranenburg, 2011).

These CDC definitions were supplemented by a set of more specific coding guidelines that distinguished clear indicators of physical abuse, sexual abuse, and physical/cognitive neglect from ambiguous indicators that were not sufficient for classification without other evidence. These additional guidelines were developed in consultation with MLSRA senior researchers, Minnesota state law, and the available research literature (e.g., Barnett, Manly, & Cicchetti, 1993), and are available from the first author upon request. However, the classifications of childhood experiences of abuse or neglect do not necessarily reflect criteria for maltreatment used by child protective services, which vary from state to state.

Although emotional unavailability or lack of caregiver responsiveness is an important dimension of adverse caregiving (especially for young children) that has pernicious developmental consequences (Egeland, 2009; National Scientific Council on the Developing Child, 2012), this dimension was not included in the current coding criteria due to insufficient information across developmental periods. Similarly, exposure to violence between caregivers and other forms of environmental violence were not included in the current set of codes. Exposure to violence between caregivers is assessed by a separate variable in the MLSRA data set (e.g., Narayan, Englund, & Egeland, 2013), and insufficient information was available to code adequately exposure to other forms of environmental violence.

Judgments regarding abuse and neglect experiences were made for participants whose records had been previously flagged as potentially ever abused or neglected (n = 139, 52% of the original sample). For these cases, all available data collected from birth

to 17.5 years (up to 25 assessments) were reviewed for information regarding caregiving quality, physical discipline, supervision, home environment, physical and sexual assault, child protective service involvement, and foster care history. Information was obtained from parent–child observations, caregiver interviews, reviews of available child protection and medical records, adolescent reports, and teacher interviews. Disclosures of childhood physical or sexual abuse during the Adult Attachment Interview (AAI) were not included in the present set of codes except when an experience of abuse was initially identified based on records through age 17.5 years, but there was insufficient detail to code the specific developmental period or perpetrator (e.g., an adolescent disclosed a history of sexual assault without specifying whether the perpetrator was a peer). In these cases, available AAIs were consulted only for clarifying information about the previously identified incident.

Coding focused on the presence or absence of physical abuse, sexual abuse, and/or neglect in each of four developmental periods (infancy: birth to 24 months; early childhood: 25 months to 5 years; middle childhood: 6–12 years; and adolescence: 13–17.5 years). For incidents of physical and sexual abuse, coders also specified the perpetrator. Perpetrators included maternal caregivers (biological mothers, stepmothers, grandmothers), paternal or father figures (biological fathers, stepfathers, adoptive fathers, and mothers' live-in boyfriends), and nonparental figures (relatives, neighbors, babysitters, and family friends). Two coders reviewed each case and demonstrated good to excellent reliability on all parameters. Kappas ranged from .80 to .98 for the presence or absence of physical abuse, sexual abuse, and/or neglect; from .80 to .84 for the presence or absence of each subtype during each development period; and from .80 to .98 for incidents of physical or sexual abuse by each category of perpetrator. All discrepancies were resolved by consensus.

Within the full MLSRA sample, 102 individuals were classified as having ever experienced physical abuse, sexual abuse, and/or neglect. To separate individuals who had not experienced abuse and/or neglect from those with missing data, a participant was coded as missing abuse and neglect data if he or she was: (a) not coded as having been abused and/or neglected based on the available information and (b) missing two or more full assessments within any given developmental period. Within the full MLSRA sample, 81 individuals were coded as not having experienced abuse or neglect, and the statuses of 84 individuals were deemed unclear due to missing data for at least one of the developmental periods. By developmental period, 47 individuals were classified as being abused and/or neglected in infancy (of the 211 with sufficient data to allow for confident classifications of abuse and/or neglect during this developmental period), 66 in early childhood (of the 185 with sufficient data during this developmental period), 66 in middle childhood (of the 190 with sufficient data during this developmental period), and 21 in adolescence (of the 179 with sufficient data during this developmental period).

For the current study, we created a measure of *early abuse and neglect exposure* by summing the number of experiences of physical abuse, sexual abuse, and neglect during the developmental periods of infancy and early childhood. Because each of these subtypes was coded on a dichotomous basis for each developmental period, the early abuse and neglect exposure measure had a theoretical minimum of zero (i.e., the participant did not experience any type of abuse or neglect during infancy or early childhood) and a theoretical maximum of six (i.e., a participant experienced all three subtypes during both infancy and early childhood). Similarly, we created a measure of *later childhood abuse and neglect exposure* by summing the number of physical abuse, sexual abuse, and neglect experiences during middle childhood and adolescence. This measure also had a theoretical range of zero to six. Participants who were missing information about one or more of the subtypes during infancy or early childhood were coded as missing for the early abuse and neglect exposure measure, and participants who were missing information about one or more of the subtypes during middle childhood or adolescence were coded as missing for the later childhood abuse and neglect exposure measure. Importantly, all analyses were also conducted using dichotomous measures of abuse and neglect experiences to maximize consistency with prior research on the consequences of early maltreatment, and no decisions regarding statistical significance differed from what is reported next (see Appendix S1 for more information).

Social Competence

The same indices of social competence included in the prior investigation of the enduring predictive significance of early maternal sensitivity in the MLSRA (Raby et al., 2015) were included in present analyses. These indices were originally selected

because they capture overall competence in the salient relationships at each age, and their construct validity had been supported in prior publications from the MLSRA (e.g., Englund, Kuo, Puig, & Collins, 2011; Sroufe et al., 2005). Briefly, during kindergarten, Grades 1, 2, 3, and 6, and at age 16 years, social competence was indexed by each child's competence in peer interactions. Specifically, teachers were asked to rank each student in their classrooms based on similarity to developmentally appropriate behavioral descriptions of peer social competence. To standardize the teacher rankings from the different classrooms, the target child's rank was divided by the number of students in the class.

During young adulthood, overall competence with the task of forming and maintaining high-quality romantic relationships was selected as the marker of social competence. At age 23 and 32 years, all participants completed a semistructured interview regarding their romantic relationship histories. This interview included questions about the length and status of each recent relationship, reasons for relationship dissolutions, and the occurrence of physical violence within their relationships. Participants who were in a current romantic relationship also answered questions regarding the quality of that relationship (e.g., closeness, depth of communication, commitment, frequency of relationship conflict, and conflict resolution strategies). Trained coders listened to the audiotaped interviews from both ages and rated the degree to which participants demonstrated developmentally appropriate competence in romantic relationships using a 5-point scale. Participants who received higher scores described a history of relationships consistently characterized by mutual concern, intimacy, and loyalty, while lower scores reflected either a history of relationships that lacked these qualities or a history of romantic relationships that were maintained for only a short period of time. Intraclass correlations at ages 23 and 32 years were .93 and .94, respectively. Because the unstandardized paths representing the enduring effects were constrained to be equal to one another in the analytic models (as described next) and because the metrics for the various social competence variables were not identical across assessments, all variables were rescaled to a 1–5 scale.

Academic Competence

Children's academic competence during childhood and adolescence was assessed with standardized tests of academic achievement. During Grades 1, 2, 3, and 6, children completed various subtests of the Peabody Individual Achievement Test (Dunn & Markwardt, 1970), and the total age-standardized score was selected as the indicator of overall academic competence at each age. At age 16 years, the adolescent participants completed the passage comprehension and calculation subtests of the Woodcock–Johnson Tests of Achievement (Woodcock & Johnson, 1990). We created a measure of overall academic functioning at age 16 years by averaging the age-standardized scores for these two subtests ($\alpha = .74$). Academic competence in adulthood was operationalized as participants' educational attainment. Participants' self-reported educational attainment at ages 23, 26, 28, 32, and 34 years were coded using a 6-point scale, which ranged from not receiving a general education diploma or high school diploma to receiving a graduate degree. These measures of academic competence were also used in the prior analyses of the enduring predictive significance of early maternal sensitivity in the MLSRA (Raby et al., 2015), except for the age 34 years educational attainment data, which were recently collected. Again, because the paths representing the enduring effects were constrained to be equal to one another and the metrics for the academic competence variables were not identical across assessments, all variables were rescaled to a 0–5 scale.

Control Variables

The same four control variables used in the prior study of the enduring versus diminishing predictive significance of early maternal sensitivity in the MLSRA (Raby et al., 2015) were included in the current analyses. Children's biological sex was coded using a binary variable (1 = female, 0 = male). Because the majority of children in the sample were White/non-Hispanic, children's ethnicities were recoded into a binary variable (1 = White/non-Hispanic, 0 = otherwise). We created a measure of early maternal education by averaging mothers' reports of the number of years of education they had completed during the third trimester of pregnancy and when the child was 42 months. Early socioeconomic status was operationalized using Duncan's Socioeconomic Index, a widely used indicator of occupational ranking (Stevens & Featherman, 1981), based on mothers' occupational status at the 42-month assessment. We also included a measure of early maternal sensitivity as a control variable. As described in Raby et al. (2015), ratings of maternal sensitivity during semistructured parent–child

interactions were collected when participants were 3, 6, 24, and 42 months old. These four ratings were standardized and averaged ($\alpha = .67$).

Missing Data

All analyses conducted using full information maximum likelihood. For this reason, sample sizes varied based on the variables included in the models. Specifically, the analytic sample size was 206 for the analyses that only included childhood abuse and neglect exposure as a predictor of social and academic competence outcomes. When covariates were added to the models, the analyses included the full sample of 267 MLSRA participants. Importantly, the conclusions about enduring versus revisionist processes did not differ when the analyses focused only on the 189 participants with information about early abuse and neglect.

Results

Patterns of Associations Across Time

Bivariate correlations revealed consistent associations between early abuse and neglect exposure and social and academic competence from childhood through adulthood (see Tables 1 and 2). Specifically, the correlations between early abuse and neglect exposure and developmental competence at each age were statistically significant and small to medium in magnitude according to Cohen's (1992) criteria (average *r*s were −.26 and −.32 for social and academic competence, respectively). Importantly, the overall magnitude of the correlations at each age were fairly consistent, indicating that the correlations were not approaching zero as the temporal spacing increased between early abuse and neglect exposure and the assessments of competence.

Basic Comparisons of the Revisionist and Enduring Effects Models

The first set of analyses tested whether these associations between early abuse and neglect exposure and later social and academic competence are best explained by an enduring effects or a revisionist model. Both models include the direct associations between early abuse and neglect and the most temporally proximate measure of social and academic competence (i.e., the *a* paths in Figure 1). Both models also include paths representing stability in social and academic competence across time (i.e., the *c* paths in Figure 1). In addition, the enduring effects model hypothesizes that early abuse and neglect have continued direct associations with later developmental outcomes (i.e., the *b* paths in Figure 1). Because the revisionist model proposes that early abuse and neglect does not have direct associations with later developmental outcomes, the *b* paths are fixed to 0.00 in the revisionist model. Consistent with prior analyses of enduring and revisionist processes (e.g., Fraley et al., 2013; Raby et al., 2015), the paths representing the enduring effects of early abuse and neglect were constrained to be equal to one another. Assuming the enduring effects of early abuse and neglect are homogenous in magnitude over time is not an explicit requirement of the enduring effects model. Nonetheless, including this constraint provides the simplest and most conservative test of whether the enduring effects model provides a superior fit to the data than the revisionist model. The standardized regression coefficients are reported next for ease of interpretability. Because the standardized estimates for the enduring effects paths can vary across time points even when the unstandardized paths are constrained to be equal, we report the average of those standardized estimates for descriptive purposes. The *p* values are based on the unstandardized estimates.

The comparisons of the basic enduring effects and revisionist structural models are presented in Tables 3 and 4 in the sections labeled "Basic model." When predicting social competence outcomes, the enduring effects model fit the data better than the revisionist model ($\Delta\chi^2 = 31.53$, $p < .01$). The average estimate of the direct path from early abuse and neglect exposure to later social competence was −.16 ($p < .01$). Similarly, when predicting academic outcomes, the enduring effects model also provided a better fit to the data than the revisionist model ($\Delta\chi^2 = 10.11$, $p < .01$). The average estimate of the direct path from early abuse and neglect exposure to later academic competence was −.04 ($p < .01$).

Extensions of the Basic Model

Following Raby et al. (2015), we next compared the enduring effects and revisionist models in the context of increasingly complex models, including: (a) models that also account for the predictive significance of abuse and neglect exposure during middle childhood and adolescence, (b) models that include possible confounding variables, and (c) models that include second-order stability paths.

Table 1
Zero-Order Correlations Between Childhood Abuse and/or Neglect Exposure, Early Maternal Sensitivity, Covariates, and Social Competence Over Time

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. Early abuse and neglect exposure	—														
2. Later abuse and neglect exposure	.50*	—													
3. Early maternal sensitivity	−.49*	−.30*	—												
4. Child biological sex	−.14	.09	.07	—											
5. Child ethnicity	−.05	−.04	.26*	.01	—										
6. Maternal education	−.27*	−.34*	.46*	−.06	−.05	—									
7. Socioeconomic status	−.13	−.14	.21*	−.06	.08	.46*	—								
8. Social competence: kindergarten	−.29*	−.26*	.16*	.04	.14	.10	.10	—							
9. Social competence: Grade 1	−.31*	−.28*	.26*	.12	.06	.20*	.08	.45*	—						
10. Social competence: Grade 2	−.24*	−.36*	.19*	.12	.08	.17*	.06	.41*	.48*	—					
11. Social competence: Grade 3	−.16*	−.18*	.20*	.19*	.13	.17*	.13	.41*	.54*	.55*	—				
12. Social competence: Grade 6	−.39*	−.30*	.21*	.21*	.00	.30*	.16*	.31*	.40*	.33*	.40*	—			
13. Social competence: age 16	−.14	−.27*	.14	.18*	.00	.29*	.16*	.25*	.29*	.23*	.36*	.35*	—		
14. Social competence: age 23	−.24*	−.26*	.07	.14	.09	.12	.05	.22*	.32*	.18*	.09	.26*	.23*	—	
15. Social competence: age 32	−.27*	−.35*	.16	.00	.11	.20*	.12	.21*	.24*	.26*	.23*	.25*	.19*	.43*	—
M	0.70	0.60	−0.01	0.47	0.63	11.75	18.44	48.71	47.40	46.15	47.67	53.16	50.12	2.60	3.43
SD	1.08	0.86	0.72	0.50	0.48	1.60	9.09	29.06	27.99	27.40	27.75	28.75	26.24	1.25	1.34

Note. Child biological sex was coded 1 = female, 0 = male; ethnicity was coded 1 = White/non-Hispanic, 0 = non-White.
*$p < .05$.

Table 2
Zero-Order Correlations Between Childhood Abuse and/or Neglect Exposure, Early Maternal Sensitivity, Covariates, and Academic Competence Over Time

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1. Early abuse and neglect exposure	—																
2. Later abuse and neglect exposure	.50*	—															
3. Early maternal sensitivity	−.49*	−.30*	—														
4. Child biological sex	−.14	.09	.07	—													
5. Child ethnicity	−.05	−.04	.26*	.01	—												
6. Maternal education	−.27*	−.34*	.46*	−.06	−.05	—											
7. Socioeconomic status	−.13	−.14	.21*	−.06	.08	.46*	—										
8. Academic competence: Grade 1	−.37*	−.17*	.41*	.10	.21*	.29*	.13	—									
9. Academic competence: Grade 2	−.41*	−.26*	.40*	.09	.21*	.30*	.18*	.89*	—								
10. Academic competence: Grade 3	−.36*	−.21*	.38*	.10	.17*	.27*	.20*	.86*	.92*	—							
11. Academic competence: Grade 6	−.29*	−.24*	.38*	.13	.12	.37*	.27*	.81*	.83*	.86*	—						
12. Academic competence: age 16	−.23*	−.18*	.42*	.10	.20*	.43*	.29*	.68*	.64*	.68*	.71*	—					
13. Academic competence: age 23	−.33*	−.26*	.24*	.19*	.04	.35*	.18*	.32*	.29*	.35*	.35*	.42*	—				
14. Academic competence: age 26	−.31*	−.26*	.28*	.12	.04	.41*	.20*	.44*	.36*	.44*	.43*	.47*	.74*	—			
15. Academic competence: age 28	−.31*	−.23*	.31*	.13	.04	.40*	.20*	.43*	.34*	.42*	.40*	.52*	.66*	.90*	—		
16. Academic competence: age 32	−.26*	−.21*	.30*	.14	.05	.39*	.22*	.42*	.36*	.44*	.45*	.54*	.59*	.83*	.85*	—	
17. Academic competence: age 34	−.32*	−.23*	.30*	.20*	−.02	.40*	.17*	.43*	.37*	.45*	.47*	.54*	.59*	.81*	.82*	.91*	—
M	0.70	0.60	−0.01	0.47	0.63	11.75	18.44	99.61	100.46	98.85	97.84	100.63	1.89	2.51	2.53	2.57	2.68
SD	1.08	0.86	0.72	0.50	0.48	1.60	9.09	12.08	12.00	12.70	10.82	12.86	1.13	1.21	1.20	1.24	1.21

Note. Child biological sex was coded 1 = female, 0 = male; ethnicity was coded 1 = White/non-Hispanic, 0 = non-White.
*$p < .05$.

Table 3
Comparing the Enduring Effects and Revisionist Models of the Influence of Early Abuse and/or Neglect on Social Competence Across Childhood, Adolescence, and Adulthood

	Model fit						Nested model comparisons		
Model	χ^2	*df*	*p*	CFI	RMSEA	SRMR	$\Delta\chi^2$	*df*	*p*
Basic model									
A. Enduring effects	93.71	27	< .001	.81	.11	.11	—	—	—
B. Revisionist	125.24	28	< .001	.72	.13	.16	B–A 31.53	1	< .001
Model with later abuse and neglect									
A. Enduring effects	110.55	34	< .001	.82	.11	.11	—	—	—
B. Revisionist	132.72	35	< .001	.77	.12	.15	B–A 22.02	1	< .001
Model with later abuse and neglect and covariates									
A. Enduring effects	148.36	69	< .001	.82	.07	.08	—	—	—
B. Revisionist	158.03	70	< .001	.80	.07	.09	B–A 9.67	1	< .001
Model with later abuse and neglect, covariates, and second-order paths									
A. Enduring effects	103.94	63	.001	.91	.05	.07	—	—	—
B. Revisionist	108.94	64	< .001	.90	.05	.08	B–A 5.00	1	.025

Note. $N = 206$ for the basic model and the model with later abuse and neglect. $N = 267$ for model with later abuse and neglect and covariates, and model with later abuse and neglect, covariates, and second-order paths. CFI = comparative fit index; RMSEA = root mean square error of approximation; SRMR = standardized root mean square residual.

Table 4
Comparing the Enduring Effects and Revisionist Models of the Influence of Early Abuse and/or Neglect on Academic Competence Across Childhood, Adolescence, and Adulthood

	Model fit						Nested model comparisons		
Model	χ^2	*df*	*p*	CFI	RMSEA	SRMR	$\Delta\chi^2$	*df*	*p*
Basic model									
A. Enduring effects	127.61	44	< .001	.96	.10	.14	—	—	—
B. Revisionist	137.72	45	< .001	.95	.10	.17	B–A 10.11	1	.001
Model with later abuse and neglect									
A. Enduring effects	136.85	53	< .001	.96	.09	.13	—	—	—
B. Revisionist	144.77	54	< .001	.95	.09	.16	B–A 7.93	1	.005
Model with later abuse and neglect and covariates									
A. Enduring effects	210.63	98	< .001	.95	.07	.11	—	—	—
B. Revisionist	212.92	99	< .001	.94	.07	.12	B–A 2.28	1	.131
Model with later abuse and neglect, covariates, and second-order paths									
A. Enduring effects	169.41	93	< .001	.96	.06	.08	—	—	—
B. Revisionist	171.46	94	< .001	.96	.06	.08	B–A 2.04	1	.153

Note. $N = 206$ for the basic model and the model with later abuse and neglect. $N = 267$ for model with later abuse and neglect and covariates, and model with later abuse and neglect, covariates, and second-order paths. CFI = comparative fit index; RMSEA = root mean square error of approximation; SRMR = standardized root mean square residual.

Modeling Later Childhood Abuse and Neglect

We first examined whether early experiences of abuse and neglect have enduring consequences for social and academic competence after controlling for later child abuse and neglect. We included *a* path representing the stability of abuse and neglect from early childhood to later childhood in both the enduring effects and the revisionist models (i.e., the *d* path in Figure 2). Moreover, we allowed for the possibility that later childhood abuse and neglect had enduring consequences for development by allowing later childhood abuse and neglect to predict social and academic outcomes at age 16 and during adulthood (i.e., the *e* paths in Figure 2). Later childhood abuse and neglect was modeled as a predictor of social and academic competence at later ages within both the enduring effects and the

revisionist models. Thus, the only difference between the enduring effects and revisionist models was the estimation of direct paths from early abuse and neglect to later developmental outcomes (i.e., the *b* paths). This provided the most direct test of whether early abuse and neglect experiences have unique and enduring consequences for individuals' social and academic development.

The results of the enduring effects and revisionist model comparisons are reported in Tables 3 and 4 in the sections labeled "Model with later abuse and neglect." For social competence outcomes, the enduring effects model continued to fit the data better than the revisionist model ($\Delta\chi^2 = 22.02$, $p < .01$). The average estimated path from early abuse and neglect to subsequent measures of social competence was $-.14$ ($p < .01$). Later abuse and neglect also had an enduring association with later social competence (average $\beta = -.16$, $p < .01$).

Similarly, for academic outcomes, the enduring effects model continued to fit the data better than the revisionist model ($\Delta\chi^2 = 7.93$, $p < .01$). The average estimate of the direct effect of early abuse and neglect on later academic competence was $-.04$ ($p < .01$). On the other hand, the association between later experiences of abuse and neglect and later academic competence was similar in overall magnitude, but not statistically significant (average $\beta = -.01$, $p = .79$).

Modeling Later Childhood Abuse and Neglect and Covariates

We next examined whether early abuse and neglect have enduring effects on social and academic outcomes after accounting for both later childhood abuse and neglect *and* controlling for five potential confounding variables: children's biological sex, children's ethnicity, maternal education, maternal socioeconomic status, and maternal sensitivity. We specified enduring paths between these variables and social and academic outcomes, such that each covariate had separate *a* and *b* paths and each covariate's *b* paths were constrained to be equal across time (see Figure 3). Paths representing the enduring effects of each of the covariates were included in both the enduring effects and the revisionist models, so that the only difference between the two models was the estimation of direct paths from early abuse and neglect to later social and academic competence.

Comparisons of the enduring effects and revisionist models are reported in Tables 3 and 4 in the sections labeled "Model with later abuse and neglect and covariates." For social competence outcomes, early abuse and neglect were directly associated with peer competence in kindergarten ($\beta = -.30$, $p < .01$). Moreover, the enduring effects model continued to fit the data better than the revisionist model ($\Delta\chi^2 = 9.67$, $p < .01$). The average estimated direct path from early abuse and neglect to subsequent measures of social competence was $-.10$ ($p < .01$). The average estimate of the enduring effects of later abuse and neglect ($\beta = -.16$, $p < .01$), biological sex ($\beta = .10$, $p < .01$), and maternal education ($\beta = .12$, $p < .01$) were significant, but the paths for socioeconomic status ($\beta = .02$, $p = .48$), child ethnicity ($\beta = .03$, $p = .22$), and early maternal sensitivity ($\beta = -.02$, $p = .59$) were not.

For academic outcomes, early abuse and neglect were directly associated with academic competence during first grade after accounting for the covariates ($\beta = -.21$, $p < .01$). However, the enduring effects model no longer fit the data better than the revisionist model ($\Delta\chi^2 = 2.28$, $p = .13$). The estimated direct effect of early abuse and neglect on later academic competence was $-.03$ ($p = .13$). The estimated enduring effects of biological sex ($\beta = .03$, $p = .58$) and maternal education ($\beta = .05$, $p < .01$) were significant, but the enduring effects of child ethnicity ($\beta = -.01$, $p = .31$), maternal socioeconomic status ($\beta = .01$, $p = .49$), later abuse and neglect ($\beta = -.01$, $p = .96$), and early maternal sensitivity ($\beta = .02$, $p = .58$) were not.

Modeling Later Childhood Abuse and Neglect, Covariates, and Second-Order Stability

Finally, second-order paths were added to the models to capture potential transactional processes (see Figure 4). These models are the most inclusive within this framework because they account for the influence of later abuse and neglect, demographic covariates, and transactional processes. Comparisons of the enduring effects and revisionist models under these assumptions are reported in Tables 3 and 4 in the sections labeled "Model with later abuse and neglect, covariates, and second-order paths." As reported by Raby et al. (2015), the absolute fit indices of these models indicated that the inclusion of transactional processes was necessary to model the data well. Models that included second-order paths (along with later abuse and neglect and the covariates) provided a better fit to the data than the models that constrained the second-order paths to be zero ($\Delta\chi^2 = 44.42$, $p < .01$ for social competence; $\Delta\chi^2 = 41.22$, $p < .01$ for academic competence).

For social competence, the enduring effects model still fit the data better than the revisionist model ($\Delta\chi^2 = 5.00$, $p = .03$). The average direct effect of early abuse and neglect on later social competence was −.07 ($p = .03$). The estimates for the enduring effects of later abuse and neglect ($\beta = -.15$, $p < .01$), biological sex ($\beta = .10$, $p < .01$), and maternal education ($\beta = .11$, $p < .01$) were significant, but the paths for socioeconomic status ($\beta = .02$, $p = .53$), child ethnicity ($\beta = .03$, $p = .34$), and early maternal sensitivity ($\beta = -.02$, $p = .61$) were not.

For academic outcomes, the enduring effects model did not provide a better fit to the data than the revisionist model ($\Delta\chi^2 = 2.04$, $p = .15$). The average estimated direct effect of early abuse and neglect on later academic competence was −.03 ($p = .13$). The estimated enduring effects of biological sex ($\beta = .03$, $p < .01$) and maternal education ($\beta = .04$, $p < .01$) were significant, but the enduring effects of child ethnicity ($\beta = -.01$, $p = .22$), maternal socioeconomic status ($\beta = .01$, $p = .61$), later abuse and neglect ($\beta = -.01$, $p = .92$), and early maternal sensitivity ($\beta = .01$, $p = .68$) were not.

Discussion

The current study used data from the MLSRA to examine the predictive significance of early abuse and neglect for individuals' social and academic competence across the next 3 decades. Consistent with prior research (Cicchetti & Toth, 2016; Gilbert et al., 2009), experiencing abuse and neglect during the first 5 years of life was associated with difficulties with peers and poorer performance on tests of academic achievement during childhood and adolescence. Additionally, early abuse and neglect had long-term associations with less effective involvement with romantic relationships and lower educational attainment during adulthood. Critically, the correlations between early abuse and neglect and later social and academic problems did not appear to diminish in overall magnitude across development. Moreover, structural model comparisons revealed that early abuse and neglect were directly associated with lower levels of social and academic competence at each age even after accounting for the stability of social and academic adjustment across development. These findings extend our understanding of the developmental consequences of child maltreatment by indicating that the associations between early experiences of abuse or neglect and later problematic adjustment are consistent with the central hypothesis of the enduring effects model of development, namely that early caregiving experiences exert a persistent influence on subsequent adaptation (Fraley et al., 2013).

We also evaluated whether these enduring associations between early abuse and neglect and later problematic developmental outcomes were accounted for by abuse and neglect during middle childhood and adolescence. Indeed, individuals who experienced abuse and neglect during the first 5 years of life were more likely to experience abuse and neglect during these later developmental periods. However, in contrast to the idea that the influence of early caregiving experiences is simply due to the stability of caregiving quality across development (e.g., Lamb et al., 1985; Lewis et al., 2000), the enduring effects of early abuse and neglect remained after controlling for the influence of abuse and neglect during later in childhood. At the same time, these results also indicated that early caregiving experiences do not exclusively determine subsequent developmental adaptations, as later abuse and neglect experiences also had enduring associations with social and academic maladjustment.

We also tested whether the enduring associations between early abuse and neglect and later adaptation were independent of commonly investigated demographic factors (namely, early maternal education, early socioeconomic conditions, ethnicity, and biological sex) as well as early experiences of sensitive caregiving. After accounting for these covariates, the enduring associations between early abuse and neglect and academic competence were no longer statistically significant. Thus, the long-term associations between early abuse and neglect and academic functioning may be due to the combination of (a) the processes hypothesized by the revisionist model of development—namely, early abuse and neglect have direct effects on early development that are carried forward by the stability of academic competence across time—and (b) the enduring influence of these demographic variables. In contrast, early abuse and neglect continued to have enduring associations with social competence after including these covariates. The enduring associations with social competence remained robust after accounting for transactional processes during development. Altogether, this study provides novel evidence that early experiences of abuse and neglect have unique associations with later success in interpersonal relationships that are relatively stable over time and robust to the inclusion of later experiences of abuse and neglect, demographic covariates, and transactional processes.

These findings complement the previously published findings from the MLSRA (Raby et al., 2015), which demonstrated enduring associations between early maternal sensitivity and academic (but not social) competence through adulthood after controlling for the same set of demographics. Raby et al. (2015) speculated that early experiences of sensitive caregiving were more robustly associated with academic success because maternal sensitivity was predominantly assessed in the context of teaching and problem-solving tasks. In contrast, the findings from this study indicate that early abuse and neglect, which represent more severe disturbances in children's early caregiving relationships and can occur in more varied situations, have robust enduring implications for individuals' later success in interpersonal relationships. The enduring associations between early maternal sensitivity and academic competence were not significant in the current analyses, which suggest that the enduring effect of early sensitivity on academic competence may be due to the overlap between maternal sensitivity and abuse and neglect during early childhood. Still, given that the current study represents the first investigation of the enduring consequences of early abuse and neglect, additional research with independent samples is needed to evaluate the potential enduring effects of both early sensitivity and early abuse and neglect.

In contrast to much of the research on the adult outcomes associated with childhood maltreatment, the measures of abuse and neglect used in the current study were based exclusively on information gathered prior to age 18 years. In addition, the measures reflect the contemporary definitions of abuse and neglect provided by the CDC. Of course, it is possible that some participants who were classified as never abused/neglected had experienced adverse caregiving without it coming to the attention of MLSRA research staff. However, this potential limitation is mitigated by our efforts to code abuse and neglect using information from all available sources, including parents, teachers, children, and records from Child Protective Services when available. Moreover, we adopted fairly conservative standards for defining cases with missing data in order to differentiate between individuals who did not experience abuse/neglect and those with insufficient information.

A key task for future research regarding the enduring effects of early abuse and neglect is leveraging study designs that provide more rigorous tests of the potentially causal influence of these adverse early caregiving experiences (e.g., Rutter, Pickles, Murray, & Eaves, 2001). In particular, research designs that disentangle genetic and environmental contributions to development may be an especially profitable future direction for research on the sequelae of early abuse and neglect. Extant investigations of children who were adopted internationally after experiencing early social deprivation and studies of twins who were physically maltreated have demonstrated potentially causal effects of early adversity on maladaptation during childhood and adolescence (e.g., Jaffee et al., 2004; Juffer et al., 2011). Future genetically informed research that includes repeated assessments of functioning at multiple ages would help clarify whether the enduring associations between childhood abuse and neglect with later maladjustment represent environmental effects on individuals' development.

Another challenge for future research is elucidating the specific mechanisms responsible for the enduring associations between early abuse and neglect and interpersonal difficulties during childhood, adolescence, and adulthood. As described by Fraley et al. (2013), the necessary characteristics of the mechanisms are a heightened capacity for being shaped by experiences with caregivers during early development, high stability after early childhood, and a role in organizing functioning at each age. Individuals' attachment-related representations represent one plausible mechanism. Attachment representations are assumed to be rooted in early experiences with caregivers, relatively stable across development, and influential in shaping individuals' thoughts, feelings, and behaviors in close relationships (Owens et al., 1995; Sroufe et al., 1990). Another possibility is that early experiences of abuse and neglect tune the development of neurobiological systems that underlie reactivity and regulation during interpersonal challenges during this early period of heightened plasticity (e.g., Shonkoff et al., 2009). There is a growing corpus of research findings that supports these ideas by suggesting that early experiences of abuse and neglect have implications for individuals' attachment representations and neurobiological development (for reviews, see Belsky & de Haan, 2011; Fearon, Groh, Van IJzendoorn, Bakermans-Kranenburg, & Roisman, 2016; Gunnar & Quevedo, 2007). However, additional investments in multilevel, longitudinal research are needed to clarify the extent to which these processes are responsible for mediating the enduring and adverse legacy of early abuse and neglect.

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Supporting Information

Additional supporting information may be found in the online version of this article at the publisher's website:

Appendix S1. Supplemental Materials