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## Intergenerational transmission of autobiographical memory specificity: Indirect effects through maternal reminiscing

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### Abstract

Mother–child reminiscing, particularly maternal sensitive guidance, fosters the development of autobiographical memory specificity (AMS) in both typically developing and maltreated children, yet little is known regarding the processes underlying individual differences in maternal reminiscing that could also relate to child AMS. Emerging evidence has shown that maternal AMS is associated with maternal sensitive guidance in typically developing dyads. We extended this research to the context of maltreatment, a risk factor for impoverished maternal sensitive guidance and reduced AMS in children. In the current study, we evaluated the indirect effect of maternal AMS on child AMS through two dimensions of maternal reminiscing style—sensitive guidance and elaboration—while including parallel pathways between neglect and abuse/emotional maltreatment and child AMS through maternal reminiscing. Participants were 123 neglecting, 30 abuse/emotional maltreating, and 78 demographically matched nonmaltreating mothers and their 3- to 6-year-old children. Results indicated that maternal AMS was indirectly associated with child AMS through maternal sensitive guidance while controlling for associations among neglect, maternal reminiscing, and child AMS, providing evidence for intergenerational transmission of AMS in at-risk dyads. These results advance the understanding of mechanisms underlying both maternal sensitive guidance and child AMS in a low-socioeconomic-status and racially diverse sample.

### Keywords

Maltreatment; Reminiscing; Sensitive guidance; Autobiographical memory specificity; Overgeneral memory

### Introduction

A broad literature has demonstrated that mother–child reminiscing conversations—discussions of past shared emotional experiences—are critical in facilitating children’s cognitive and socioemotional functioning, including the development of autobiographical memory (for reviews, see Fivush, Haden, & Reese, 2006; Salmon & Reese, 2016; Waters,

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Uncited references  
Speidel et al. (2019).

Camia, Facompré, & Fivush, 2019; Wu & Jobson, 2019). The vast majority of research on mother–child reminiscing has been conducted on typically developing middle-class dyads. Research on these families has demonstrated that even within largely homogeneous samples, mothers tend to differ in their reminiscing styles, particularly in terms of their sensitive guidance (i.e., coherent and emotionally supportive reminiscing; Koren-Karie, Oppenheim, Haimovich, & Etzion-Carasso, 2003) and elaboration (i.e., statements and questions adding new information; Fivush & Fromhoff, 1988; Peterson & McCabe, 1992). Moreover, maternal reminiscing styles have been theorized (Fivush et al., 2006; Nelson & Fivush, 2004) and empirically shown (e.g., Larkina & Bauer, 2010; Reese, Haden, & Fivush, 1993) to have consequences for aspects of children’s own autobiographical memory, including the clinically relevant phenomenon of overgeneral memory (OGM) or its inverse, autobiographical memory specificity (AMS) (Jobson, Burford, Burns, Baldry, & Wu, 2018; Lawson, Valentino, Speidel, McDonnell, & Cummings, 2020; Valentino, 2011; Valentino et al., 2014).

Autobiographical memory has been defined as a uniquely human recall system that integrates memories of past experiences with skills of perspective, interpretation, and evaluation into an overarching personal life narrative (Fivush, 2011). Within the autobiographical memory literature, attention has been given to OGM, defined as difficulty in recalling specific autobiographical memories (see Valentino, 2011, for a review). The OGM effect is observed via the Autobiographical Memory Test (AMT; Williams & Broadbent, 1986), wherein individuals are prompted to provide a specific memory of a time they felt a certain emotion. For example, individuals are asked to recall a time from their past that lasted a day or less when they felt happy. OGM is observed when the individual fails to give an adequately specific response about an event lasting a day or less (e.g., “Yesterday at my birthday party”) and instead provides an overgeneral response that includes a categorical memory, which is a repeated event (e.g., “Every year on my birthday”), or an extended memory, which refers to a period of time lasting longer than a day (e.g., “During the summer”) (Williams, 1996; Williams & Dritschel, 1992).

This overgeneral retrieval style has been identified among adults, adolescents, and children with clinical and subclinical levels of depression and/or trauma-related psychopathologies (for reviews, see Moore & Zoellner, 2007; Valentino, 2011; Williams et al., 2007) and in maltreated youths (Lawson et al., 2020; Valentino, Bridgett, Hayden, & Nuttall, 2012; Valentino, Toth, & Cicchetti, 2009). In addition, OGM has been shown to predict the onset (e.g., Kleim & Ehlers, 2008) and maintenance (e.g., Peeters, Wessel, Merckelbach, & Boon-Vermeeren, 2002) of these disorders (for reviews, see Hitchcock, Nixon, & Weber, 2014; Moore & Zoellner, 2007). Consequently, although the directionality of the association between OGM and these disorders is unclear (Moore & Zoellner, 2007; Valentino, 2011), it is evident that overgenerality is an important clinical phenomenon, particularly for youths in the context of high risk (Gutenbrunner, Salmon, & Jose, 2018).

Building on an understanding of memory retrieval as a generative process whereby a search for a specific memory begins at a broad level (e.g., lifetime periods) and then shifts to specific knowledge (Conway & Pleydell-Pearce, 2000), etiological models of OGM emphasize cognitive mechanisms that interfere with this process (e.g., Williams et al., 2007).

Although prominent in explaining OGM among adults (Sumner, 2012), etiological models have not considered processes at broader ecological levels and are not developmental in nature, failing to explain the occurrence of OGM among children (Hitchcock et al., 2014).

### Developmental psychopathology model of OGM

Valentino (2011) proposed a developmental psychopathology model of OGM that integrates research on the normative development of autobiographical memory and considers how risk and protective processes at multiple ecological levels contribute to OGM. Drawing on social cultural developmental theory, which postulates that social interaction, such as reminiscing, shapes autobiographical memory (Fivush et al., 2006; Nelson & Fivush, 2004), Valentino (2011) hypothesized that maternal reminiscing style would be related to reduced AMS during childhood. In testing this hypothesis in a low-income and racially diverse sample of preschool-aged children and their mothers, Valentino et al. (2014) found that maternal sensitive guidance during reminiscing was positively associated with children's AMS, whereas maternal elaboration during reminiscing was not significantly associated with AMS. Similarly, Jobson et al. (2018) showed that sensitive guidance, but not elaboration, was positively associated with children's AMS in a small sample of typically developing, middle-class mother-child dyads.

Furthermore, research using the current study's sample examined reminiscing and children's AMS in maltreating dyads and found that neglected preschoolers were at particular risk for reduced AMS (i.e., OGM) and that AMS in these children was accounted for by maternal elaboration in the context of high maternal sensitive guidance (Lawson et al., 2020). Thus, in both nonmaltreating and maltreating dyads, it appears that a mother's ability to sensitively help her child make sense of past emotional experiences is important for the emergence of the child's AMS. Reminiscing that is high in sensitive guidance—such that a mother is involved in and focused on structuring an adequate and coherent narrative, accepting of her child's ideas, and attempting to guide her child to positive resolutions for negative emotion memories (Koren-Karie et al., 2003)—may uniquely encourage a child's understanding of emotionally salient memories and how they fit into his or her autobiography, facilitating the child's ability to retrieve specific memories in independent contexts (Valentino et al., 2014). Indeed, research has shown that parental resolution of children's negative feeling during reminiscing is important for children's socioemotional development (Leyva, Berrocal, & Nolivós, 2014).

Despite the importance of maternal reminiscing for children's autobiographical memory development, minimal research has investigated processes underlying reminiscing styles (Reese, Meins, Fernyhough, & Centifanti, 2019), specifically sensitive guidance. Researching such processes may advance an etiological understanding of maternal sensitive guidance and provide further insight into the development of AMS in children. The current study begins to fill this gap by using the developmental psychopathology model of OGM (Valentino, 2011) as a framework to examine processes underlying maternal sensitive guidance and children's AMS.

## Maternal OGM and reminiscing

One mechanism that may be associated with how mothers reminisce is their own memory specificity. Jobson et al. (2018), for example, found that maternal AMS was positively associated with sensitive guidance during reminiscing but was not associated with elaboration. In addition, maternal AMS was associated with child AMS indirectly through sensitive guidance, suggesting intergenerational transmission of AMS through maternal reminiscing.

There are several reasons to believe that the presence of a specific autobiographical retrieval style in mothers may be associated with maternal reminiscing, particularly high levels of sensitive guidance. First, the typical reminiscing task used in the literature requires mothers to retrieve specific autobiographical memories at the outset. As part of the preparation for the reminiscing task, mothers are asked to nominate times when they were with their children and their children felt certain emotions. Mothers are then instructed to discuss these events with their children as they ordinarily would at home. A tendency toward specificity may make it more feasible for mothers to produce and decide on appropriate shared memories, whereas mothers with reduced AMS may find it challenging to retrieve and choose specific memories.

Moreover, mothers play a critical role in guiding reminiscing conversations with their young children. To engage their children and create structure for the children's participation, mothers may need to prompt their children by using their own memory of specific details from the event (e.g., discussing a memory when the children felt happy on Christmas: "I remember you got a new truck for Christmas. What else did you get?"). Therefore, it is possible that mothers' specific remembering may enable mothers to demonstrate aspects of sensitive guidance during reminiscing, including appropriate structuring of the interaction so as to ensure the co-creation of adequate and coherent narratives. Furthermore, the ability to retrieve specific details may help mothers to resolve negative emotion memories, another component of sensitive guidance (e.g., discussing a memory when the children felt sad after losing a stuffed animal: "What did we do that made you feel better? I remember we went to the store and picked out a new teddy bear.").

Given that both the AMT and reminiscing task involve the discussion of specific details of emotion memories, it is possible that maternal reduced AMS may manifest in the context of reminiscing and contribute to difficulties with sensitive guidance irrespective of the number of elaborations that mothers are able to provide. The emotional nature of reminiscing may make it such that mothers with reduced AMS struggle to focus on and exhibit interest in discussion of children's past emotional experiences, two aspects of sensitive guidance. Consequently, we hypothesized that maternal AMS would be positively associated with sensitive guidance during reminiscing. Furthermore, we hypothesized that maternal AMS would be indirectly associated with child AMS through maternal sensitive guidance during reminiscing.

Although prior research has not supported associations between maternal AMS and maternal elaboration (Jobson et al., 2018), we chose to include maternal elaboration in our model because it has been established as an important mechanism linking maltreatment to child

cognitive and emotional skills in this sample (Valentino et al., 2019). Mothers with a tendency to retrieve more specific autobiographical memories may be more likely to provide and ask questions about specific details when reminiscing with their children about past shared events. We hypothesized that the indirect effect of maternal AMS to child AMS through maternal sensitive guidance would be significant when including pathways linking maternal AMS to child AMS through maternal elaboration within the same model.

### **AMS and reminiscing in the context of maltreatment**

Within the developmental psychopathology framework, the integration of normative and atypical developmental processes is emphasized (Cicchetti, 1984). The current study contributes to the developmental psychopathology model of OGM (Valentino, 2011) by extending previous evidence of intergenerational transmission of maternal AMS to child AMS through maternal reminiscing among a high-functioning sample (Jobson et al., 2018) into the context of at-risk and maltreating families. Expanding this research to maltreating families may provide further insight into these associations by allowing examination of a greater range of variability in maternal reminiscing, the constructs that may underlie these styles, and children's AMS. Maltreatment, which has been called a pathogenic relational experience (Cicchetti & Valentino, 2006), is a relevant context in which to investigate these associations because it puts parent-child dyads at risk for communication deficits that may manifest in reminiscing conversations (Salmon & Reese, 2015) and imparts vulnerability for reduced AMS in children (Lawson et al., 2020; Valentino et al., 2009). For example, research from the current study's sample has shown that maltreating mothers engage in less sensitive and elaborative reminiscing in comparison with nonmaltreating mothers (Valentino et al., 2019) and that maltreated children, in particular neglected children, have reduced AMS as a consequence of impoverished maternal reminiscing (Lawson et al., 2020).

Furthermore, outside of the reminiscing context, other research groups have demonstrated that maltreating mothers are less likely to discuss the causes and consequences of emotions with their children compared with nonmaltreating mothers (Shipman & Zeman, 1999). Maltreating mothers also tend to have difficulties with emotional expression (Shackman et al., 2010), provide fewer effective coping strategies to help their children manage their emotions (Shipman & Zeman, 2001), and offer more invalidation in response to their children's emotions (Shipman et al., 2007). Considering the emotional salience of the reminiscing task, these difficulties may manifest in low levels of sensitive guidance, particularly in terms of maternal acceptance and ability to resolve negative emotions. Thus, maltreating dyads are an important sample in which to investigate associations among maternal AMS, reminiscing, and children's AMS given their risk for low levels of both sensitive guidance and children's AMS.

### **Hypotheses**

We hypothesized that maternal AMS would be positively associated with maternal sensitive guidance and child AMS. We expected that these associations would be significant while controlling for the contributions of neglect and other maltreatment subtypes. Second, we hypothesized that maternal AMS would be indirectly associated with child AMS through maternal sensitive guidance. This pathway was expected to be significant when including

maternal elaboration as a parallel mediator within the same model and when including potential pathways between neglect and other forms of maltreatment to children's AMS through the sensitive guidance and elaboration of maternal reminiscing.

## Method

### Participants

Participants in this study included 165 maltreating and 83 nonmaltreating mothers along with their 3- to 6-year-old children ( $M_{age} = 4.90$  years,  $SD = 1.14$ ). These participants were drawn from an ongoing longitudinal randomized controlled trial intervention occurring in a mid-sized city in the midwestern United States. Only baseline assessment data were used in the current study because the intervention was designed to enhance maternal sensitive guidance during reminiscing, our main process variable, after the baseline assessment. Maltreating dyads were recruited through the Department of Child Services (DCS) and had substantiated child maltreatment. DCS family case workers presented a verbal script and an informational flyer about the study to eligible mother-child dyads. Interested mothers gave their contact information and were later contacted and enrolled by the research staff upon verifying that families met the following inclusion criteria: Dyads were primarily English speaking, the child was 3–6 years old, maltreating dyads had been involved with DCS and the mother was identified as the perpetrator of at least one instance of maltreatment, and nonmaltreating dyads had no previous involvement with DCS. Nonmaltreating families were recruited from locations within the community that serve a similar demographic population as those mothers who were identified as maltreating such as the Special Supplemental Nutrition Program for Women, Infants, and Children office, Head Start, and the housing authority.

### Procedure

Before participating in the study, all mothers provided informed consent and signed release forms allowing the research staff to access their DCS records. Maltreating/nonmaltreating status and, for maltreating mothers, subtypes of maltreatment were identified and verified through DCS case record examination and maternal interviews. Thus, all incidences of maltreatment occurred prior to our assessments. As part of the longitudinal study, dyads completed a 2-h baseline assessment battery in the laboratory, including assessments of maternal AMS, child AMS, and mother-child reminiscing. In addition, maternal depressive symptomatology was assessed via a self-report questionnaire; however, maternal depressive symptoms did not significantly predict our primary study variables, so we chose not to add this variable to our model. The research staff who administered the assessments to the mothers and children were naive to maltreatment status. At the end of the study, mothers and children were debriefed and compensated.

### Measures and coding

**Maltreatment subtype**—The Maltreatment Classification System (MCS; Barnett, Manly, & Cicchetti, 1993) was used to code DCS records for maltreating families. Records were coded for the occurrence of sexual abuse, physical abuse, physical neglect, emotional maltreatment, and moral-legal or educational maltreatment. *Sexual abuse* was coded given

attempted or actual sexual contact between the child and an adult. *Physical abuse* was coded when the child sustained nonaccidental injuries from an adult. *Physical neglect* was coded if the child's basic needs for food, clothing, shelter, health care, hygiene, or safety were not met. *Emotional maltreatment* was coded when the child experienced chronic or extreme neglect or disregard for his or her emotional needs. Finally, *moral-legal or educational (MLE) maltreatment* was coded if caregivers exposed or encouraged the child to engage in illegal activities or if the child did not receive age-appropriate education.

For the purpose of this study, maltreating dyads were classified as *neglecting* if DCS records indicated the occurrence of physical neglect or MLE regardless of any comorbid incidences of sexual abuse, physical abuse, or emotional maltreatment against the child (for similar classification, see Kinard, 2004; Manly, Kim, Rogosch, & Cicchetti, 2001; Smith, Ireland, & Thornberry, 2005). Children who did not experience physical neglect or MLE but experienced sexual abuse, physical abuse, or emotional maltreatment were classified as *abuse/emotional maltreating* to serve as a control variable in analyses because neglect (vs. other maltreatment subtypes) has been observed to drive low maternal sensitive guidance and children's reduced AMS in previous publications with the current dataset (Lawson et al., 2020). Reliability was established by double coding 19% ( $n = 32$ ) of the maltreating sample's DCS records ( $\kappa = .81-1.00$ ). Three maltreating dyads with incomplete or missing MCS data were not categorized and were dropped from all analyses. In total, 130 dyads were classified as neglecting and 32 dyads were classified as abuse/emotional maltreating.

**Autobiographical memory specificity**—The AMT (Williams & Broadbent, 1986) was used to assess maternal AMS. Researchers presented mothers orally and visually with five positive and five negative emotion cue words in a fixed order: happy, sorry, safe, angry, interested, clumsy, successful, hurt, surprised, lonely. The Autobiographical Memory Test-Preschool Version (AMT-PV; Nuttall, Valentino, Comas, McNeill, & Stey, 2014) assessed child AMS. The AMT-PV is unique in that its five positive and five negative emotion cue words are adapted to be age appropriate for preschoolers: happy, mad, surprised, sad, lucky, scared, strong, tired, smart, hungry. Both mothers and children were instructed by researchers to “Tell me one time you felt \_\_\_\_.” If an initial response to this prompt was not adequately specific (see criteria below), researchers prompted, “Tell me *one* time you felt \_\_\_\_.” The AMT and AMT-PV were audiotaped and transcribed verbatim.

Initial response to the emotion cue was coded as either specific or overgeneral according to whether the memory was a one-time occurrence lasting for a day or less. The number of specific memories provided for the 10 emotion cues were summed to create a composite variable for AMS such that specificity could range from 0 to 10. This coding procedure is standard in the literature (e.g., Johnson, Greenhoot, Glisky, & McCloskey, 2005; Valentino et al., 2009; Williams & Broadbent, 1986). Reliability for maternal AMS was assessed by double coding 20% ( $n = 50$ ) of the transcripts; reliability was established using Cohen's kappa ( $M_{\kappa} = .80$ ). Similarly, 21% ( $n = 51$ ) of the children's transcripts were double coded to establish reliability ( $M_{\kappa} = .84$ ).

**Maternal reminiscing**—Mothers identified four one-time past emotional events experienced by the mothers and children together in which the children felt happy, sad,

scared, and angry (Koren-Karie et al., 2003). The emotion words and events were written on index cards before the task began and were used by mothers as cues during the reminiscing portion of the task. Mothers were instructed to discuss the events with their children as they normally would at home in private rooms without researchers present. This task was videotaped and transcribed verbatim.

Maternal sensitive guidance was coded directly from the videotapes. A composite score was created by averaging the following seven criteria, each of which was coded on a 9-point Likert scale with higher scores indicating more of the given behavior: (a) shift of focus (i.e., how focused the mother was on completing the task), (b) acceptance and tolerance (i.e., how accepting and encouraging or impatient and critical the mother was of her child's contributions to the conversation), (c) involvement and reciprocity (i.e., how engaged the mother was throughout the conversation), (d) closure of negative feelings (i.e., how the mother handled negative emotions, emphasizing negative aspects or working to resolve the story and end it on a positive note), (e) structuring (i.e., how well the mother guided the process of creating the four stories), (f) overall adequacy of the stories (i.e., how accurately the stories matched the emotion cue), and (g) overall coherence of the stories (i.e., how clear the stories were). This coding scheme is based on the Autobiographical Emotional Events Dialogue (AEED; Koren-Karie et al., 2003) coding manual. Interrater reliability was assessed by double coding 20% ( $n = 50$ ) of the videotapes, with intraclass correlation coefficients for individual subscales ranging from .71 to .93. The sensitive guidance composite had adequate internal consistency ( $\alpha = .89$ ).

Maternal elaboration was coded from the transcriptions according to a frequency-based scheme in which each utterance (subject–verb preposition) was coded for the presence of (a) maternal elaborations (i.e., statements or questions that add new information about the event), (b) maternal confirmations of child contributions (i.e., positive affirmations of the child's memory), (c) maternal “wh”-questions (i.e., open-ended questions), and (d) maternal yes/no questions (i.e., closed-ended questions). This coding procedure is common in the literature (Fivush & Sales, 2006; Valentino et al., 2015; Van Bergen, Salmon, Dadds, & Allen, 2009). We created separate variables for these four elements and then square root transformed each to alleviate positive skew ( $z_{\text{skew}} = 6.65\text{--}15.25$ ,  $ps < .05$ ). The composite score used in subsequent analyses was calculated by summing the transformed variables across the four emotion events. Interrater reliability was assessed by double coding 20% ( $n = 50$ ) of the transcripts, with intraclass correlation coefficients for individual categories ranging from .74 to .99. The elaboration composite had adequate internal consistency ( $\alpha = .70$ ).

**Receptive language**—The Peabody Picture Vocabulary Test–Fourth Edition (PPVT-4; Dunn & Dunn, 2007) was administered to assess receptive language in mothers and children. This measure is an individually administered and norm-referenced test designed for individuals aged 2–90 years. Reported split-half reliabilities of the PPVT-4 are good to excellent, ranging from .89 to .97 for different age groups, and test-retest reliability ranges from .92 to .96, indicating that the PPVT-4 performance is highly stable over time (Dunn & Dunn, 2013). The PPVT-4 was administered to identify mothers with low language abilities and to control for children's language abilities on their AMS.



**Analytic strategy**—In addition to the 3 maltreating dyads dropped due to missing MCS data, mothers who scored 2 standard deviations below the sample mean on the PPVT-4 ( $M = 84.95$ ,  $SD = 12.72$ ) were excluded; thus, 5 dyads (all neglecting) with mothers scoring below 60 were dropped. Previous investigations (e.g., Lawson et al., 2020; McDonnell, Valentino, Comas, & Nuttall, 2016) have used this standard to minimize the influence of low maternal language skill on reminiscing and autobiographical memory tasks because low PPVT-4 scores may be indicative of intellectual disabilities (Bell, Lassiter, Matthews, & Hutchinson, 2001). An additional 9 dyads (2 neglecting, 2 abuse/emotional maltreating, and 5 nonmaltreating) were excluded: 1 because the baseline video of reminiscing was not available, 1 because reminiscing occurred in Spanish, 1 because only the “happy” memory was discussed during reminiscing, 4 because baseline audio recordings of the maternal AMT were unavailable, 1 because of experimenter error during maternal AMT administration, and 1 because the child AMT was not administered. In total, 17 participants (3 maltreating dyads missing DCS data, 7 neglecting, 2 abuse/emotional maltreating, and 5 nonmaltreating) were dropped from the original sample, resulting in a final sample of 123 neglecting, 30 abuse/emotional maltreating, and 78 nonmaltreating dyads used in analyses. Demographic characteristics of the sample by group (neglecting, abuse/emotional maltreating, or nonmaltreating) are presented in Table 1.

Independent-samples  $t$  tests and chi-square tests of independence were performed using demographic variables to examine whether the three groups were matched on demographic characteristics. Neglecting, abuse/emotional maltreating, and nonmaltreating dyads were matched on all demographic variables except maternal ethnicity,  $\chi^2(4) = 10.40$ ,  $p < .05$ , and child language,  $F(2, 225) = 13.13$ ,  $p < .001$ . Post hoc Bonferroni-corrected comparisons revealed that nonmaltreated children had significantly higher language scores than neglected children ( $p < .001$ ). Maternal ethnicity was not significantly correlated with any of the primary study variables, but child language was significantly correlated with maternal sensitive guidance ( $r = .27$ ,  $p < .001$ ), maternal elaboration ( $r = .30$ ,  $p < .001$ ), and child AMS ( $r = .37$ ,  $p < .001$ ). Child language was included in subsequent analyses as a covariate on child AMS, but not on maternal sensitive guidance, because children’s language abilities are understood to be an outcome of maternal reminiscing style (Valentino et al., 2015; Waters et al., 2019). In addition, child age was covaried on maternal sensitive guidance and child AMS because both maternal sensitive guidance ( $r = .14$ ,  $p < .05$ ) and child AMS ( $r = .43$ ,  $p < .001$ ) were correlated with child age.

## Results

### Descriptive analyses

Preliminary descriptive analyses were conducted in SPSS Version 26 (IBM Corp., Armonk, NY, USA). Means, standard deviations, and correlations among the primary study variables are presented in Table 2. Maternal AMS was significantly and positively correlated with maternal sensitive guidance ( $r = .14$ ,  $p < .05$ ), whereas maternal AMS was not significantly correlated with maternal elaboration during reminiscing. In addition, maternal sensitive guidance was significantly and positively correlated with child AMS ( $r = .27$ ,  $p < .01$ ).

## Main analyses

All hypotheses were investigated using a single structural equation model in Mplus Version 8 (Muthén & Muthén, 2017). PPVT-4 data were missing for 5 children, and full information maximum likelihood estimation was used to handle these missing data. Indirect effects were examined using the bias-corrected bootstrap method suggested by MacKinnon, Lockwood, and Williams (2004) with 1000 resamples to construct 95% confidence intervals (CIs) around the product coefficients of the indirect effects. Intervals containing 0 were considered nonsignificant. This method is ideal in small to moderately sized samples and uses resampling that makes fewer assumptions about the distribution of the indirect effect (Shrout & Bolger, 2002). To control for previously published effects of neglect on child AMS through sensitive guidance in the current sample (Lawson et al., 2020), the indirect effect of neglect and abuse/emotional maltreatment on child AMS via sensitive guidance and via elaboration were also included in this model. Child age was included as a covariate on maternal sensitive guidance and elaboration, and child age and child language were included as covariates on child AMS. The model was fully saturated. Unstandardized coefficient values are presented in the text, and standardized coefficients are presented in Fig. 1. Standardized 95% CIs are presented for indirect effects.

Our first hypothesis with regard to maternal AMS as a predictor of maternal sensitive guidance during reminiscing and child AMS was partially supported. Maternal AMS was positively associated with maternal sensitive guidance ( $b = 0.074$ ,  $SE = 0.029$ ,  $p < .05$ ), but the direct effect of maternal AMS on child AMS was not significant ( $b = 0.003$ ,  $SE = 0.079$ ,  $p = .969$ ). In addition, maternal AMS was not significantly associated with maternal elaboration during reminiscing ( $b = 0.047$ ,  $SE = 0.120$ ,  $p = .694$ ). Our second hypothesis concerned the indirect effect of maternal AMS on child AMS through maternal sensitive guidance during reminiscing. As hypothesized, maternal AMS was indirectly associated with child AMS through maternal sensitive guidance (95% CI [0.002, 0.049]). This pathway was significant while controlling for the significant indirect pathway between neglect on child AMS through maternal sensitive guidance in the same model (95% CI [-0.062, -0.001]). The indirect effects of maternal AMS on child AMS through elaboration (95% CI [-0.006, 0.025]) and neglect on child AMS through elaboration (95% CI [-0.046, 0.017]) were not significant. No specific hypotheses were made in regard to abuse/emotional maltreatment as a predictor because its purpose was to serve as a control variable. Abuse/emotional maltreatment was not significantly associated with maternal sensitive guidance ( $b = -0.229$ ,  $SE = 0.221$ ,  $p = .300$ ), maternal elaboration ( $b = -1.203$ ,  $SE = 0.813$ ,  $p = .139$ ), or child AMS ( $b = 0.329$ ,  $SE = 0.610$ ,  $p = .590$ ). Abuse/emotional maltreatment was not indirectly associated with child AMS through either maternal sensitive guidance (95% CI [-0.044, 0.005]) or elaboration (95% CI [-0.035, 0.009]).

## Discussion

The current study investigated associations among maternal memory specificity, maternal reminiscing style, and child memory specificity in a high-risk sample of maltreating and nonmaltreating families. Based on the developmental psychopathology model of OGM (Valentino, 2011), we tested a model examining the influence of maternal AMS on child

AMS through two dimensions of maternal reminiscing style (i.e., sensitive guidance and elaboration) while controlling for parallel pathways between neglect and abuse/emotional maltreatment and child AMS. Uniting evidence that maternal AMS is indirectly associated with child AMS through maternal sensitive guidance in typically developing dyads (Jobson et al., 2018) with previous evidence from the current study's sample that neglect is a risk factor for impoverished maternal reminiscing and reduced AMS in children (Lawson et al., 2020), this investigation demonstrates that maternal AMS explains variance in sensitive guidance and child AMS in the context of maltreatment. Moreover, this study advances the understanding of mechanisms underlying maternal reminiscing style by examining maternal AMS as a predictor of reminiscing in a low-socioeconomic-status and racially diverse sample.

As hypothesized, we observed a small indirect effect of maternal AMS on child AMS through maternal sensitive guidance during reminiscing, providing evidence for a potential intergenerational transmission of AMS. Notably, this indirect effect was significant while accounting for previously documented associations among neglect, maternal reminiscing style, and child AMS in the current sample (Lawson et al., 2020). Maternal AMS was positively associated with maternal sensitive guidance during reminiscing, indicating that the more specific autobiographical memories a mother retrieved in an independent context, the higher her sensitive guidance. These findings replicate Jobson et al.'s (2018) findings from a sample of middle-class, predominantly Caucasian dyads in a low-socioeconomic-status and racially diverse sample and provide initial empirical evidence that these associations exist in the context of maltreatment, a risk factor that has been previously found in this sample to be associated with maternal reminiscing difficulties and children's reduced AMS (Lawson et al., 2020).

Given that the reminiscing task requires mothers to retrieve and discuss specific emotionally salient events with their children—a task that is similar to the AMT—it is possible that maternal specificity may enable mothers to reminisce with high levels of sensitive guidance. Similarly, maternal overgenerality may give rise to difficulties with sensitive guidance. Reminiscing is demanding, particularly with preschool-aged children who require scaffolding to encourage their engagement, and the relative accessibility of specific memories may be a useful tool as mothers attempt to sensitively guide the conversations. Sensitive guidance captures several maternal behaviors and characteristics of the reminiscing—focus, acceptance, involvement, resolution of negative feelings, structuring of the interaction, and the overall adequacy and coherence of the narrative—that may be aided by specificity or impaired by overgenerality. For instance, a mother might retrieve specific details about the event to progress the conversation when necessary (i.e., demonstrating appropriate structuring and involvement) or to remind the child of positive endings to the negative emotion memories. On the other hand, OGM may make it challenging for mothers to exhibit these scaffolding behaviors and ensure that adequate and coherent narratives are co-created.

Furthermore, it is notable that whereas maternal AMS was significantly associated with maternal sensitive guidance, it was not significantly associated with maternal elaboration during reminiscing. This pattern of results replicates that found by Jobson et al. (2018) and

provides support for the notion that success or difficulty with retrieving specific memories is more relevant for maternal reminiscing style in terms of sensitive guidance than it is for maternal elaboration. One possible explanation for this finding is that difficulty with emotional content, reflected in OGM as difficulty in retrieving emotional memories, is more likely to be captured by sensitive guidance than by elaboration. Sensitive guidance measures a mother's ability to help her child resolve negative emotions, a feat that requires direct engagement with specific details of emotionally salient memories. On the other hand, elaboration is a frequency code and does not take into account the degree to which emotions are discussed; thus, elaboration might not capture underlying difficulty in conversing about emotions. In addition, maternal AMS may enable mothers to use their own memory of specific details to provide structure when children need scaffolding, and this is captured in our measure of sensitive guidance.

Consistent with past research (Jobson et al., 2018; Valentino et al., 2014), including previous reports using this sample (Lawson et al., 2020), maternal sensitive guidance was positively associated with child AMS, whereas maternal elaboration was not significantly associated with child AMS. These findings provide additional support for the developmental psychopathology model of OGM's hypothesis that maternal reminiscing style, in particular maternal sensitive guidance, facilitates the emergence of children's memory specificity (Valentino, 2011). Mothers who are highly sensitive as they reminisce with their children may be aiding their children's understanding of and engagement with emotional memories in such a way that supports the integration of these memories into children's autobiographies, enabling children to retrieve specific emotional autobiographical memories in independent contexts. Although maternal elaboration may help to structure and elicit children's participation in the past event discussion, it might not help children to make sense of their emotional memories in a way that facilitates later independent retrieval.

In addition to finding evidence of an intergenerational transmission of AMS, neglect was negatively associated with both maternal sensitive guidance and elaboration during reminiscing; furthermore, we observed an indirect effect of neglect on reduced AMS in children through impoverished maternal sensitive guidance. These results are in accordance with previous findings from this study's dataset demonstrating that neglected preschoolers (vs. abused, emotionally maltreated, and nonmaltreated preschoolers) were at risk for overgenerality and that when examining neglected versus nonmaltreating families, AMS in neglected children was explained by maternal elaboration in the context of high maternal sensitive guidance (Lawson et al., 2020). Expanding beyond this previous study, these results represent a larger sample that includes dyads with abuse/emotional maltreatment as well as demographically similar nonmaltreating dyads. Including these additional dyads and incorporating abuse/emotional maltreatment as a control in the model provides further support for the notion that neglecting mother-child dyads are at distinct risk for deficits in maternal sensitive guidance and reduced child AMS.

Meta-analytic findings by Wilson, Rack, Shi, and Norris (2008) showed parental lack of involvement during parent-child interactions better distinguishes neglecting parents from nonmaltreating parents than it distinguishes physically abusive parents from nonmaltreating parents, indicating that neglecting parents are at particular risk for low involvement. Notably,

involvement is one component of maternal sensitive guidance; thus, neglecting mothers who demonstrate low involvement in reminiscing may correspondingly receive low ratings of sensitive guidance. Furthermore, whereas physical abuse, sexual abuse, and emotional maltreatment involve the commission of inappropriate behaviors, neglect has been conceptualized as the omission of appropriate caregiving behaviors (Schumacher, Slep, & Heyman, 2001). Hence, neglecting mothers may be especially likely to have difficulties with engaging in appropriate sensitive guidance behaviors during reminiscing such as showing acceptance of their children's contributions and providing adequate structure in response to their children's needs. Although neglect is the most prevalent form of child maltreatment in the United States (U.S. Department of Health and Human Services, 2019), it is understudied relative to other subtypes of maltreatment (Schumacher et al., 2001); thus, these findings draw attention to the need for research on the parenting behaviors of neglecting parents in the context of reminiscing and more broadly. That our preliminary analyses showed that neglected children had significantly lower receptive language scores than nonmaltreated children further indicates the need for research to explore associations between the perpetration of neglect, reminiscing, and children's language development.

In the context of robust literatures that have demonstrated the clinical significance of OGM and the importance of mother-child reminiscing for children's cognitive and socioemotional development (e.g., Fivush et al., 2006; Moore & Zoellner, 2007; Waters et al., 2019), these findings provide further evidence that maternal reminiscing style—particularly maternal sensitive guidance—is an important target for intervention programs for maltreating families (Valentino et al., 2019). Accordingly, reminiscing-based interventions have emerged as a means of improving maternal sensitive guidance in at-risk samples such as maltreating families (Valentino et al., 2019).

Still, there is a critical need for research to continue exploring what processes underlie individual differences in maternal reminiscing style both to improve the field's etiological understanding of maternal reminiscing styles and because the identification of underlying mechanisms has the potential to enhance reminiscing-based interventions. For instance, the current study and research by Jobson et al. (2018) indicate that maternal AMS may be a relevant factor in predicting maternal sensitive guidance during reminiscing. Thus, extant reminiscing-based interventions meant to improve maternal sensitive guidance might consider including a supplemental training component to enhance mothers' abilities to retrieve specific autobiographical memories (Barry, Sze, & Raes, 2019; Raes, Williams, & Hermans, 2009). Researchers should consider the role that such training may play in enhancing outcomes associated with reminiscing interventions.

There are several limitations to this study. First, our investigation was cross-sectional, and consequently we are unable to draw conclusions about causality or the directionality of the associations. Future research can address this limitation by assessing potential longitudinal associations among maternal AMS, reminiscing style, and child AMS. Second, our study exclusively examined maternal reminiscing in a mid-sized city in the midwestern United States. Similarly, although the current study's sample was representative of the local community in terms of ethnicity, it was nonetheless skewed toward African American and Caucasian mother-child dyads. Reminiscing may manifest differently with other caregivers

or in other geographic or cultural contexts; thus, there is a need for future research to explore whether these associations emerge with other caregivers and in other contexts. Finally, our sample had a low frequency of physical and sexual abuse, and we did not consider severity or developmental timing of maltreatment in these analyses. Future research should address how these factors, as well as the comorbidity of multiple subtypes of maltreatment, may affect these associations.

Our study also had distinct strengths. Foremost among these was our unique sample. The sensitive nature of maltreatment makes it a challenging phenomenon on which to gather data, and many extant studies determine maltreatment incidence through retrospective self-report data. Our recruitment method through the DCS allowed us to research dyads with substantiated and relatively recent cases. In addition, the current study expanded autobiographical memory and reminiscing research to maltreating and high-risk nonmaltreating dyads that have historically been understudied. Lastly, our large sample size gave us adequate power for analyses.

In conclusion, this investigation found support for an intergenerational transmission of memory specificity via maternal sensitive guidance during reminiscing in the context of maltreatment. Future research should continue to explore processes underlying reminiscing style to advance our understanding of why caregivers reminisce the way they do and how reminiscing styles influence children's memory specificity. This research will be especially important to improve existing reminiscing interventions and provide support to vulnerable mothers and children.

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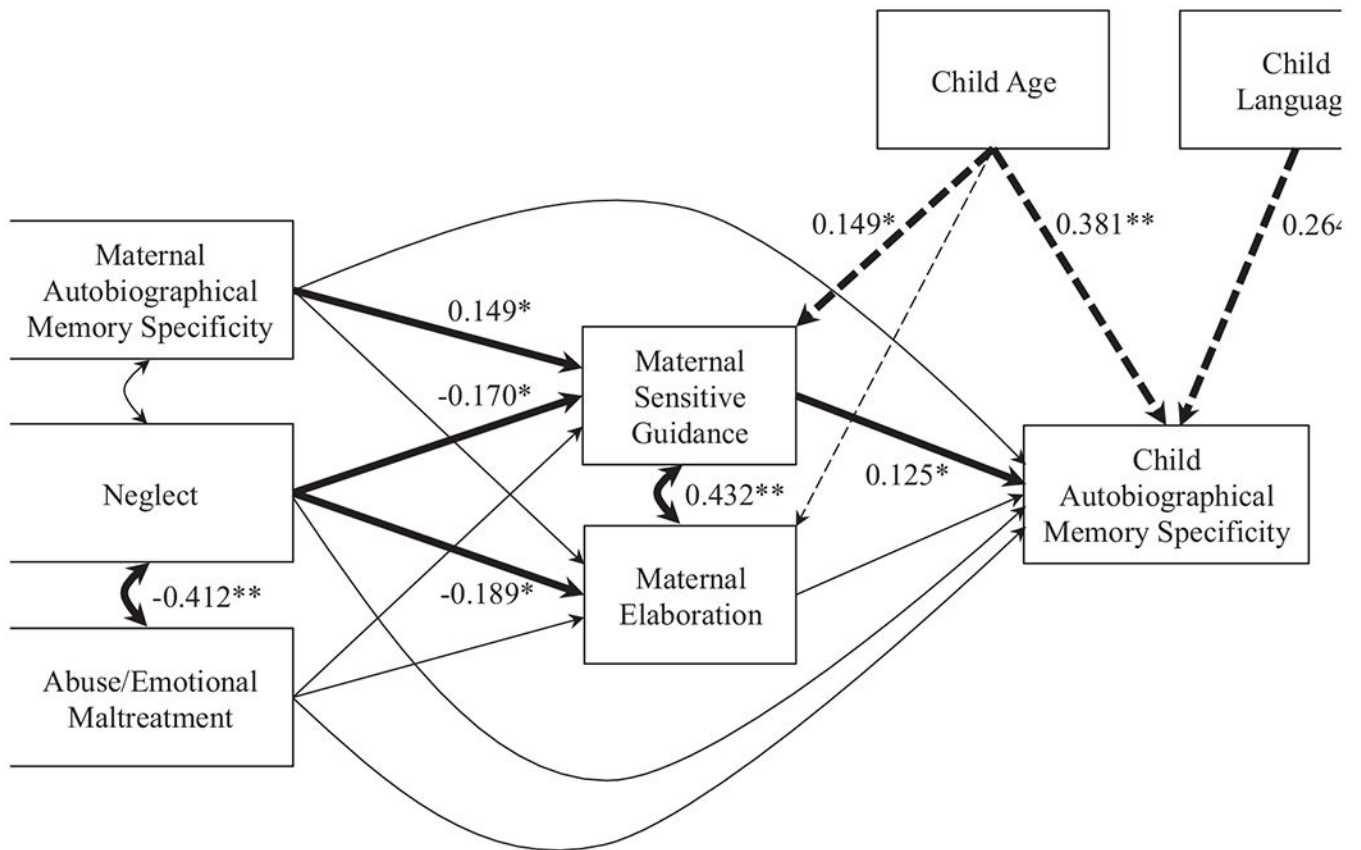
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**Fig. 1.** Path analysis model. Path coefficients are standardized. Dashed lines indicate associations with control variables. Bolded lines indicate significant associations. \* $p < .05$ ; \*\* $p < .01$ .

**Table 1**

Mother and child demographic characteristics.

Variable	Neglecting ( <i>n</i> = 123)		Abuse/emotional maltreating ( <i>n</i> = 30)		Nonmaltreating ( <i>n</i> = 78)		<i>F</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
1. Maternal age	29.54	4.86	30.55	7.21	30.21	6.86	0.52
2. Child age	4.94	1.12	4.97	1.25	4.89	1.12	0.07
3. Maternal language (PPVT-4)	85.67	11.45	85.20	12.14	86.87	12.33	0.32
4. Child language (PPVT-4)	86.35	15.80	91.70	14.35	97.69	14.40	13.13 <sup>*</sup>
	%	%	%	%	%	%	$\chi^2$
5. Child gender							0.78
Male	52.0		43.3		48.7		
6. Maternal ethnicity							10.40 <sup>*</sup>
African American	36.6		50.0		39.7		
Caucasian	49.6		26.7		33.3		
Hispanic/other	13.8		23.3		26.9		
7. Maternal education							14.32
Some high school or less	37.4		13.3		23.1		
High school/GED	32.5		40.0		26.9		
Some trade school/college	21.1		33.3		32.1		
Completed trade school/college	8.1		13.3		15.4		
Master's degree	0.8		0.0		2.6		
8. Family income							4.47
<\$12,000	54.5		73.3		51.3		
9. Marital status							4.05
Single	51.2		63.3		42.3		

Note. PPVT-4, Peabody Picture Vocabulary Test–Fourth Edition; GED, general educational development.

\*  $p < .001$ .

**Table 2**

Correlation matrix of primary study variables.

Variable	1	2	3	4	<i>M</i> ( <i>SD</i> )	Range
1. Maternal AMS	–				6.14 (2.05)	0–10
2. Sensitive Guidance	.14 <sup>*</sup>	–			5.08 (1.01)	1.86–7.71
3. Elaboration	.03	.44 <sup>**</sup>	–		11.16 (3.51)	2.73–22.85
4. Child AMS	.00	.27 <sup>**</sup>	.18 <sup>**</sup>	–	3.77 (3.13)	0–10

Note. *N* = 231. AMS, autobiographical memory specificity.

\*  $p < .05$ .

\*\*  $p < .01$ .