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# Infant Behavior and Development



## Sticking out and fitting in: Culture-specific predictors of 3-year-olds' autobiographical memories during joint reminiscing

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### ABSTRACT

The present study investigates the relationship between mother–child interaction styles with 19 months and children's autobiographical memory with 3 years of age in two cultural contexts: New Delhi, India ( $n = 25$ ) and Berlin, Germany ( $n = 33$ ). Results demonstrate similarities as well as culture specificities. In both contexts, maternal elaborations during reminiscing were related to children's memory contributions. Over time, maternal support for toddlers' self-expression during free play at 19 months predicted their children's memory elaborations at 3 years in the Berlin context. In the Delhi context, toddlers' willingness to carry out their mothers' requests at 19 months predicted their memory elaborations at 3 years. These results suggest different motivational bases underlying children's autobiographical memory contributions during mother–child reminiscing related to different cultural orientations.

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There is increasing consensus that there are culture-specific solutions to universal developmental tasks (e.g., Greenfield, Keller, Fuligni, & Maynard, 2003; Weisner, 2002). Developmental tasks, as pan-cultural themes that humans have to solve, have evolved due to adaptive challenges that our ancestors faced (Keller, 2007). In the present study we investigated the socialization process of children's autobiographical memory development across different cultural contexts varying in their emphasis on autonomy and relatedness. Autobiographical memory is an episodic memory system that contains memories of past events, which are specific, of personal significance, and remembered over the lifespan (Nelson, 1993). This memory system emerges during the second and third year of life when children start to talk about their personal past. Recalling personal past experiences is socialized during joint reminiscing among children and socialization agents (Nelson & Fivush, 2004; Pillemer & White, 1989), which has mainly been studied with mothers (e.g., Fivush, Haden, & Resse, 2006 for a review).

Studies revealed that the way in which mothers engage in joint reminiscing with their children varies among mothers. The maternal *reminiscing style* captures the way in which mothers structure past event conversations with their children (e.g., Fivush & Fromhoff, 1988; Reese & Fivush, 1993). Distinct variation in the reminiscing style has been revealed for mothers' elaborativeness (see Fivush et al., 2006). Mothers that are highly elaborative provide richly embellished input during conversations; they ask many questions (mostly open-ended), and give regular feedback (mostly positive) to children's contributions. Furthermore, among other variables (e.g., evaluations or repetitions) maternal elaborativeness has been shown to be the best predictor for children's provision of memory information during mother–child conversations about past events concurrently (Fivush & Fromhoff, 1988; Reese, Haden, & Fivush, 1993) as well as longitudinally (e.g., Farrant & Reese, 2000; Wang, 2007).

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Studies also show differences across cultures in the maternal reminiscing style: European and Euro-American middle-class mothers predominantly adopt a high-elaborative style, whereas mothers from non-Western, low-educated, rural contexts (e.g., from Cameroon and India) but also Chinese urban middle-class families are less elaborative (e.g., Schröder et al., *in press*; Wang, 2007). Consequently, children from urban Euro-American and European middle-class families – with mothers adopting a high elaborative style – contribute more memory elaborations during conversations than children from families of contexts whose mothers adopt a less elaborative style, e.g., Asian middle-class families and rural African contexts (Leichtman, Wang, & Pillemer, 2003; Schröder et al., *in press*; Wang, 2001, 2006, 2007; Wang, Leichtman, & Davies, 2000).

These cross-cultural differences in mother–child reminiscing have been related to different conceptualizations of cultural orientations, i.e., the concepts of autonomy and relatedness (e.g., Kağitçibaşı, 2007; Keller, 2007) and the concepts of independence and interdependence (Markus & Kitayama, 1991). Specifically, maternal elaborativeness has been interpreted as indicating different socialization goals and expectations during joint reminiscing that are associated with the different cultural orientations (e.g., Fivush & Haden, 2003; Schröder et al., *in press*): mothers being highly elaborative (e.g., from American and European middle-class families) create a detailed and personally unique past narratives with their children. They encourage the child to participate in the conversation by asking many elaborative questions (e.g., Farrant & Reese, 2000) and the child is treated as a quasi-equal interlocutor. By doing so, mothers may foster children's individual opinion formation related to the socialization goal to encourage the development of a distinguished self-concept, i.e., psychological autonomy/independence. In contrast, less elaborative conversations of mothers from some non-Western contexts mirror an expert-novice relationship with the child rather being an active listener. Mothers of these sociocultural contexts may foster children's compliance related to the socialization goal to encourage the development of a hierarchical adapted self-concept; i.e., relational adaptation/interdependence (e.g., Wang, 2007).

However, results from other cultural contexts show variety and heterogeneity in maternal elaborative reminiscing and children's memory across different relational cultural contexts: Mothers from South- and Central-American contexts were, for example, similarly elaborative as European and Euro-American families and children consequently did not differ in their memory contributions (Melzi, 2000; Melzi, Schick, & Kennedy, 2011). Another study demonstrates, however, that children of mothers from Tallinn, Estonia contribute as many memory elaborations as mothers from European middle-class families although their mothers are overall less elaborative (Tõugu, Tulviste, Schröder, Keller, & De Geer, 2011). Similarly, this has been demonstrated for Maori families from New Zealand (Reese, Hayne, & MacDonald, 2008).

Thus, culture-specific socialization patterns in general and reminiscing patterns more specifically, might lead to quantitative differences but also qualitative differences. More specifically, it might be the case that it is children's motivation to contribute memory elaborations during joint reminiscing that differs across sociocultural contexts: in autonomy-oriented cultural contexts, children might participate and contribute during reminiscing in order to express themselves and their own opinions. In more relatedness-oriented cultural contexts, children might participate in joint reminiscing in order to meet the mother's expectations when being asked a question. Thus, joint reminiscing aims at *sticking out* in the autonomy-oriented cultural contexts while the aim is *fitting in* relatedness-oriented cultural contexts (Markus & Kitayama, 1991). More broadly, Kitayama and Uchida (2005) speak of different motivational "systems of action" (p. 138). They argue that the motivation of independent agency is anchored by sets of meanings referring to the "needs of the self"; whereas motivation of interdependent agency is referring to the "needs of significant others" (e.g., parents). Thus, during joint reminiscing, children's memory contributions might be motivated by *self-realization* versus *meeting other's expectations* in different cultural contexts.

More generally, we propose that these different types of agency are socialized from infancy onwards and result in different developmental pathways. From birth on, cultures differ in the degree to which caregivers are responsive to infants' communicative signals and in the degree to which infants are expected to be responsive to caregivers' signals. In prototypical autonomous contexts the emphasis lies on the former, namely on *maternal responsiveness*. In contrast, in more relational sociocultural contexts the emphasis lies on the latter, namely *children's responsiveness*.

During infancy, mothers of autonomous contexts interact with their three-month olds by creating a turn-taking communication pattern in which the mother takes up (responds to) the infant's vocal signals. In contrast, interactions in relational contexts mirror a rhythmic unity between mother and infant, in which mothers actively structure and control the infants' behavior (e.g., Demuth, Keller, & Yovsi, 2012; Keller et al., 2007). Accordingly, mothers show longer episodes of synchronous communication (Keller, Otto, Lamm, Yovsi, & Kärtner, 2008) and have higher scores for responsive control that is characterized by monitoring, instructing, training and directing the infant's activities (Yovsi, Kärtner, Keller, & Lohaus, 2009) than mothers in autonomous cultural contexts. During toddlerhood, play interactions in autonomous contexts are characterized by children's play initiatives, which are followed-up by the mother. In relational contexts, play interactions are characterized by maternal play initiatives which are followed-up by the child (Keller, Borke, Chaudhary, Lamm, & Kleis, 2010). Furthermore, toddlers of relational contexts show greater compliance when the mother asks the child to run errands (e.g., bringing or putting away objects; Keller et al., 2004).

Based on these findings we argue that these general interactional emphases on maternal and children's social responsiveness leads to different expectations and motivations during joint reminiscing: a motivation for self-expression in autonomous sociocultural contexts and a motivation to meet others' expectations in more relational sociocultural contexts. Furthermore, we argue that there are ontogenetically earlier characteristics of mother–child interaction that are related to children's reminiscing behavior. These relations might indicate different motivations for children to contribute to conversations. In order to test these assumptions, we assessed maternal and child responsiveness with 19 months of age and mother–child past event conversations when children were three years of age in two distinct cultural contexts: middle-class families from Berlin,

Germany, and Delhi, India. Previous studies demonstrated that middle-class families from Berlin emphasize autonomous socialization goals (i.e., individuality, self-reliance, assertiveness; Keller, 2007) and early mother–child interactions are characterized by exclusive attention and distal interaction strategies in order to foster the child's independence (Keller et al., 2005). This context thus represents the prototypical model of psychological autonomy. In contrast, middle-class families from Delhi emphasize relational socializations goals (i.e., interpersonal responsibility and helpfulness) more strongly compared to autonomous contexts (Keller, 2007; Kärtner, Keller, & Chaudhary, 2010; Miller & Bersoff, 1992). This orientation is also reflected in more proximal interaction styles fostering relational adaptation to a higher degree (Keller, 2007). However, due to urbanization and the high levels of formal education, an emphasis on autonomy is increasing in this context as well (Keller, 2007). Still, and most importantly, mothers of the two samples vary in their emphasis on relational adaptation.

For maternal and child responsiveness, we hypothesized that Delhi toddlers would follow maternal requests more often than Berlin toddlers (see also Keller et al., 2004). In contrast, we expected maternal responsiveness during free play to be higher in mothers from the Berlin sample. Based on previous results, we expected that the reminiscing conversations that mothers from both contexts would either be similarly elaborative or mothers from the Berlin sample to be more elaborative than mothers from the Delhi sample. Accordingly, we expected children from both contexts to either provide a similar amount of memory elaborations or children from the Berlin sample to provide more memory elaborations. Maternal elaborations should be highly correlated with children's memory in both sociocultural contexts (e.g., Reese et al., 1993; Wang, 2007).

Based on our assumption that joint reminiscing is associated with culture-specific motivations concerning children's memory elaborations (*self-realization* versus *meeting other's expectations*), we hypothesized that there are different aspects of mother–child interaction when children are 19-months old that predict 3-year-olds' memory elaborations. More specifically, we hypothesize that children's memory elaborations are predicted by maternal responsiveness in the Berlin sample and by children's responsiveness in the Delhi sample due to mothers in the Delhi context emphasizing relatedness more than mothers in the Berlin context.

## 1. Method

### 1.1. Participants

Participating families came from urban middle-class contexts in Berlin ( $n = 33$ ) and Delhi ( $n = 25$ ). Mothers in the Berlin sample were significantly older ( $M = 33.84$  years,  $SD = 4.20$  years) than were mothers in the Delhi sample ( $M = 28.64$  years,  $SD = 3.09$  years),  $t(55) = 5.19$ ,  $p < .001$ ,  $d = 1.41$ . Mothers from both the Berlin and the Delhi samples had high degrees of formal education and did not differ from each other with regard to their years of formal education (Berlin:  $M = 15.69$  years,  $SD = 3.46$  years; Delhi:  $M = 15.52$  years,  $SD = 1.33$  years),  $t(55) = .23$ ,  $p > .10$ ,  $d = .05$ . With the exception of two Berlin families, the parents from all participating families were living together. In the Berlin sample, the dominant family type was the nuclear family (90.6%), whereas it was the extended family in the Delhi sample (64.0%),  $\chi^2 = 25.28$ ,  $p < .001$ . As a consequence, there were more people living in the Delhi households ( $M = 5.80$  people,  $SD = 2.12$  people) than there were in the Berlin households ( $M = 3.47$  people,  $SD = .76$  people),  $t(55) = 5.77$ ,  $p < .001$ ,  $d = 1.46$ .

In both samples, there were equal numbers of male and female children (Berlin: 50.0% females, Delhi: 44.0% females). At the 19-month assessment, toddlers in the Berlin sample were, on average, 19 months and 2 days old ( $SD = 6.82$  days) and toddlers in the Delhi sample were, on average, 19 months and 6 days old ( $SD = 10.75$  days),  $t(53) = -1.58$ ,  $p > .10$ ,  $d = .44$ . At the following time-point of assessment, children of both samples were 3 years on average ( $\pm 4$  weeks at maximum). More than three-quarter of children from the Berlin sample were first-borns (79%); in the Delhi sample less than half of the children were first-borns (48%);  $\chi^2 = 5.97$ ,  $p < .05$ .

### 1.2. Procedure and coding

One (3-year assessment) or two (19-month assessment) female experimenters from the respective cultural context visited the families at home. The home visits lasted about 2 h. After one of the experimenters had given an overview of the visit and the assessments, the mothers answered questionnaires regarding sociodemographic information and socialization goals, while the other experimenter established rapport with the toddler.

**Socialization goals.** In order to verify the theoretically assumed cultural models, we assessed maternal orientation towards autonomy and relatedness at both time points using a socialization goals (SG) questionnaire. The SG questionnaire consisted of two scales with 6 items each: (1) Autonomous SG Scale (e.g., "During the first 3 years of life, children should develop independence"), and (2) Relational SG Scale (e.g., "During the first 3 years of life, children should learn to help others"). Mothers were asked to indicate how important these SGs were for them on a 6-point Likert scale, ranging from 1 ("I do not agree at all") to 6 ("I agree completely"). Internal consistencies for both scales were medium to high within each cultural sample at both time points (Cronbach's  $\alpha$ s ranged between .60 and .89). The autonomous and relational SG scores were defined as the mean score of the respective six items for each scale.

**19-month assessment.** There were two key components that we assessed when toddlers were 19 months old: (1) maternal responsiveness to the child and (2) children's responsiveness to maternal requests. Both assessments, i.e., maternal responsiveness during free play and child responsiveness in a compliance task were video-recorded by the second experimenter.

**Maternal responsiveness.** Maternal responsiveness to child initiatives was assessed during a 10-min free-play interaction between mother and child. The experimenter instructed the mother to play with her child as she would normally do and provided a set of age- and culture-appropriate toys (e.g., building bricks, puppet, and car) that was standardized within cultural samples. Since it took some time until mother and child adjusted to being observed while playing, coders only analyzed the video recordings after 2 min had passed since play began and coded a total of 5 min. Children's and mothers' behavior was coded separately. *Children's initiatives* were defined as instances in which the child initiated play by, for example, starting object-directed behavior (e.g., starting to play with a ball) and/or by directing his or her mother's attention to a new toy. We coded onsets of play episodes as children's initiatives only if they had a minimum duration of 2 s. A similar behavior was coded as an onset of a separate initiative if there was a pause or an interruption of at least 5 s. *Maternal responsiveness* was defined as episodes in which the mother followed her child's initiative, e.g., by starting to play with the same toy her child was playing with or by paying full attention to her child. On- and offsets of each of these episodes were coded. The final score for subsequent analyses was the duration of maternal following.

**Toddlers' responsiveness.** Toddlers' responsiveness to maternal requests was assessed in six temporally distributed, separate tasks, in which mothers asked their children to bring a neutral and familiar object (e.g., mug, pen) to them (twice), to the experimenter (twice) or to another place (twice) (see Keller et al., 2004). Mothers were allowed to repeat the request if their child showed no response or irrelevant behavior. The final score was the proportion of requests that the child followed correctly.

**Inter-rater reliability.** For *maternal responsiveness* reliability was calculated for both child initiatives (based on frequencies) and maternal follow-up based on ten videos, five from each sample. For child initiatives, the number of agreements was divided by the sum of agreements and divergences. Based on this measure, reliability for child initiatives was .91 on average. For maternal follow-up Cohen's Kappa indicated good inter-rater reliability,  $\kappa = .73$ . For *toddlers' responsiveness*, another pair of trained coders coded ten videos, five from each sample and Cohen's kappa indicated good reliability,  $\kappa = .80$ .

**3-year assessment.** When children were three years old, an experimenter visited the families at home again. Following the procedure by Reese and Fivush (1993), mothers were asked to discuss two shared past events with their children that had occurred within the last four weeks. Mothers were asked to choose specific, one-point-in-time events that lasted no longer than one day and did not include a story-line like in a book or in routine events (e.g., going to bed). There was no time limit and mothers chose the place for the conversation where they felt most comfortable. The conversations were audio-taped.

**Coding.** Local research assistants transcribed the conversations verbatim in the original languages. Trained German research assistants coded the original German transcripts and English translations of the Indian transcripts. Maternal and child elaborations were coded according to coding scheme of Reese and Fivush (1993). Coding units were independent clauses with a unique or implied verb (propositions).

**Maternal elaborations** were defined as mothers' utterances that introduced an event to discuss or added new information about the event under discussion. Children's utterances that contributed new information about the event not being mentioned by the mother or the child before were coded as *Child memory elaborations*. Final scores for both maternal and child elaborations were frequencies per past-event (in line with previous research by Reese & Fivush, 1993; Reese et al., 1993; Wang, 2007).

**Inter-rater reliability.** Two independent research assistants coded 20% of the German and 20% of the Indian transcripts. Cohen's kappa was .85, on average, for the Delhi sample (range = .77–1.0) and .88, on average, for the Berlin sample (range = .81–.95). Both research assistants coded half of the remaining transcripts each.

## 2. Results

### 2.1. Preliminary analyses

In order to determine whether the two cultural groups differed in terms of their SGs, we subjected the mothers' average autonomous and relational SG scores (maximum = 6) to a 2 (SGs: autonomous and relational)  $\times$  2 (cultural context: Berlin and Delhi) Analysis of Variance (ANOVA) with repeated measures over SGs. There was a significant main effect of SGs,  $F(1, 53) = 4.96$ ,  $p < .05$ ,  $\eta_p^2 = .09$ ; autonomous SGs were emphasized significantly more strongly ( $M = 4.15$ ,  $SE = .09$ ) than were relational socialization goals ( $M = 3.83$ ,  $SE = .10$ ). The relative emphases on autonomous and relational SGs differed as a function of cultural context (SGs  $\times$  cultural context interaction), however,  $F(1, 53) = 35.33$ ,  $p < .001$ ,  $\eta_p^2 = .40$ . Inspection of means revealed that Berlin mothers emphasized autonomous SGs ( $M = 4.52$ ,  $SD = .87$ ) significantly more strongly than they did relational SGs ( $M = 3.64$ ,  $SD = 0.98$ ),  $t(30) = 6.79$ ,  $p < .001$ ,  $d = .95$ . In contrast, Delhi mothers emphasized relational SGs ( $M = 4.18$ ,  $SD = .68$ ) significantly more strongly than they did autonomous SGs ( $M = 3.78$ ,  $SD = 1.16$ ),  $t(23) = 2.24$ ,  $p < .05$ ,  $d = .42$ . Thus, the autonomy orientation in the Berlin sample was clearly evident. In contrast, a stronger relatedness orientation was revealed for the Delhi sample.

### 2.2. Maternal and child responsiveness

As expected, with 19 months of age, children's responsiveness (following maternal requests) was more pronounced in the Delhi dyads; Delhi toddlers successfully complied to a greater proportion of their mothers' requests ( $M = .84$ ,  $SD = .20$ ) than did Berlin toddlers ( $M = .60$ ,  $SD = .23$ ),  $t(75) = 4.98$ ,  $p < .001$ ,  $d = 1.11$ . However, maternal responsiveness during free play

did not differ between contexts; there was no significant difference in length between Berlin ( $M = 42.33$  s,  $SD = 26.23$  s) and Delhi ( $M = 32.79$  s,  $SD = 27.25$  s) mothers to follow their toddlers' initiatives,  $t(56) = 1.35$ ,  $p > .10$ ,  $d = .36$ .

### 2.3. Mother–child reminiscing

When children were three years old, mothers discussed shared past events with their children. Berlin mothers' provided more elaborations during reminiscing ( $M = 21.19$ ,  $SD = 8.83$ ) than did Delhi mothers ( $M = 16.61$ ,  $SD = 7.98$ ),  $t(56) = 2.05$ ,  $p < .05$ ,  $d = .54$ . Additionally, three-year-olds from Berlin contributed more memory elaborations ( $M = 8.56$ ,  $SD = 4.32$ ) during the conversations than did 3-year-olds from Delhi ( $M = 5.34$ ,  $SD = 3.84$ ),  $t(56) = 2.95$ ,  $p < .01$ ,  $d = .79$ .

### 2.4. Predictors of children's memory elaborations

*Maternal elaborations.* We hypothesized that mothers' elaborations would predict children's memory (i.e., memory elaborations). Thus, mothers' and children's elaboration scores should be correlated in both samples. As expected, the correlations were significant in both the Berlin sample,  $r = .58$ ,  $p < .01$ , and the Delhi sample,  $r = .51$ ,  $p < .01$ .

*Responsiveness and children's memory.* We predicted that if joint reminiscing serves different functions depending on the sociocultural context, then the level of maternal responsiveness should predict children's recall in the Berlin sample and the level of child responsiveness should predict children's recall in the Delhi sample. As expected, child responsiveness at 19 months correlated with the number of memory elaborations they made during reminiscing at 3 years in the Delhi sample,  $r = .35$ ,  $p_{1-sided} < .05$ , but not in the Berlin sample,  $r = .02$ , *n.s.* In contrast, in the Berlin sample maternal responsiveness at 19 months correlated with the number of children's memory elaborations at 3 years,  $r = .46$ ,  $p < .01$ , but not in the Delhi sample,  $r = -.08$ , *n.s.*

*Regression analyses.* Given that simple correlations do not take into account intercorrelations with other predictors of children's memory elaborations, we conducted regression analyses separately for the two cultural groups. In each regression analysis, the number of children's memory elaborations was the dependent variable and mothers' elaborations during joint reminiscing, maternal and child responsiveness were entered into the model as predictors. In the Berlin sample, maternal elaborations ( $\beta = .49$ ,  $p < .01$ ) and maternal responsiveness ( $\beta = .30$ ,  $p < .10$ ), but not child responsiveness ( $\beta = -.02$ , *n.s.*) predicted children's memory elaborations,  $R_{adj}^2 = .36$ ,  $p < .01$ . In the Delhi sample, maternal elaborations ( $\beta = .34$ ,  $p < .10$ ) and child responsiveness ( $\beta = .45$ ,  $p < .05$ ), but not maternal responsiveness, ( $\beta = .08$ , *n.s.*) predicted children's memory elaborations,  $R_{adj}^2 = .28$ ,  $p < .05$ .

## 3. Discussion

The aim of the present study was to analyze culture-specific motivations of children's memory contributions during reminiscing. We hypothesized that, depending on the cultural context, different characteristics of mother–child interaction would relate to children's memory contributions. From infancy on mother–child interaction varies with respect to an emphasis on maternal and child responsiveness. In sociocultural contexts with the model of autonomy the emphasis lies on mothers being responsive to child signals (fostering psychological autonomy), whereas in sociocultural contexts with the model of relatedness, the emphasis lies on children being responsive to maternal signals (fostering relational adaptation). By relating early interaction patterns with children's memory contributions, we wanted to demonstrate potentially different motivational systems of action (Kitayama & Uchida, 2005) underlying children's provision of memory information during reminiscing.

For this purpose, we selected cultural contexts with different cultural models. Based on maternal socialization goals, we confirmed that both contexts differed in their emphasis on autonomy and relatedness: mothers from the Berlin context emphasized autonomous socialization goals more than relational socialization goals, confirming an underlying model of psychological autonomy. In the Delhi families, mothers emphasized relational socialization goals stronger than autonomous socialization goals. Most important, however, Delhi mothers emphasized relational socialization goals significantly more strongly than Berlin mothers.

As expected, dyadic responsiveness with 19 months of age differed across the two contexts: As indicated by the higher number of maternal requests the child complied with, child responsiveness was more pronounced in the Delhi than in the Berlin sample. Maternal responsiveness, in contrast did not differ between the two cultural contexts. This might be due to an increase of autonomy orientation in highly educated, non-Western contexts (Keller, 2007). Mothers of the Delhi context thus are as responsive to their child's signals as mothers from Berlin; however, children still fulfill their adaptive social role in being highly responsive to maternal requests (Keller et al., 2010).

At the 3-year time point, there were cross-cultural differences in maternal elaborations and children's memory contributions: in the Berlin context, children contributed more memory elaborations to the conversation and mothers provided more elaborations than did children and mothers from the Delhi context. These results are in line with previous studies including non-Western educated urban middle-class samples (e.g., from Beijing), demonstrating that mothers are less elaborative than mothers of autonomous contexts (e.g., Wang, 2007). However, it has to be kept in mind that the cultural orientation is not necessarily reflected on the dimension of elaborations only but also in the manner mothers use

elaborations to scaffold conversations (Melzi, 2000; Melzi et al., 2011); the type of elaborations used (Tōugu et al., 2011) and the style patterns elaborations are combined with other elements (Schröder et al., in press).

Most relevant to this study were the longitudinal regression analyses. Generally, we found similarities and differences across cultural contexts. Consistent with previous research (e.g., Fivush et al., 2006; Leyva, Reese, Grolnick, & Price, 2008; Reese et al., 1993; Wang, 2001, 2007), there was a positive correlation between maternal reminiscing style (i.e., elaborations) and children's memory contributions within both cultural contexts. Additional variance in children's memory contributions, however, was explained by different characteristics of mother–child interaction that were assessed when children were 19 months old within each of the two cultural contexts. In the Berlin context, 3-year-olds' memory elaborations were predicted by maternal responsiveness. In the Delhi context, on the other hand, children's memory elaborations were predicted by child responsiveness. These results suggest that there may be a universal relation of maternal elaborations and children's memory irrespective of sociocultural context (e.g., Leyva et al., 2008; Reese & Fivush, 1993; Schröder et al., in press; Wang, 2007). Children's motive to provide memory information, however, is also influenced by early socialization processes that differ depending on the normative orientation of the sociocultural context. The contribution of memory elaborations by the child may reflect and serve different functions in different cultural contexts. In the Berlin context, the child's memory contributions may reflect an autonomous initiative, which the mother picks up. Children contribute to the conversation in order to express their unique and specific perspective reflecting the underlying motive of *sticking out*. In line with this interpretation are study results demonstrating greater memory performance in children, when the mother is autonomy supportive during reminiscing (e.g., following-in on the child's response) rather than being controlling (e.g., Cleveland & Reese, 2005). This idea corresponds to the self-function inherent in autobiographical remembering; early socialization practices by the mother require and foster psychological autonomy in her child, which in turn, influence the child's subsequent memory contributions (Bluck, Alea, Habermas, & Rubin, 2005).

In the Delhi context, the child's memory contributions may reflect a more social function of autobiographical remembering. Early socialization practices by the mother require and foster compliance in her child, which influence the child's memory contributions because the child is obliged to meet the demands of the situation, i.e., the expectation to remember a past event because his or her mother asked him or her to do so. Children might contribute to the conversation in order to comply with the expected demand of obedience reflecting the underlying motive of *fitting in*. In the mother–child context, memory sharing may specifically reflect the social function of nurturing the relationship – in which the child is the apprentice and the mother is the teacher (Bluck et al., 2005). These results indicate that toddlers are assigned different social roles and meet the expectations associated with these roles relatively early on in their lives – by at least the middle of their second year.

The cross-cultural differences in mother–child interaction when children were 19 months and 3 years of age support the concept of structural continuity in development. This continuity is also evident in even earlier developmental phases. For example, Keller and her colleagues (Keller, 2007; Keller et al., 2010) demonstrated that mothers in autonomy-oriented sociocultural contexts adopted a distal, autonomy-fostering interaction style as well as an autonomous conversation style with their 3-month-old infants. These early interaction experiences led to the accelerated development of self-recognition when the children were 19-month olds and a more autonomous interaction pattern between mothers and children (Keller et al., 2010). In contrast, mothers in relational contexts adopted a proximal interaction style as well as a relational conversation style with their 3-month-old infants. These early interaction experiences led to the accelerated development of relational interaction patterns (compliance) between mothers and children when the children were 19-month olds. In this way, from very early on in development, individual distinctness is emphasized in autonomous contexts, whereas hierarchical stratification is emphasized in contexts that value relatedness.

It is important to note that the culture-specific differences in children's memory contributions form part of different communication patterns and understanding of the social roles of mothers and their children, which cannot be qualified as better or worse. We would not expect children's engagement or willingness to participate in shared conversations to differ between sociocultural contexts even though the motivation to do so may have different origins. Thus, children's participation may reflect different action systems, motivationally related to different sets of meanings. The agency may be energized by the drive of self-expression or by the drive to comply with parental expectations (Kitayama & Uchida, 2005).

The present study contributes to our understanding of development in terms of culture-specific pathways. These specific pathways emerge due to the differing emphases and values of the specific cultural contexts and their related cultural models. As such, the concept of developmental pathways implies two main assumptions: first, children achieve different developmental outcomes at different time points and secondly, the development of the same outcome can be related to different parental socialization strategies. Meaning that also the relationship between parental behavior and child development is not universal but culture-specific – depending on the context the same parental behavior might relate to different developmental outcomes as well as different parental behavior can be related to the same developmental outcomes. This assumption is supported by the results of the present and other studies (e.g., Lu, Su, & Wang, 2008).

Future research should systematically relate different cultural orientations to various developmental achievements (Keller, 2007; Wang, 2007). This foundation is necessary to fully interpret cultural differences in developmental processes. In the present study, we assessed maternal socialization goals in order to verify the theoretically hypothesized cultural models. Based on this assessment, we were able to relate the results to the dimensions of autonomy and relatedness. It would be beneficial, however, to examine the functional relationships within different cultural contexts separately. Using this approach, it is possible to examine culture-specific correlation patterns and trace different pathways of developmental processes in

different sociocultural contexts. With regard to culture-specific pathways in the development of AM specifically, future research should incorporate further structural aspects of maternal reminiscing (e.g., evaluations and repetitions) that have been identified as important characteristics of maternal reminiscing (see Reese & Fivush, 1993). The content of mother–child shared conversations may also reveal further culture-specific pathways to AM development (see Wang, 2001). In conclusion, the results of the present study provide empirical evidence that there may be culture-specific pathways to autobiographical memory development. Further research is needed to systematically map the different developmental pathways that exist across different developmental domains and cultural contexts; in this way, we can develop a true understanding of universal development.

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## References

- Bluck, S., Alea, N., Habermas, T., & Rubin, D. C. (2005). A TALE of three functions: The self-reported uses of autobiographical memory. *Social Cognition*, 23, 91–117.
- Cleveland, E. S., & Reese, E. (2005). Maternal structure and autonomy support in conversations about the past: Contributions to children's autobiographical memory. *Developmental Psychology*, 41, 376–388.
- Demuth, C., Keller, H., & Yovsi, R. D. (2012). Cultural models in communication with infants – Lessons from Kikaikelaki, Cameroon and Muenster, Germany. *Journal of Early Childhood Research*, 10, (1), 70–87.
- Farrant, K., & Reese, E. (2000). Maternal style and children's participation in reminiscing: Stepping stones in children's autobiographical memory development. *Journal of Cognition and Development*, 1, 193–225.
- Fivush, R., & Fromhoff, F. A. (1988). Style and structure in mother–child conversations about the past. *Discourse Processes*, 11, 337–355.
- Fivush, R., & Haden, C. A. (Eds.). (2003). *Autobiographical memory and the construction of a narrative self: Developmental and cultural perspectives*. Mahwah, NJ: Lawrence Erlbaum Associates.
- Fivush, R., Haden, C. A., & Reese, E. (2006). Elaborating on elaborations: Role of maternal reminiscing style in cognitive and socioemotional development. *Child Development*, 77, 1568–1588.
- Greenfield, P. M., Keller, H., Fuligni, A., & Maynard, A. (2003). Cultural pathways through universal development. *Annual Review of Psychology*, 54, 461–490.
- Kağitçibaşı, C. (2007). *Family, self, and human development across countries. Theory and applications* (2nd ed.). Mahwah, NJ: Erlbaum.
- Kärtner, J., Keller, H., & Chaudhary, N. (2010). Cognitive and social influences on early prosocial behavior in two socio-cultural contexts. *Developmental Psychology*, 46, 905–914.
- Keller, H. (2007). *Cultures of infancy*. Mahwah, NJ: Erlbaum.
- Keller, H., Abels, M., Borke, J., Lamm, B., Lo, W., Su, Y., et al. (2007). Socialization environments of Chinese and Euro-American middle-class babies: Parenting behaviors, verbal discourses and ethnotheories. *International Journal of Behavioral Development*, 31, 60–67.
- Keller, H., Abels, M., Lamm, B., Yovsi, R. D., Voelker, S., & Lakhani, A. (2005). Ecocultural effects on early infant care: A study in Cameroon, India, and Germany. *Ethos*, 33, 512–541.
- Keller, H., Borke, J., Chaudhary, N., Lamm, B., & Kleis, A. (2010). Continuity in parenting strategies – A cross-cultural comparison. *Journal of Cross-Cultural Psychology*, 41, 391–409.
- Keller, H., Otto, H., Lamm, B., Yovsi, R., & Kärtner, J. (2008). The timing of verbal/vocal communications between mothers and their infants: A longitudinal cross-cultural comparison. *Infant Behavior and Development*, 31, 217–226.
- Keller, H., Yovsi, R. D., Borke, J., Kärtner, J., Jensen, H., & Papaligoura, Z. (2004). Developmental consequences of early parenting experiences: Self regulation and self recognition in three cultural communities. *Child Development*, 75, 1745–1760.
- Kitayama, S., & Uchida, Y. (2005). Interdependent agency: An alternative system for action. In R. M. Sorrentino, D. Cohen, J. M. Olson, & M. P. Zanna (Series Eds.) & *Culture and social behavior: The Ontario symposium : Vol. 10*. (pp. 137–164). Mahwah, NJ: Lawrence Erlbaum Associates.
- Leichtman, M. D., Wang, Q., & Pillemer, D. B. (2003). Cultural variations in interdependence and autobiographical memory: Lessons from Korea, China, India, and the United States. In R. Fivush, & C. A. Haden (Eds.), *Autobiographical memory and the construction of a narrative self: Developmental and cultural perspectives* (pp. 73–97). Mahwah, NJ: Lawrence Erlbaum Associates.
- Leyva, D., Reese, E., Grolnick, W. S., & Price, C. (2008). Elaboration and autonomy support in low-income mothers' reminiscing: Links to children's autobiographical narratives. *Journal of Cognition and Development*, 9, 363–389.
- Lu, H., Su, Y., & Wang, Q. (2008). Talking about others facilitates theory of mind in Chinese preschoolers. *Developmental Psychology*, 44, 1726–1736.
- Markus, H. R., & Kitayama, S. (1991). Culture and the self: Implications for cognition, emotion, and motivation. *Psychological Review*, 98, 224–253.
- Melzi, G. (2000). Cultural variations in the construction of personal narratives: Central American and European American mothers' elicitation styles. *Discourse Processes*, 30, 153–177.
- Melzi, G., Schick, A. R., & Kennedy, J. L. (2011). Narrative elaboration and participation: Two dimensions of maternal elicitation style. *Child Development*, 82, 1282–1296.
- Miller, J. G., & Bersoff, D. M. (1992). Culture and moral judgment: How are conflicts between justice and interpersonal responsibilities resolved? *Journal of Personality and Social Psychology*, 62, 541–554.
- Nelson, K. (1993). The psychological and social origins of autobiographical memory. *Psychological Science*, 4, 7–14.
- Nelson, K., & Fivush, R. (2004). The emergence of autobiographical memory: A social cultural developmental theory. *Psychological Review*, 111, 486–511.
- Pillemer, D. B., & White, S. H. (1989). Childhood events recalled by children and adults. In H. W. Reese (Series Ed.) & *Advances in child development and behavior : Vol. 21*. (pp. 297–340). New York: Academic Press.
- Reese, E., & Fivush, R. (1993). Parental styles of talking about the past. *Developmental Psychology*, 29, 596–606.
- Reese, E., Haden, C. A., & Fivush, R. (1993). Mother–child conversations about the past: Relationships of style and memory over time. *Cognitive Development*, 8, 403–430.
- Reese, E., Hayne, H., & MacDonald, S. (2008). Looking back to the future: Māori and Pakeha mother–child birth stories. *Child Development*, 79, 114–125.
- Schröder, L., Keller, H., Kärtner, J., Kleis, A., Abels, M., Yovsi, R.D., et al. Early reminiscing in cultural context: Cultural models, maternal reminiscing styles, and children's memories. *Journal of Cognition and Development*, in press.
- Tōgu, P., Tulviste, T., Schröder, L., Keller, H., & De Geer, B. (2011). Socialization of past event talk: Cultural differences in maternal elaborative reminiscing. *Cognitive Development*, 26, 142–154.

- Wang, Q. (2001). Did you have fun?: American and Chinese mother–child conversations about shared emotional experiences. *Cognitive Development*: 16., 693–715.
- Wang, Q. (2006). Relations of maternal style and child self-concept to autobiographical memories in Chinese, Chinese immigrant, and European American 3-year-olds. *Child Development*: 77., 1794–1809.
- Wang, Q. (2007). “Remember when you got the big, big bulldozer?” Mother–child reminiscing over time and across cultures. *Social Cognition*: 25., 455–471.
- Wang, Q., Leichtman, M. D., & Davies, K. (2000). Sharing memories and telling stories: American and Chinese mothers and their three-year-olds. *Memory*: 8., 159–177.
- Weisner, T. S. (2002). Ecocultural understanding of children’s developmental pathways. *Human Development*: 45., 275–281.
- Yovsi, R., Kärtner, J., Keller, H., & Lohaus, A. (2009). Maternal interactional quality in two cultural environments: German middle class and Cameroonian rural mothers. *Journal of Cross-Cultural Psychology*: 40., 701–707.