



## He Says, She Says: Mothers and Children Remembering the Same Events

Qi Wang  
Cornell University

Qingfang Song  
Western Kentucky University

This study examined the consistency of memories for the same events in mothers and children, and how that varied as a function of culture and organizational components of memories. European American (EA) and Chinese immigrant (CI) mothers and their 6-year-old children ( $N = 127$ ) independently recalled two emotionally salient events. In both cultures, mothers and children agreed more on factual event details and observable behaviors and less on subjective experiences and idiosyncratic interpretations. EA mothers and children told more diverse stories than did CI mothers and children. The findings shed important light on autobiographical memory as a multidimensional construct shaped by cultural beliefs and practices, and have critical implications for the evaluation of memory accuracy in research and real-life settings.

Memories of past experiences often reflect one's beliefs, goals, and perspectives. As a result, people who have experienced the same event often come up with diverse stories (Conway, 2005; Ross & Holmberg, 1990; Wang, 2013). What is less known is the consistency between memories of parents and children, who experience together a great many events on a daily basis and who tend to hold markedly different goals and perspectives. Consider an incident that involved a mother–daughter conflict, in which the daughter refused to practice the piano and was grounded. From the daughter's perspective, she was excited about going to her friend's birthday party and got upset with her mother, who insisted on her practicing the piano as usual beforehand. From the mother's perspective, it was important to keep the routine and for her daughter to exercise self-control. It is not surprising that the mother and daughter provide drastically different accounts of this incident.

Yet studies to date have generally assumed that parents are the more reliable source of information than children and often asked parents to verify the accuracy of their children's memories (e.g., Jack, MacDonald, Reese, & Hayne, 2009; Peterson, Wang, & Hou, 2009). Without taking into account their varying perspectives, parents are expected to

remember the same content as their children do, only more of it, and it is unclear how reliability of information is linked to the specific content of information. There has been no study that we know of to directly examine and compare memories of the same events by parents and children. Neither has there been any study that examines adult–child memory consistency in relation to the characteristics of the memory or the rememberer. What aspects of past events are more likely to be remembered consistently or differently by parents and children? Will the characteristics of parents and children, such as their cultural background, influence the consistency of their memories? These are empirical questions that remain to be answered. They carry theoretical importance for our understanding of autobiographical memory as a multidimensional construct that consists of different organizational components, and of developmental processes in personal storytelling through meaning making (Bauer, 2007; Habermas & de Silveira, 2008; Miller, Fung, & Koven, 2007; Wang, in press). They further have practical significance in real-life settings such as eyewitness testimony that frequently involves adults and children who differ in goals and perspectives. Against this backdrop, the present study examined memories for the same events in European-American (EA) and Chinese-immigrant (CI) mothers and their school-aged children.

---

This research was supported by Grant BCS-0721171 from the National Science Foundation to Qi Wang. We thank members of the Culture & Social Cognition Lab at Cornell University for their assistance. Special thanks go to the children and families who made the study possible.

Correspondence concerning this article should be addressed to Qi Wang, Department of Human Development, Cornell University, MVR Hall, Ithaca, NY 14853. Electronic mail may be sent to [qiwang@cornell.edu](mailto:qiwang@cornell.edu).

© 2017 The Authors

Child Development © 2017 Society for Research in Child Development, Inc.  
All rights reserved. 0009-3920/2017/xxxx-xxxx  
DOI: 10.1111/cdev.12927

### *Personal Memory as a Multidimensional Construct*

Remembering significant personal events is a constructive process that inevitably involves the self, such that what events and what aspects of the events people remember are deeply conditioned by their goals, motivations, and perspectives (Conway, 2005; Ross & Holmberg, 1990; Wang & Ross, 2007). Consequently, memories of past experiences contain not only *objective*, event-specific details of when, where, who, and what, but also *subjective* elements about the idiosyncratic thoughts, emotions, and evaluations of the rememberer. Related to the subjectivity of memory, there is also a *structural* component in personal remembering, in which people, based on their interpretation of what happened, draw causal connections between event elements, add elaborations to enhance the richness of event details (e.g., "The hot air balloon ride was *sooooo cool!*"), and integrate semantic knowledge and other general details to provide background information (Habermas & de Silveira, 2008; Reese et al., 2016; Wang, Capous, Koh, & Hou, 2014). Although the objective component of past events supplies the substance to the memories, the subjective and structural components render the memories with coherence and personal meaning (Bauer, 2007; Wang, 2013, in press).

The different organizational components of memory go hand in hand during the course of development. Children as young as age 2 or 3 are able to remember specific event details for a considerable period of time, often in rudimentary causal sequences (Bauer, 2007; Harley & Reese, 1999; Nelson & Fivush, 2004). Children at this age are also already able to convey their own perspectives when recounting past experiences, expressing their attitude toward the past event, and making a "point" about its personal relevance (e.g., *I scared Sharon and Patty dumb*; Miller & Sperry, 1988). Over the preschool years, children show increasing abilities to retain and recall past events (Bauer, 2007; Fivush, Haden, & Adam, 1995), and their memories include not only causally structured event details but also information about their subjective or internal states such as thoughts, emotions, and desires (Fivush & Baker-Ward, 2005; Haden, Haine, & Fivush, 1997). By the end of the preschool years and early middle childhood, children have become fairly independent in recounting their past experiences, structuring their memories in clear causal sequences, and evaluating and expressing their thoughts and feelings about the past events (Bauer, 2007; Nelson & Fivush, 2004).

Importantly, the objective, subjective, and structural components of personal memories may continue to develop well into adulthood (Bauer, 2007; Wang, 2013). With increasing social experiences and cognitive skills such as causal reasoning, thematic mapping, and emotional understanding, individuals come to construct personal experiences into more detailed, coherent, and integrated memories (Habermas & de Silveira, 2008; Pasupathi & Wainryb, 2010; Reese et al., 2016). Yet developmental research directly contrasting memories of children and adults is scarce in spite of its apparent theoretical and practical implications. Personal memories provide a unique window to examine what information adults and children attend to and how they react to it given their different experiences, goals, and perspectives, and thus serve an important means to understand development processes in memory operation and meaning making (Bauer, 2007; Miller et al., 2007; Nelson & Fivush, 2004; Wang, in press). Especially, when people—as in the case of parents and children—remember about the same past events, they may show different patterns of consistency in the objective, subjective, and structural components of their memories. Given the idiosyncratic nature of subjective experiences (e.g., emotions) and structural features (e.g., causal connections) of the past events, these components are likely to be less consistent between parents and children, when compared with objective event details. In other words, parents and children may be more likely to agree upon where, when, and what in a past event than inner thoughts and feelings or how one past action might have led to another. In addition to the characteristics within a memory that may influence memory consistency, the characteristics of the rememberers may also play a role. In particular, the cultural background of parents and children can influence how parents and children remember past events and the consistency between their memories.

### *The Role of Culture*

Culture has profound influences on people's goals, motivations, and perspectives and, in turn, how people process and remember their personal experiences (Wang, 2013; Wang & Ross, 2007). In Western, particularly EA, cultures, there is a paramount emphasis on individuality and personal autonomy, where the primary self-goals are to be distinct, to express the self, and to seek and exercise control and free choice (Markus & Kitayama, 1991; Triandis, 1994). In this cultural context, people are

motivated to attend to and remember details of personal experiences that accentuate the uniqueness of the individual, and to further construct well-organized and articulated life stories as the foundation for a unique personal identity (Wang, 2013). In contrast, East Asian cultures such as China embrace interdependence and relatedness, where the primary self-goals are to find one's right place in the family and community, and to relate, belong, and fit in (Markus & Kitayama, 1991; Triandis, 1994). When remembering past experiences, people are motivated to focus on information about group activities that facilitates social connections as well as general or semantic details that inform regularities, social roles, and rules (Wang, 2013). In addition, in EA culture, a high value is placed on inner psychological states as the indication of one's true self and authenticity (Halberstadt & Lozada, 2011; Markus & Kitayama, 1991; Wang, 2006). In contrast, in East Asian cultures, subjective experiences are viewed as of little importance for one's sense of self. Instead, individuals' behaviors are considered more informative for the understanding of self, others, and social situations (Halberstadt & Lozada, 2011; Markus & Kitayama, 1991; Wang, 2006). These different beliefs across cultures may motivate people to differentially focus on inner thoughts and feelings versus external behavior when remembering past events (Wang, 2013).

Consistent with the theoretical analysis, research has revealed cultural differences in memory detailedness, subjectivity, and structural features that emerge early in life (for a review, see Wang, 2014). When asked to recount recent experiences, EA preschool- and school-aged children often recall more organized and coherent memories about what happened in a clearer causal sequence and with more specific event details when compared with their Chinese and Korean peers who often provide bare-bone accounts with a greater focus on general information (Chae, Kulkofsky, & Wang, 2006; Han, Leichtman, & Wang, 1998; Wang et al., 2014). EA children also more frequently use internal states language to refer to their feelings, thoughts, and subjective evaluations in their memory accounts than do Asian children (Chae et al., 2006; Han et al., 1998; Wang, 2004). These cultural differences become more pronounced with age and persist into adulthood. Compared with native Chinese and Asian Americans, EA adults tend to recall more event-specific details, include more personal interpretations and subjective experiences, and focus less on general information in their memory reports (Wang, 2001;

Wang & Conway, 2004; Wang, Hou, Tang, & Wiprovnick, 2011; Wang & Ross, 2005).

The early emergence of cultural differences in personal remembering stems from early family socialization practices that convey cultural norms and expectations (Miller et al., 2007; Wang, 2013). Given the importance of personal memories for establishing and affirming a unique identity in their culture, EA parents share memories with their children more frequently, more elaborately, and in a more child-focused manner compared with parents of Asian cultures (Miller et al., 2007; Mullen & Yi, 1995; Wang, 2013, 2014). Studies have shown that, during memory sharing, EA mothers often let their children take the lead, supplement rich details and causal connections to encourage children to contribute, and frequently elaborate on children's perspectives and feelings in the past events. Such conversations help children learn to organize and remember details of past events and develop a sense of ownership of their personal stories. East Asian mothers, in contrast, tend to expect their children to follow their lead, pose and repeat factual questions for short answers, and orient the conversation to social interactions and behavioral expectations (Doan & Wang, 2010; Miller, Wiley, Fung, & Liang, 1997; Mullen & Yi, 1995; Wang, Doan, & Song, 2010; Wang & Fivush, 2005; Wang, Leichtman, & Davies, 2000). Such conversations situate the child in a relational hierarchy and emphasize to the child the importance of taking others' perspectives in remembering the personal past. The different conversational styles may have implications for the consistency between mothers' and children's memories.

### *The Present Study*

The purpose of the present study was to examine the consistency of memories for the same events in mothers and children and how that varied as a function of culture and organizational components of memories. We chose to focus on children in early middle childhood because, by this age, children are fairly independent in providing detailed and organized personal accounts of past events (Bauer, 2007; Nelson & Fivush, 2004). EA and CI mothers and their 6-year-old children independently recalled two emotionally salient events that were either positive or negative. Their memories were examined in terms of objective event details (i.e., time, location, objects, and people), subjective experiences (i.e., internal states such as emotions and thoughts), and structural features (i.e., causal references, modifiers, general details). Memories for emotionally salient

events allowed us to better examine the meaning-making process in mothers and children (Fivush & Baker-Ward, 2005; Reese et al., 2016), and the inclusion of positive and negative events allowed us to test the generalizability of our hypotheses across event valence. We made the following hypotheses.

First, consistent with prior research (Wang, 2014; Wang & Ross, 2007), we expected cultural differences to be evident in children's memories and become more salient in mothers' memories, regardless of event valence. Specifically, we expected that EA mothers and children would recall more event-specific details, focus more on subjective internal states, and more often organize information in causal sequences and with idiosyncratic elaborations, when compared with CI mothers and children who would focus more on external behavior and general information.

Second, pertaining to memory consistency, we expected mothers and children to be more consistent in remembering specific event details and observable external behavior (objective component), and less consistent in their references to inner thoughts and feelings (subjective component) or their interpretations of causal connections of event elements and their features (structural component). We expected this pattern of results to be consistent across positive and negative events.

Third, given their cultural emphasis on individuality, authenticity, and the ownership of one's personal stories (Ochs & Capps, 2001; Wang, 2013), we expected that, regardless of event valence, EA mothers and children would show greater disagreement in their memories than CI mothers and children, for whom the emphasis on shared perspectives and concert actions in their cultural beliefs and practices would result in less memory inconsistency. The cultural differences in memory inconsistency would be particularly salient for the subjective and structural components of memories. On the other hand, given that EA mothers and children frequently discuss internal states, and Chinese mothers and children frequently discuss external behavior in everyday conversations (Doan & Wang, 2010; Miller et al., 1997; Wang et al., 2010), EA mothers and children might agree more on internal states in their memories than Chinese mothers and children, who might agree more on behavior.

## Method

### *Participants*

The data were collected in 2008 and 2009. A total of 127 children and their mothers from a university

town and suburban areas in upstate New York participated in the study, including 68 EA children (40 girls;  $M_{age} = 6.66$  years, range = 5.77–7.51,  $SD = 0.45$ ) and 59 first-generation CI children (30 girls;  $M_{age} = 6.60$  years, range = 5.67–7.50,  $SD = 0.46$ ). All children were from middle-class families, with 97.6% mothers (97% for EA; 98% for CI) having a college degree or beyond. The majority of the CI children (91%) were born in the United States, and the rest moved to the United States when they were on average 2.84 years old (range = 4 months–4.9 years); the immigrant mothers were all born in China. Children were recruited through local schools and by word of mouth, and were taking part in a larger study of social-cognitive development in middle childhood. Parents gave permission for their children to participate and children gave informed assent. Three additional children participated but their interviews were not recorded due to technical errors; they were not included in the final sample.

### *Procedure*

Two female researchers visited the mothers and children at home. English-Chinese bilingual researchers visited CI families and conducted the interview in the language of the children's and mothers' choice. Approximately 63% of the Chinese children chose to speak English, and the rest spoke Chinese or a mixture of English and Chinese. Seven (12%) Chinese mothers chose to speak English, and the rest spoke Chinese mixed with some English words. All interviewers were advanced graduate students who had extensive experiences working with young children. They were trained for the tasks and practiced before the data collection began. The entire home visit took approximately 2 hr. The interview sessions were videotape recorded and later transcribed verbatim for coding. Only the tasks relevant to the current study are described here.

### *Event Memory*

One researcher interviewed mothers, while the second researcher worked with children in a separate room to complete some surveys. The researcher told mothers that she was going to ask their children some questions to see what they remembered about their past experiences. She asked mothers to nominate two specific, one-time events that took place within the past 2 months, one event being emotionally positive to the child and one being

emotionally negative. Mothers were asked not to nominate events that they and their children had previously discussed, so that mothers and children could provide independent accounts of the events. For each nominated event, the researcher asked mothers to describe what happened. She used standard prompts such as "What else happened?" and "What else?" until mothers indicated that they were done. The sequence of recalling positive and negative events was counterbalanced across mothers within each sample. This task took approximately 15 min.

Then the same researcher interviewed children for the two memory events nominated by their mothers, following the procedure from previous studies (e.g., Fivush et al., 1995; Han et al., 1998; Reese & Newcombe, 2007; Wang, 2004). Mothers filled out surveys in a separate room. To establish contact with children and to put them at ease, the researcher first played and chatted with children for several minutes. When children seemed relaxed and comfortable, she asked children to tell a warm-up story about things that they did in the past weekend, in order to prepare them for the memory task. The researcher then began the interview by giving children the topic of each target past event: "Your mum just told me that . . . (e.g., you and her went to the Cornell Plantation last week, or you had to bring a note home from school). Tell me what happened. I really want to know." Following each memory question, she used standard prompts to encourage children to remember (e.g., "That's great. Can you tell me more?" "What else happened?" and "What else?"), until children indicated by speech or gesture that the memory was finished. The sequence of recalling positive and negative events was counterbalanced across children within each sample. The entire task took approximately 15 min.

### *Verbal Skills*

Children's mothers filled out a Child Communication Survey adapted from Feagans and Farrans (1997). The survey consists of 18 questions that assess school-aged children's verbal skills, including comprehension, production, rephrase, listening, spontaneity, and fluency (e.g., "Child is easily understood when he/she is talking to you"). Mothers answered each question by rating on a scale of 1 (*well below average*) to 5 (*well above average*). The survey has shown excellent internal consistency reliability and discriminant validity, and was reliable for the current sample (Cronbach's

$\alpha = .93$ ). The aggregated rating score was used to index the children's verbal skills (maximum score 90). CI mothers gave ratings on their children's ability to communicate in English and Chinese, respectively, and the score for the child's language of interview was used in analysis. For children who spoke English and Chinese interchangeably, the mean score between English and Chinese was used.

### *Coding*

Mothers' and children's memory recalls were parsed into propositional units, that is, subject–verb constructs (in Chinese, 主谓结构) that center on a single verb, verb phrase, or implied verb and often include an object, prepositional phrase, or other related information (e.g., "I played football." Fivush et al., 1995; Wang, 2007). Off-topic utterances (e.g., about the video-recorder) were rare and not coded.

### *Memory Volume*

The total number of propositions in mothers' and children's memories was counted, respectively, to index the memory volume.

### *Content Codes*

Mothers' and children's memories were coded, respectively, for the following content categories adapted from previous studies (Fivush et al., 1995; Reese & Newcombe, 2007; Wang, Bui, & Song, 2015; Wang et al., 2014). These categories constitute the objective (orientation and behavior), subjective (internal states), and structural components (causal reference, modifier, and general detail) of memory (Bauer, 2007; Wang, in press). The coding was exhaustive, whereby every event-relevant proposition was coded. A single proposition could contain multiple content codes (e.g., "We made a pizza in the classroom" contained information details about location, people, action, and object). The content codes were mutually exclusive such that each information detail was coded once and only once.

*Orientation.* This code included objective details of the memory event, including temporal information (e.g., "Yesterday Bob had his friends over"), location (e.g., "So I picked up Catherine and Corinne *at school*"), character introduction (e.g., "I yelled at *my mom*"), object introduction (e.g., "She bought a *Webkinz*"), and factual details about aspects of the event (e.g., "Her eyes were just really *red*").

*Internal states.* This code included references to emotions, thoughts, desires, and subjective evaluations. For both mothers' and children's memories, *child internal states* (e.g., M: "He didn't wanna get back on the bike" and C: "I thought of the bed") and *other internal states* (e.g., C: "And my brother got really mad at me") were coded separately. For mothers' memories, references to *mother internal states* were further coded separately.

*Behavior.* This code included references to actions and spoken words during the event. For both mothers' and children's memories, *child behavior* (e.g., C: "I jumped onto the couch" and M: "She said, 'Mom, but I want it'") and *other behavior* (including group activities, e.g., "We were riding on the beach" and "They get to play in their tree house") were coded separately. For mothers' memories, references to *mother behavior* were further coded separately.

*Causal reference.* This code captured causal connections between event details (e.g., "Last night we went out for ice cream because she had a really good report card from school").

*Modifier.* This code included utterances that added idiosyncratic emphases to provide richness and vividness to the memory account (e.g., "she lobbied *really hard* this time").

*General detail.* This code included propositions concerning nonepisodic information such as semantic details, information pertaining to other nontarget events or extended events that were not specific in time and place, and repetitions (e.g., "It is called the Morder turtle" and "We bought her a fish last year").

#### Consistency Between Child and Mother Memories

Mothers' and children's memories were coded for *consistency* and *inconsistency*, following the method in previous research (Talarico & Rubin, 2007; Wang et al., 2015). The coding was exhaustive such that every content code detail in children's memories was compared with mothers' memories of the same events. Given that each proposition or sentence could contain multiple content codes, it could include both consistent and inconsistent information. Content code details were marked as *consistent* if both children and mothers reported those details using the same or similar words (e.g., M: "We bought a certain number of *tickets* for the different rides"; C: "We had *tickets*." These were coded for 2 counts of consistency for orientation). Content code details were marked as *inconsistent* if they were directly contradictory between children's

and mothers' accounts (e.g., M: "He put out some needles on the floor"; C: "My sister spilled the needles." These were coded for 2 counts of inconsistency for orientation and behavior), or if the details were reported only by children but not mothers.

Note that the above two types of inconsistent details, namely, child-mother contradictions and child commissions, were initially coded separately. They yielded similar patterns of results and were therefore combined. In addition, because mothers generally recalled more information than did children, details that were recalled only by mothers but not children were coded separately as *maternal commissions* (e.g., *on the floor* in the above example of maternal utterance). The pattern of results was identical for maternal commissions and overall maternal memories (see Results). Results of maternal commissions were therefore not reported to avoid repetition.

One trained English-Chinese bilingual research assistant coded the data. Another bilingual assistant and an English-speaking assistant independently coded randomly selected 25% of the CI and EA data, respectively, for reliability check. All coders were unaware of the study hypotheses. Prior to the coding, repeated joint coding sessions were held to ensure that coders apply the same definitions of variables to the data, and a small set of transcripts (approximately 10%) was used for practice. The intercoder reliability  $r$  (Rosenthal & Rosnow, 1991) ranged from .81 to .95 for EA mothers ( $M = 0.90$ ) and .83 to 1.00 for EA children ( $M = 0.94$ ), and from .93 to .99 for CI mothers ( $M = 0.96$ ) and .82 to 1.00 for CI children ( $M = 0.97$ ). Disagreements were resolved by discussion between the coders.

#### Results

Preliminary analyses showed that EA children ( $M = 67.83$ ,  $SD = 10.21$ ) scored higher on verbal skills than did CI children ( $M = 64.13$ ,  $SD = 9.49$ ),  $F(1, 125) = 4.43$ ,  $p = .04$ ,  $d = .38$ , and girls ( $M = 67.84$ ,  $SD = 10.49$ ) scored higher on verbal skills than did boys ( $M = 63.99$ ,  $SD = 9.04$ ),  $F(1, 125) = 4.78$ ,  $p = .03$ ,  $d = .39$ . Verbal skills were therefore controlled for in subsequent analyses pertaining to children's memories. The memory events that mothers nominated and recalled were diverse in topic. Among the positive events, the top three most common topics for EAs were family outings/activities/vacations (41%), birthday parties (14%), and school outings/activities (11%). Similarly, the top three most common topics for Chinese were

family outings/activities/vacations (48%), extracurricular activities (17%), and school outings/activities (9%). For the negative events, the top three most common topics nominated by both EA and Chinese mothers were conflicts involving parents/caregivers (27% and 44%), personal wish not granted (18% and 29%), and child injuries/illnesses (12% and 9%). Chi-square analyses revealed no significant cultural differences in the topics of positive or negative events nominated by mothers.

In the following sections, we first examined mothers' event memories, followed by children's event memories. We then examined the consistency between mothers' and children's memories. Unless otherwise noted, the data were analyzed using a 2 (culture: EA vs. CI)  $\times$  2 (gender: girls vs. boys)  $\times$  2 (event valence: positive vs. negative) mixed-model design with SAS PROC MIXED program (Singer, 1998), with culture and gender being between-subject factors, event valence being a within-subject factor, and subject being a random factor. Analyses with and without the seven Chinese mothers who were interviewed in English showed identical patterns of results. We therefore present results based on data of all mothers. A few children recalled only one event ( $n = 5$ ) or recalled a different event from their mothers ( $n = 3$ ), and one mother nominated only one specific event. These participants were excluded from relevant analyses.

#### *Mothers' Event Memories*

An analysis was first conducted to examine the volume of mothers' memory recall, indexed by the total number of propositions, as a function of culture, gender, and event valence. CI mothers (positive:  $M = 57.60$ ,  $SD = 31.26$ ; negative:  $M = 61.00$ ,  $SD = 30.16$ ) produced more propositions than did EA mothers (positive:  $M = 23.11$ ,  $SD = 12.56$ ; negative:  $M = 27.14$ ,  $SD = 13.97$ ),  $F(1, 123) = 86.92$ ,  $p < .0001$ ,  $\Delta R^2 = .50$ . There were no effects pertaining to gender or event valence. To control for the cultural difference in the volume of recall, subsequent analyses included the total number of propositions as a covariate, following research that examines content components of language-based data (e.g., Fernald & Morikawa, 1993; Wang & Conway, 2004). The mean memory content codes in EA and Chinese mothers' memories, adjusted for the covariate, are shown in Figure 1.

For orientation information about time, location, objects, and people in the past events, EA mothers recalled more such information than did Chinese mothers,  $F(1, 123) = 4.67$ ,  $p = .03$ ,  $\Delta R^2 = .58$ ,

regardless of event valence. Mothers of both cultures recalled more orientation information for positive events than for negative events,  $F(1, 113) = 34.57$ ,  $p < .0001$ ,  $\Delta R^2 = .20$ .

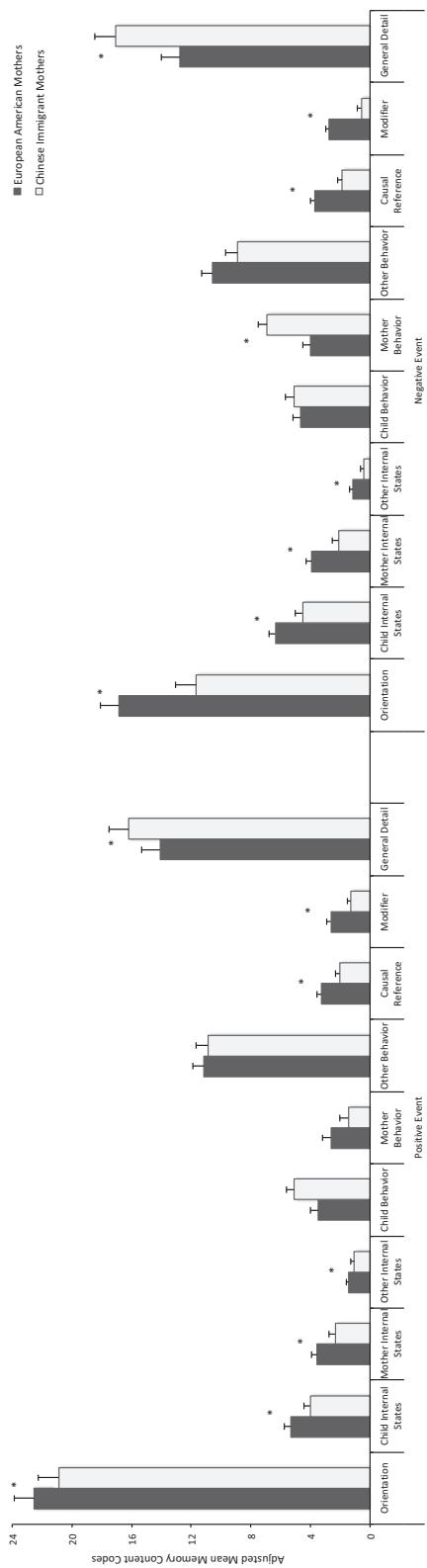
For internal states, EA mothers referred more frequently to their children's,  $F(1, 123) = 9.40$ ,  $p = .003$ ,  $\Delta R^2 = .26$ , their own,  $F(1, 123) = 8.57$ ,  $p = .004$ ,  $\Delta R^2 = .12$ , and other people's,  $F(1, 123) = 4.50$ ,  $p = .04$ ,  $\Delta R^2 = .01$ , internal states in the past events than did CI mothers, regardless of event valence. Mothers of both cultures referred more frequently to children's internal states when recalling negative than positive events,  $F(1, 113) = 4.75$ ,  $p = .03$ ,  $\Delta R^2 = .03$ , whereas referred more frequently to others' internal states when recalling positive than negative events,  $F(1, 113) = 5.61$ ,  $p = .02$ ,  $\Delta R^2 = .03$ .

Pertaining to behavior, an effect of event valence emerged on the references to mothers' own behavior,  $F(1, 113) = 42.85$ ,  $p < .0001$ ,  $\Delta R^2 = .29$ , qualified by a Culture  $\times$  Valence interaction,  $F(1, 113) = 15.79$ ,  $p = .0001$ ,  $\Delta R^2 = .10$ . Follow-up Tukey's honestly significant difference (HSD) tests ( $p < .05$ ) showed that whereas Chinese mothers recalled more information about their behavior in negative events than did EA mothers (least squares means [LSM] difference = 2.95), there was no significant cultural difference for positive events (LSM difference = -1.17). No effects pertaining to children's and others' behavior reached significance.

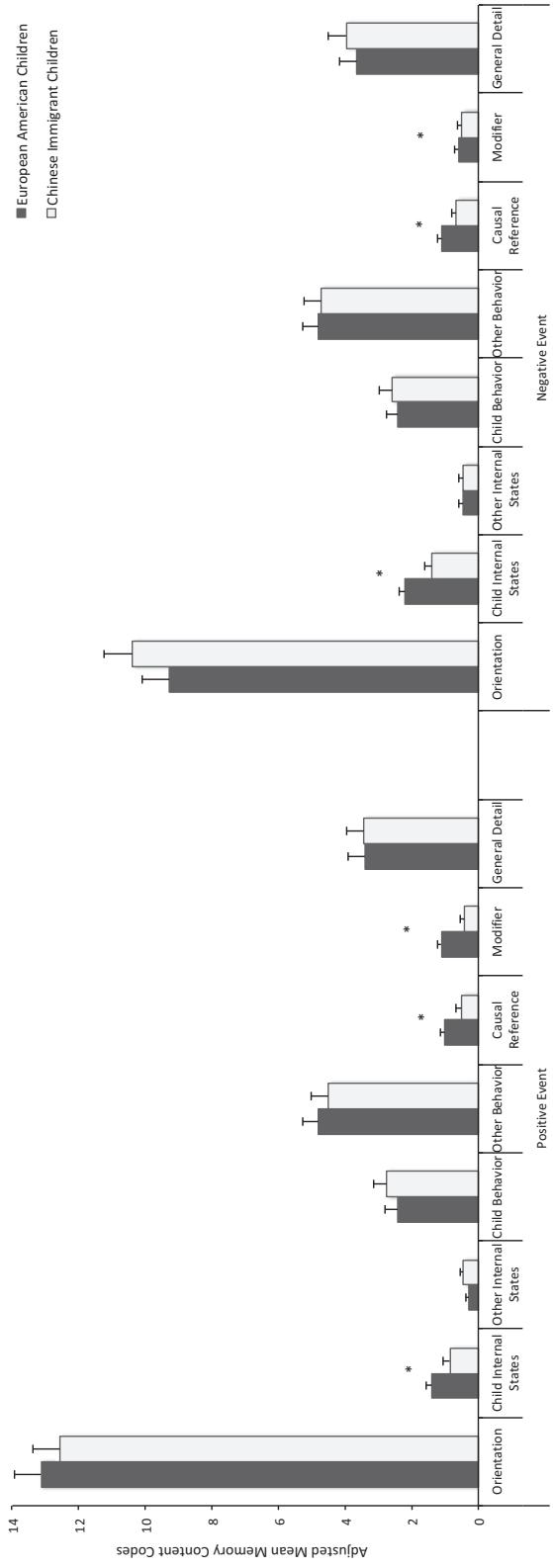
Finally, pertaining to the structural features of memories, EA mothers made more causal references for both events than did Chinese mothers,  $F(1, 123) = 15.10$ ,  $p = .0002$ ,  $\Delta R^2 = .26$ . Similarly, EA mothers used more modifiers to provide descriptive details of the memory events than did Chinese mothers,  $F(1, 123) = 39.84$ ,  $p < .0001$ ,  $\Delta R^2 = .89$ . In contrast, Chinese mothers included more general details external to the target memory events than did EA mothers,  $F(1, 123) = 4.10$ ,  $p = .05$ ,  $\Delta R^2 = .12$ , regardless of event valence.

#### *Children's Event Memories*

An analysis of the volume of children's memory recall as a function of culture, gender, and event valence showed that children produced a greater number of propositions in positive ( $M = 15.37$ ,  $SD = 13.89$ ) than negative events ( $M = 12.60$ ,  $SD = 11.39$ ),  $F(1, 114) = 8.19$ ,  $p = .005$ ,  $\Delta R^2 = .06$ . There were no significant effects pertaining to culture or gender. To control for the difference in the volume of recall between positive and negative events, subsequent analyses included the total number of propositions as well as children's age and



*Figure 1.* Adjusted mean memory content codes in mothers' memories as a function of culture and event valence. Error bars represent standard errors of the means. Asterisks indicate significant cultural differences.



*Figure 2.* Adjusted mean memory content codes in children's memories as a function of culture and event valence. Error bars represent standard errors of the means. Asterisks indicate significant cultural differences.

verbal skills (both being continuous variables) as covariates. The mean memory content codes in EA and CI children's memories, adjusted for the covariates, are shown in Figure 2.

For orientation information, children of both cultures recalled more such information in positive than negative events,  $F(1, 112) = 18.38, p < .0001, \Delta R^2 = .14$ . There was no significant cultural or gender effect on orientation.

Pertaining to internal states, like their mothers, EA children referred more frequently to their internal states in the past events than did Chinese children,  $F(1, 122) = 9.85, p = .002, \Delta R^2 = .15$ , regardless of event valence. Children of both cultures referred more frequently to their internal states in negative than positive events,  $F(1, 112) = 17.21, p < .0001, \Delta R^2 = .13$ . There were no significant effects pertaining to children's references to others' internal states or behavior, or to children's own behavior.

Finally, with regard to the structural features of memories, EA children made more causal references in both events than did Chinese children,  $F(1, 122) = 8.65, p = .004, \Delta R^2 = .17$ . Older children made more causal references than did younger children,  $F(1, 112) = 4.94, p = .03, \Delta R^2 = .11$ . Furthermore, EA children used more modifiers to provide descriptive details of the memory events than did Chinese children,  $F(1, 122) = 9.56, p = .003, \Delta R^2 = .09$ . There was also an effect of event valence on the use of modifiers,  $F(1, 112) = 3.98, p = .05, \Delta R^2 = .09$ , qualified by a Culture  $\times$  Valence

interaction,  $F(1, 112) = 7.86, p = .006, \Delta R^2 = .05$ . Follow-up Tukey's HSD tests ( $p < .05$ ) showed that whereas EA children used more modifiers in positive than negative events (LSM difference = .52), there was no significant difference for Chinese children (LSM difference = -.09). There were no effects on the number of general details children provided.

#### *Consistency Between Children's and Mothers' Memories*

To answer the question of what aspects of memories were more likely to be consistent or different between mothers and children, we constructed a consistency ratio score on the basis of the children's total content code details for each variable, namely, consistency/(consistency + inconsistency + 1). A constant of 1 was added to the denominator because some children scored 0 for certain variables. Thus, a child who recalled three consistent and four inconsistent orientation details would receive a consistency ratio score of .375 for orientation. The mean consistency ratio scores across memory codes by event valence are shown in Figure 3. A 2 (culture)  $\times$  2 (gender)  $\times$  8 (memory code) multivariate analysis of variance was conducted for positive and negative events, respectively. In both cases, there was a significant main effect of memory code,  $F(7, 114) = 57.07, p < .0001, \eta_p^2 = .78$ , for positive event;  $F(7, 111) = 56.40, p < .0001, \eta_p^2 = .78$ , for negative event. There were no effects pertaining to culture or gender. Follow-up univariate tests

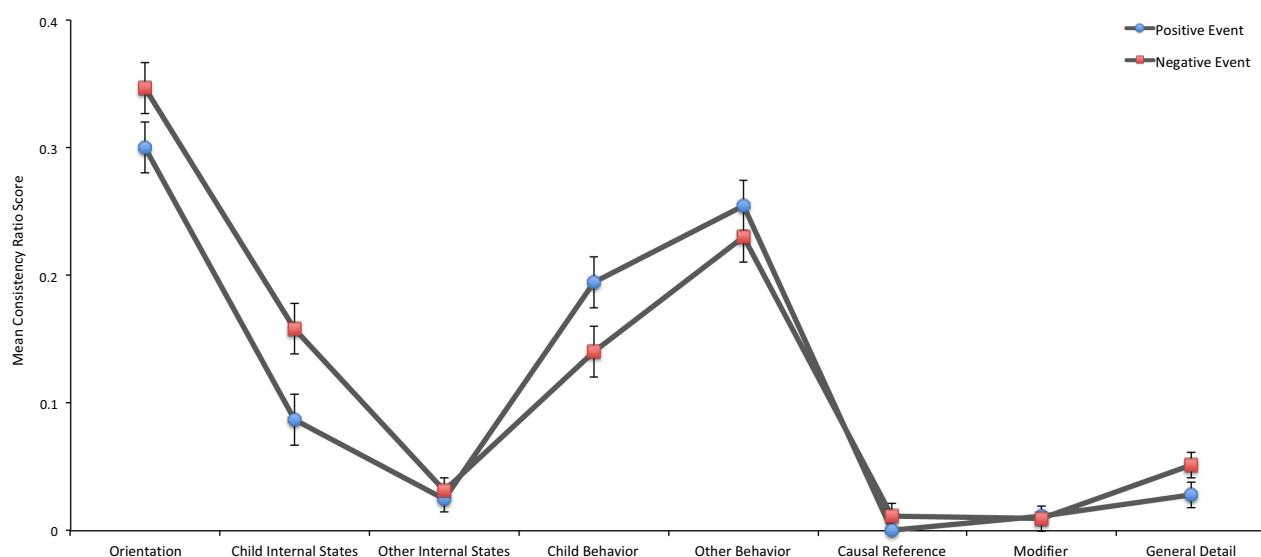


Figure 3. Mean consistency ratio scores across memory codes by event valence. Error bars represent standard errors of the means.

( $p < .05$ ) confirmed that, regardless of valence, memories of mothers and children were most consistent for orientation information, followed by information about others' behavior, and then information about children's behavior and internal states. Their memories were least consistent for others' internal states, causal references, modifiers, and general details, which did not differ from each other.

To further examine the consistency and inconsistency between children's and mothers' memories for each memory code, 2 (culture)  $\times$  2 (gender)  $\times$  2 (event valence) mixed-model analyses were conducted on the consistency and inconsistency scores, respectively, with children's age, verbal skills, and total number of propositions as covariates. The mean consistency and inconsistency scores, adjusted for the covariates, are listed in Table 1 by culture and event valence.

For orientation information, children and mothers in both cultures made significantly more inconsistent references in positive than negative events,  $F(1, 112) = 13.54$ ,  $p = .0004$ ,  $\Delta R^2 = .12$ . There were no other effects pertaining to orientation.

For internal states, EA children and mothers made more consistent references,  $F(1, 122) = 5.62$ ,  $p = .02$ ,  $\Delta R^2 = .37$ , as well as more inconsistent references to children's internal states,  $F(1, 122) = 5.56$ ,  $p = .02$ ,  $\Delta R^2 = .13$ , than did Chinese children and mothers. In both cultures, children and mothers made more consistent references to children's internal states in negative than positive events,  $F(1, 112) = 11.99$ ,  $p = .0008$ ,  $\Delta R^2 = .10$ . They also made more inconsistent references to children's internal states in negative than positive events,  $F(1, 112) = 5.04$ ,  $p = .03$ ,  $\Delta R^2 = .02$ . For children's behavior, on the other hand, Chinese children and mothers made more consistent references than did EA children and mothers,  $F(1, 122) = 4.11$ ,  $p = .04$ ,  $\Delta R^2 = .17$ . There were no effects pertaining to others' internal states or behavior.

Pertaining to the structural features of memories, EA children and mothers made more inconsistent causal references than did Chinese children and mothers, regardless of valence,  $F(1, 122) = 9.36$ ,  $p = .003$ ,  $\Delta R^2 = .17$ . Older children made more inconsistent causal references with their mothers than did younger children,  $F(1, 112) = 4.17$ ,  $p = .04$ ,  $\Delta R^2 = .08$ . Similarly, EA children and mothers used more inconsistent modifiers than did Chinese children and mothers,  $F(1, 122) = 7.99$ ,  $p = .006$ ,  $\Delta R^2 = .06$ . There was also a Culture  $\times$  Event Valence interaction on inconsistent modifiers,  $F(1, 112) = 8.30$ ,  $p = .005$ ,  $\Delta R^2 = .05$ . Follow-up Tukey's HSD tests ( $p < .05$ )

Table 1  
Adjusted Mean Consistency and Inconsistency Scores (and SEs) for Children's and Mothers' Memories

Content codes	Consistency	Event	European American	Chinese immigrant
Orientation	Consistence	Positive	3.54 (.27)	3.61 (.28)
		Negative	3.11 (.27)	2.98 (.29)
	Inconsistence	Positive	9.63 (.74)	8.91 (.79)
		Negative	6.17 (.75)	7.39 (.80)
Child internal states	Consistence*	Positive	0.31 (.10)	0.18 (.11)
		Negative	0.80 (.10)	0.41 (.11)
	Inconsistence*	Positive	1.09 (.15)	0.68 (.16)
		Negative	1.40 (.15)	0.98 (.16)
Other internal states	Consistence	Positive	0.05 (.04)	0.08 (.04)
		Negative	0.09 (.04)	0.09 (.04)
	Inconsistence	Positive	0.22 (.10)	0.36 (.11)
		Negative	0.37 (.10)	0.36 (.11)
Child behavior	Consistence*	Positive	0.61 (.12)	0.95 (.13)
		Negative	0.54 (.12)	0.72 (.13)
	Inconsistence	Positive	1.81 (.31)	1.80 (.33)
		Negative	1.83 (.31)	1.87 (.34)
Other behavior	Consistence	Positive	1.48 (.17)	1.50 (.18)
		Negative	1.18 (.17)	1.22 (.18)
	Inconsistence	Positive	3.31 (.43)	3.01 (.46)
		Negative	3.62 (.44)	3.49 (.47)
Causal reference	Consistence	Positive	0.00 (.02)	0.00 (.02)
		Negative	0.01 (.02)	0.05 (.02)
	Inconsistence**	Positive	0.99 (.13)	0.52 (.14)
		Negative	1.08 (.14)	0.60 (.15)
Modifier	Consistence	Positive	0.06 (.02)	0.01 (.02)
		Negative	0.03 (.02)	0.02 (.02)
	Inconsistence**	Positive	1.06 (.12)	0.38 (.12)
		Negative	0.57 (.12)	0.49 (.13)
General detail	Consistence	Positive	0.15 (.09)	0.14 (.09)
		Negative	0.28 (.09)	0.37 (.09)
	Inconsistence	Positive	3.26 (.48)	3.27 (.51)
		Negative	3.37 (.49)	3.65 (.52)

Cultural differences at \* $p < .05$ . \*\* $p < .01$ .

showed that the cultural difference was only evident in positive (LSM difference = .68) but not negative events (LSM difference = .08). In both cultures, children and mothers agreed more on general details in negative than positive events,  $F(1, 112) = 4.25$ ,  $p = .04$ ,  $\Delta R^2 = .003$ . Older children provided more consistent general details with their mothers than did younger children,  $F(1, 112) = 5.31$ ,  $p = .02$ ,  $\Delta R^2 = .49$ .

## Discussion

This study is the first that we know of to examine the consistency between mothers' and children's

memories for the same events and how the cultural background of mothers and children and the characteristics of memories influence mother-child memory consistency. The findings shed important new light on the nature of autobiographical memory as a multidimensional construct, where some organizational components are more likely than others to be subject to individual perspectives and reconstruction, and these processes are further shaped by cultural beliefs and practices of the rememberers. Furthermore, the findings reveal developmental processes in memory operation and meaning making that reflect not simply age differences between children and adults (mothers), but, more importantly, varied experiences, goals, and perspectives often accompanying different developmental stages and social roles (Bauer, 2007; Miller et al., 2007; Nelson & Fivush, 2004; Wang, *in press*). The findings also have practical significance in real-life settings such as eyewitness testimony, which often involves people of different ages, including children and adults, recounting the same events from their memories (Fitzgerald & Price, 2015; Jack, Martyn, & Zajac, 2015).

Consistent with our predictions, cultural differences emerged in mothers' and children's memories. EA mothers recalled more event-specific details; focused more on the internal states of themselves, their children, and other people; and more often organized information in causal sequences and with idiosyncratic elaborations, when compared with CI mothers who referred more frequently to their external behavior and general information. Similarly, compared with their CI peers, EA children focused more on their own internal states and more frequently organized even information in causal connections and elaborations. These cultural differences are in line with the beliefs and practices in respective cultural contexts: Whereas EA individuals are encouraged to construct detailed and coherent personal stories from which they can discern meanings and further build a unique individual identity, Chinese individuals are motivated to focus on general regularities and external behavior that can inform smooth social transactions but to shy away from subjective experiences (Wang, 2013; Wang & Ross, 2007).

Also as predicted, cultural differences were found to be more prominent in mothers' than children's memories. This pattern of results may reflect the influence of further socialization and enculturation on mothers so that they perceived and interpreted event information more in line with their cultural expectations than did their children. This is

consistent with the theoretical notion that enculturation is a continuing process extending well into adulthood (Hermans, 2001; Triandis, 1994; Wang, 2013), as well as empirical findings that cultural differences often increase with age (e.g., Peterson et al., 2009; Reese et al., 2016; Wang, 2004). Furthermore, the current results may also reflect a differential acculturation process, whereby CI children in our study grew up in the United States and therefore might have been influenced by mainstream values to a greater extent than their parents (Cheung, Chudek, & Heine, 2011; Kim, Chen, Wang, Shen, & Orozco-Lapray, 2013). As a result, their memories exhibited greater similarities with those of their EA peers.

Notably, CI mothers produced significantly more propositions in their recall than did EA mothers. We speculate that this cultural difference in memory volume may reflect Chinese mothers' view of memory as an indication of cognitive skills and their great performance orientation, in contrast to EA mothers' view of sharing memory as a fun activity (Kulkofsky, Wang, & Koh, 2009; Unemori, Omoregie, & Markus, 2004). Consequently, Chinese mothers might be more motivated to provide lengthy accounts of the past events than were EA mothers. Similar cultural differences have also been observed in previous studies in which adults were asked to recall past events or imagine future events (Wang & Conway, 2004; Wang et al., 2014).

Pertaining to memory consistency, as we expected, mothers and children were most consistent in remembering specific event details such as where, when, who, and what, as well as observable external behaviors of others and children themselves. Mothers and children were also reasonably consistent in remembering children's internal states, presumably because mothers may generally have a good understanding of their children's subjective experiences and, also, mothers were present at the events to witness children's behaviors and expressions (e.g., crying) that might indicate their subjective experiences. In contrast, inferences about other people's internal states, depictions of causal connections, interpretations of event details, and general personal knowledge are all idiosyncratic in nature. As a result, mothers and children remembered hardly any consistent information for these aspects of memories. This pattern of results was apparent regardless of culture, gender, and event valence. These findings suggest that during the constructive process of autobiographical remembering (Conway, 2005; Ross & Holmberg, 1990; Wang & Ross, 2007), individuals' goals and perspectives influence not

only their attention and perception of event information, but also, more pervasively, their interpretation and evaluation of the information. Thus, the subjective and structural components of memories are particularly susceptible to inconsistency across individuals. The findings are important when we consider the validity of children's memories, which are often verified with parents and other adults who are assumed to be the more reliable source of information (Jack et al., 2009; Peterson et al., 2009). For example, discrepancy in a subjective evaluation between children and adults (e.g., "He was funny" vs. "He was mean") should not discredit children's memories for specific event details (e.g., "He had a baseball bat").

Furthermore, the current findings provide evidence that although by early middle childhood, children have developed sufficient memory and narrative skills to remember past events (Bauer, 2007; Nelson & Fivush, 2004), autobiographical memory continues to develop well into adulthood (Habermas & de Silveira, 2008; Pasupathi & Wainryb, 2010; Reese et al., 2016; Wang, 2013). They further suggest that the objective, subjective, and structural components of memory exhibit different developmental pathways. Compared with adults, children attend to and remember similar, albeit fewer, objective event details, yet they show divergent evaluative and subjective stances toward their understanding of their experiences. It appears that over the course of development, increasing social experiences and shifting social roles bring about different goals and perspectives, which, coupled with increasing cognitive skills such as causal reasoning and emotional understanding, shape the appraisal and meaning-making process, which further contributes to age-related differences in the subjective and structural components of memory.

Importantly, culture influenced the consistency and inconsistency between mothers' and children's memories. As predicted, EA mothers and children showed greater disagreement in their memories than did CI mothers and children, making more inconsistent references to children's internal states, more different causal connections among event elements, and more idiosyncratic elaborations of event details. This is consistent with the EA cultural emphasis on individuality, authenticity, and the ownership of one's personal stories (Ochs & Capps, 2001; Wang, 2013). It is further consistent with family narrative practices in which EA parents encourage children to take their own perspectives in evaluating and remembering past events (Miller et al., 1997, 2007; Mullen & Yi, 1995; Wang &

Fivush, 2005; Wang et al., 2000). In contrast, the Chinese cultural emphasis on shared perspectives and concert actions, frequently transmitted through family narrative interactions, may have resulted in more similar versions of personal stories between Chinese mothers and children (Kulkofsky et al., 2009; Miller et al., 2007; Wang, 2013).

Interestingly, also as we expected, EA mothers and children agreed more on children's internal states in their memories, compared with Chinese mothers and children who agreed more on children's behavior. These findings reflect different family socialization goals and practices in the two cultures: Parent-child conversations in EA families often focus on children's subjective experiences to encourage a unique sense of self, whereas those in Chinese and CI families often focus on children's external actions to convey social norms and behavioral expectations (Doan & Wang, 2010; Miller et al., 1997; Wang et al., 2010). Overtime, mothers and children may develop greater joint perspectives on these most frequently discussed aspects of their memories in respective cultural contexts. Taken together, the current study provides further empirical evidence of a link between family reminiscing and children's developing sense of self and personal remembering (Miller et al., 2007; Nelson & Fivush, 2004; Wang, 2013).

Some interesting effects of event valence emerged. Mothers and children of both cultures recalled more orientation information of event details for positive than negative events, although they were also more likely to disagree on such information in positive than negative events. Also, when recalling positive than negative events, mothers of both cultures referred more frequently to others' internal states, and EA children used more modifiers to describe event details. In contrast, mothers and children of both cultures referred more frequently to children's internal states in negative than positive events, and they both agreed and disagreed more on such information in negative than positive events. Thus, when recalling positive events, mothers and children recalled more as well as more inconsistent objective information, whereas when recalling negative events, they recalled more consistent as well as more inconsistent subjective information. Taken together, the pattern of results suggests that when recalling positive events, mothers and children seemed to direct their attention more outward, to what was happening as well as other people's presence. Their different roles and perspectives affected the specific details they attended to. The greater provision of event details

about positive events than negative ones has also been observed during mother-child conversations of shared experiences across cultures (Wang, 2001; Wang & Fivush, 2005). In contrast, when recalling negative events, mothers and children focused more inward, on the child's feelings and thoughts, and exhibited both shared perspectives and divergent views of the child's subjective experiences. This is consistent with research showing that, when remembering aversive events, individuals frequently think about and reflect on their inner experiences to discern personal meanings (Fivush & Baker-Ward, 2005) and that young children learn to do so from sharing memories with their parents (Ackil, Van Abbema, & Bauer, 2003; Bird & Reese, 2006; Laible, Murphy, & Augustine, 2013; Wang & Fivush, 2005; Wang et al., 2010).

In spite of the original findings, there are some important limitations to this study. We examined memories of mothers and children for the same events happening in their lives. This method provided ecological validity to the findings and resembled real-life settings in which different memory accounts of an event are compared without any objective measure of accuracy. However, individual differences in past experiences might affect how and what mothers and children remembered. Future research in a more controlled context, such as asking mothers and children to remember a staged event that has objective measures of accuracy, will corroborate the findings. Furthermore, we had a one-time assessment of mothers' and children's memories. It will be a fruitful line of research that further examines mother-child memory consistency in cross-sectional and longitudinal designs, in connection with individual characteristics (e.g., child temperament, attachment security), the socioemotional context of remembering, and cultural variables (e.g., cultural self-construal). For instance, securely attached children and their mothers more frequently engage in open communication about past emotions, especially those in stressful events (Fivush & Vasudeva, 2002). Consequently, mother-child dyads with secure attachment may exhibit greater consistency in remembering negative emotional experiences. In addition, whereas we focused on the comparison between EA and CI mothers and children, there is variability within each cultural group in terms of how strongly members endorse particular beliefs and practices (Hermans, 2001). Future research should examine individual differences in cultural identification in relation to personal remembering. Another important line of work is to examine the direct effect of memory

sharing between parents and children on their subsequent memory consistency, particularly in a cross-cultural context.

In conclusion, when remembering the same events, mothers and their 6-year-old children agreed more on factual event details and observable behaviors and less on subjective experiences and idiosyncratic interpretations of the events. There were further cultural differences such that EA mothers and children told more diverse stories than did CI mothers and children, and that information that tends to be frequently shared in family conversations in respective cultural contexts was more consistently remembered by mothers and children. These findings highlight the importance of attending to different organizational components of event memories as well as considering the cultural background of the rememberers when evaluating memory accuracy both in research and in real-life settings.

## References

- Ackil, J. K., Van Abbema, D. L., & Bauer, P. J. (2003). After the storm: Enduring differences in mother-child recollections of traumatic and nontraumatic events. *Journal of Experimental Child Psychology*, 84, 286–309. [https://doi.org/10.1016/S0022-0965\(03\)00027-4](https://doi.org/10.1016/S0022-0965(03)00027-4)
- Bauer, P. (2007). *Remembering the times of our lives: Memory in infancy and beyond*. Mahwah, NJ: Erlbaum.
- Bird, A., & Reese, E. (2006). Emotional reminiscing and the development of an autobiographical self. *Developmental Psychology*, 42, 613–626. <https://doi.org/10.1037/0012-1649.42.4.613>
- Chae, Y., Kulkofsky, S., & Wang, Q. (2006). What happened in our Pizza Game? Memory of a staged event in Korean and European American preschoolers. In M. A. Vanchevsky (Ed.), *Frontiers in cognitive psychology* (pp. 71–89). New York, NY: Nova Science.
- Cheung, B. Y., Chudek, M., & Heine, S. J. (2011). Evidence for a sensitive period for acculturation: Younger immigrants report acculturating at a faster rate. *Psychological Science*, 22, 147–152. <https://doi.org/10.1177/0956797610394661>
- Conway, M. A. (2005). Memory and the self. *Journal of Memory and Language*, 53, 594–628. <https://doi.org/10.1016/j.jml.2005.08.005>
- Doan, S. N., & Wang, Q. (2010). Maternal discussions of mental states and behaviors: Relations to emotion situation knowledge in European American and immigrant Chinese children. *Child Development*, 81, 1490–1503. <https://doi.org/10.1111/j.1467-8624.2010.01487.x>
- Feagans, L.V., & Farrans, D.C. (1997). *Adaptive Language Inventory (ALI)*. Chapel Hill, NC: Frank Porter Graham Child Development Center.
- Fernald, A., & Morikawa, H. (1993). Common themes and cultural variations in Japanese and American

- mothers' speech to infants. *Child Development*, 64, 637–656. <https://doi.org/10.2307/1131208>
- Fitzgerald, R. J., & Price, H. L. (2015). Eyewitness identification across the life span: A meta-analysis of age differences. *Psychological Bulletin*, 141, 1228–1265. <https://doi.org/10.1037/bul0000013>
- Fivush, R., & Baker-Ward, L. (2005). The search for meaning: Developmental perspectives on internal state language in autobiographical memory. *Journal of Cognition and Development*, 6, 455–462. [https://doi.org/10.1207/s15327647jcd0604\\_1](https://doi.org/10.1207/s15327647jcd0604_1)
- Fivush, R., Haden, C. A., & Adam, S. (1995). Structure and coherence of preschoolers' personal narratives over time: Implication for childhood amnesia. *Journal of Experimental Child Psychology*, 60, 32–56. <https://doi.org/10.1006/jecp.1995.1030>
- Fivush, R., & Vasudeva, A. (2002). Remembering to relate: Socioemotional correlates of mother-child reminiscing. *Journal of Cognition and Development*, 3, 73–90. [https://doi.org/10.1207/S15327647JCD0301\\_5](https://doi.org/10.1207/S15327647JCD0301_5)
- Habermas, T., & de Silveira, C. (2008). The development of global coherence in life narratives across adolescence: Temporal, causal, and thematic aspects. *Developmental Psychology*, 44, 707–721. <https://doi.org/10.1037/0012-1649.44.3.707>
- Haden, C. A., Haine, R. A., & Fivush, R. (1997). Developing narrative structure in parent-child reminiscing across the preschool years. *Development Psychology*, 33, 295–307. <https://doi.org/10.1037/0012-1649.33.2.295>
- Halberstadt, A. G., & Lozada, F. L. (2011). Emotion development in infancy through the lens of culture. *Emotion Review*, 3, 158–168. <https://doi.org/10.1177/1754073910387946>
- Han, J. J., Leichtman, M. D., & Wang, Q. (1998). Autobiographical memory in Korean, Chinese, and American children. *Developmental Psychology*, 34, 701–713. <https://doi.org/10.1037/0012-1649.34.4.701>
- Harley, K., & Reese, E. (1999). Origins of autobiographical memory. *Developmental Psychology*, 35, 1338–1348. <https://doi.org/10.1037/0012-1649.35.5.1338>
- Hermans, H. M. (2001). The dialogical self: Toward a theory of personal and cultural positioning. *Culture & Psychology*, 7, 243–281. <https://doi.org/10.1177/1354067X0173001>
- Jack, F., MacDonald, S., Reese, E., & Hayne, H. (2009). Maternal reminiscing style during early childhood predicts the age of adolescents' earliest memories. *Child Development*, 80, 496–505. <https://doi.org/10.1111/j.1467-8624.2009.01274.x>
- Jack, F., Martyn, E., & Zajac, R. (2015). Getting the picture: Effects of sketch plans and photographs on children's, adolescents' and adults' eyewitness recall. *Applied Cognitive Psychology*, 29, 723–734. <https://doi.org/10.1002/acp.3156>
- Kim, S. Y., Chen, Q., Wang, Y., Shen, Y., & Orozco-Lapray, D. (2013). Longitudinal linkages among parent-child acculturation discrepancy, parenting, parent-child sense of alienation, and adolescent adjustment in Chinese immigrant families. *Developmental Psychology*, 49, 900–912. <https://doi.org/10.1037/a0029169>
- Kulkofsky, S., Wang, Q., & Koh, J. B. K. (2009). Functions of memory sharing and mother-child reminiscing behaviors: Individual and cultural variations. *Journal of Cognition and Development*, 10, 92–114. <http://dx.doi.org/10.1080/15248370903041231>
- Laible, D., Murphy, T. P., & Augustine, M. (2013). Constructing emotional and relational understanding: The role of mother-child reminiscing about negatively valenced events. *Social Development*, 22, 300–318. <https://doi.org/10.1111/sode.12022>
- Markus, H. R., & Kitayama, S. (1991). Culture and the self: Implications for cognition, emotion, and motivation. *Psychological Review*, 98, 224–253. <https://doi.org/10.1037/0033-295X.98.2.224>
- Miller, P. J., Fung, H., & Koven, M. (2007). Narrative reverberations: How participation in narrative practices co-creates persons and cultures. In H. Kitayama & D. Cohen (Eds.), *Handbook of cultural psychology* (pp. 595–614). New York, NY: Guilford.
- Miller, P. J., & Sperry, L. L. (1988). Early talk about the past: The origins of conversational stories of personal experience. *Journal of Child Language*, 15, 293–315. <https://doi.org/10.1017/S0305000900012381>
- Miller, P. J., Wiley, A. R., Fung, H., & Liang, C. H. (1997). Personal storytelling as a medium of socialization in Chinese and American families. *Child Development*, 68, 557–568. <https://doi.org/10.1111/j.1467-8624.1997.tb01958.x>
- Mullen, M. K., & Yi, S. (1995). The cultural context of talk about the past: Implications for the development of autobiographical memory. *Cognitive Development*, 10, 407–419. [https://doi.org/10.1016/0885-2014\(95\)90004-7](https://doi.org/10.1016/0885-2014(95)90004-7)
- Nelson, K., & Fivush, R. (2004). The emergence of autobiographical memory: A social cultural developmental theory. *Psychological Review*, 111, 486–511. <https://doi.org/10.1037/0033-295X.111.2.486>
- Ochs, E., & Capps, L. (2001). *Living narrative: Creating lives in everyday storytelling*. Cambridge, MA: Harvard University Press.
- Pasupathi, M., & Wainryb, C. (2010). On telling the whole story: Facts and interpretations in autobiographical memory narratives from childhood through midadolescence. *Developmental Psychology*, 46, 735–746. <https://doi.org/10.1037/a0018897>
- Peterson, C., Wang, Q., & Hou, Y. (2009). "When I was little": Childhood recollections in Chinese and European Canadian grade-school children. *Child Development*, 80, 506–518. <https://doi.org/10.1111/j.1467-8624.2009.01275.x>
- Reese, E., Myftari, E., McAnally, H. M., Chen, Y., Neha, T., Wang, Q., . . . Robertson, S. (2016). Telling the tale and living well: Adolescent narrative identity, personality traits, and well-being across cultures. *Child Development*, 88, 612–628. <https://doi.org/10.1111/cdev.12618>
- Reese, E., & Newcombe, R. (2007). Training mothers in elaborative reminiscing enhances children's autobiographical memory and narrative. *Child Development*, 78,

- 1153–1170. <https://doi.org/10.1111/j.1467-8624.2007.01058.x>
- Rosenthal, R., & Rosnow, R. L. (1991). *Essentials of behavioral research: Methods and data analysis*. McGraw-Hill, Inc.
- Ross, M., & Holmberg, D. (1990). Recounting the past: Gender differences in the recall of events in the history of a close relationship. In J. M. Olson & M. P. Zanna (Eds.), *Self-inference processes: The Ontario Symposium* (Vol. 6, pp. 135–152). Hillsdale, NJ: Erlbaum.
- Singer, J. D. (1998). Using SAS PROC MIXED to fit multilevel models, hierarchical models, and individual growth models. *Journal of Educational and Behavioral Statistics*, 24, 323–355. <https://doi.org/10.2307/1165280>
- Talarico, J. M., & Rubin, D. C. (2007). Flashbulb memories are special after all; in phenomenology, not accuracy. *Applied Cognitive Psychology*, 21, 557–578. <https://doi.org/10.1002/acp.1293>
- Triandis, H. C. (1994). *Culture and social behavior*. Boulder, CO: McGraw-Hill.
- Unemori, P., Omoregie, H., & Markus, H. (2004). Self-portraits: Possible selves in European-American, Chilean, Japanese and Japanese-American cultural contexts. *Self and Identity*, 3, 321–328. <http://dx.doi.org/10.1080/13576500444000100>
- Wang, Q. (2001). Culture effects on adults' earliest childhood recollection and self-description: Implications for the relation between memory and the self. *Journal of Personality and Social Psychology*, 81, 220–233. <https://doi.org/10.1037/0022-3514.81.2.220>
- Wang, Q. (2004). The emergence of cultural self-constructs: Autobiographical memory and self-description in European American and Chinese children. *Developmental Psychology*, 40, 3–15. <https://doi.org/10.1037/0012-1649.40.1.3>
- Wang, Q. (2006). Developing emotion knowledge in cultural contexts. *International Journal of Behavioral Development*, 30(Suppl. 1), 8–12.
- Wang, Q. (2007). "Remember when you got the big, big bulldozer?" Mother-child reminiscing over time and across cultures. *Social Cognition*, 25, 455–471. <https://doi.org/10.1521/soco.2007.25.4.455>
- Wang, Q. (2013). *The autobiographical self in time and culture*. New York, NY: Oxford University Press. <https://doi.org/10.1093/acprof:oso/9780199737833.001.0001>
- Wang, Q. (2014). The cultured self and remembering. In P. J. Bauer & R. Fivush (Eds.), *The Wiley handbook on the development of children's memory* (pp. 605–625). West Sussex, UK: Wiley.
- Wang, Q. (in press). Culture in the organization of autobiographical memory. In J. Mace (Ed.), *The organization and structure of autobiographical memory*. New York, NY: Oxford University Press.
- Wang, Q., Bui, V., & Song, Q. (2015). Narrative organization at encoding facilitated children's long-term episodic memory. *Memory*, 23, 602–611. <https://doi.org/10.1080/09658211.2014.914229>
- Wang, Q., Capous, D., Koh, J. B. K., & Hou, Y. (2014). Past and future episodic thinking in middle childhood. *Journal of Cognition and Development*, 15, 625–643. <https://doi.org/10.1080/15248372.2013.784977>
- Wang, Q., & Conway, M. A. (2004). The stories we keep: Autobiographical memory in American and Chinese middle-aged adults. *Journal of Personality*, 72, 911–938. <https://doi.org/10.1111/j.0022-3506.2004.00285.x>
- Wang, Q., Doan, S. N., & Song, Q. (2010). Talking about internal states in mother-child reminiscing influences children's self-representations: A cross-cultural study. *Cognitive Development*, 25, 380–393. <https://doi.org/10.1016/j.cogdev.2010.08.007>
- Wang, Q., & Fivush, R. (2005). Mother-child conversations of emotionally salient events: Exploring the functions of emotional reminiscing in European American and Chinese Families. *Social Development*, 14, 473–495. <https://doi.org/10.1111/j.1467-9507.2005.00312.x>
- Wang, Q., Hou, Y., Tang, H., & Wiprovnick, A. (2011). Traveling backward and forward in time: Culture and gender in the episodic specificity of past and future events. *Memory*, 19, 103–109. <https://doi.org/10.1080/09658211.2010.537279>
- Wang, Q., Leichtman, M. D., & Davies, K. (2000). Sharing memories and telling stories: American and Chinese mothers and their 3-year-olds. *Memory*, 8, 159–177. <https://doi.org/10.1080/096582100387588>
- Wang, Q., & Ross, M. (2005). What we remember and what we tell: The effects of culture and self-priming on memory representations and narratives. *Memory*, 13, 594–606. <https://doi.org/10.1080/09658210444000223>
- Wang, Q., & Ross, M. (2007). Culture and memory. In H. Kitayama & D. Cohen (Eds.), *Handbook of cultural psychology* (pp. 645–667). New York, NY: Guilford.