ABSTRACT—This study examined the age and content of earliest childhood memories of self and others. European American and Taiwanese participants (N = 111) retrieved their earliest memories in response to the cue words self, mother, family, friend, and surroundings. Memory for mother was from an earlier age than memory for self, and memories for mother, family, and friend were more socially oriented in content than memories for self or surroundings. In addition, in response to all cue words, Euro-Americans recalled memories from an earlier age than did Taiwanese. Euro-Americans also had a greater tendency to report memories of specific events and focused more on their own roles and autonomy than did Taiwanese, who more often described routine events and emphasized the roles of others. These findings have important implications for infantile amnesia and the memory-self interplay.

The phenomenon of infantile amnesia, that is, the common inability among adults to consciously retrieve personal event memories from the first years of life, has intrigued psychologists in diverse fields. It poses an enigma: Although children as young as age 2 or 3 are able to remember event information for considerable periods of time, especially with adults’ assistance (e.g., Fivush & Hamond, 1990), adults generally show impoverished recall of early childhood memories, and this discontinuity is not accountable entirely by normal forgetting with age (Howe & Courage, 1993). Infantile amnesia has been attributed to a number of neurological, cognitive, linguistic, and social mechanisms (see Nelson & Fivush, 2004). One cognitive mechanism that may contribute to the offset of infantile amnesia is the emergence of a conceptual self (Howe & Courage, 1993, 1997). Although there is disagreement on the exact nature of the self required for autobiographical memory, and when this self emerges (Povinelli, 1995; Welch-Ross, 2001), there is a consensus among theorists that the self, once established, provides a knowledge structure to organize “memories of experiences that happened to ‘me’” (Howe & Courage, 1997, p. 499), and thus facilitates the retention of those memories over the long term. Event information encoded prior to the emergence of the self cannot be made autobiographical and eventually becomes inaccessible.

The self, in this theoretical context, is constituted primarily by one’s physical and psychological attributes and serves mainly to organize memories about oneself. Empirical studies to date, much like theoretical work, has focused on earliest childhood recollections of self-events (e.g., Howes, Siegel, & Brown, 1993). Little attention has been paid to the social aspect of the self and how it affects the retention of early memories of significant others or of the self-in-relation.

Indeed, self theories have long established that the self comprises not only a personal sphere that is relatively independent of social factors, such as awareness of one’s own physical attributes and psychological dispositions, but also a social sphere that includes the self-representations presumably held by significant others, as well as the social values and norms shared with others (see Harter, 1998). Some theorists further suggest that the social self precedes the personal self in ontogeny. For instance, according to Mead (1982), an awareness of others and their attitudes precedes an awareness of the self. When the child can take the perspective of others and the attitude of the group, “he can come back to himself the same way and thus come to have self-consciousness and a unitary self” (p. 147). This theoretical view has important implications for the emergence of early event memory. Suppose that the child’s emergent self-concept first comprises knowledge of others and
social groups significant in his or her first years of life (e.g., mother and family). This social self might then serve to organize event information about these individuals and social groups and their relations with the child. As a result, memories about others might be retained from an earlier age than memories exclusively about oneself. In addition, other-memories should be more socially oriented in content than self-memories are, whereas self-memories should be more focused on the rememberer than other-memories are.

Although the impact of self on remembering may be universal (e.g., Conway & Pleydell-Pearce, 2000), the outcome in the accessibility and content of earliest memories may vary cross-culturally depending on how the importance of personal event memories is perceived (Wang & Conway, 2004). In many Western cultures that place a premium on autonomy and distinctiveness, and particularly in the United States, memories of significant personal experiences are regarded as an important means of distinguishing oneself from others and as necessary ingredients of a unique individual identity (Nelson, 2003). This cultural context may channel cognitive processes and resources into the early formation of durable personal event memories. It may further motivate individuals to remember unique, one-moment-in-time events (e.g., “the time I won the spelling bee”) and to focus on their own roles and perspectives even when the events are about other people. In contrast, in many Asian cultures that accentuate group solidarity and interconnectedness, such as Chinese culture, identity is more often defined by the larger structure of relationships one participates in than by unique past experiences of oneself or other people (Markus & Kitayama, 1991; Wagar & Cohen, 2003; Wang, 2001). This cultural context may prioritize the retention of social knowledge rather than development of a structured personal event memory system, and this might lead to a longer period of infantile amnesia. In addition, memories, once retained, might focus on the roles of others and might frequently concern generic events (e.g., “going to church with family every Sunday”), which help to reaffirm interpersonal relations and social conventions.

The present study is the first to compare earliest childhood recollections of self and others. In addition, situating the study in a cross-cultural context enabled examination of universal and culture-specific aspects of memory-self interplay. The word-cued method (Rubin, 2000) was used to elicit earliest memories pertaining to self, mother, family, friend, and surroundings in Euro-American and Taiwanese Chinese young adults. Memories for mother and family, particularly the former, were expected to come from an earlier age and be more socially oriented than memory for self, regardless of cultural background. Memories pertaining to friends were expected to have a later date, because the concept of friend develops gradually over the preschool years (Dunn, Cutting, & Fisher, 2002), so that the social self in relation to friend would become available to organize and retain event information about friends only at a later age. Memories pertaining to surroundings were studied for purposes of comparison. Because knowledge of the physical world starts to develop early in infancy (Spelke, 1995), it might enable memories for physical surroundings (e.g., layout of a setting) to be encoded at an earlier age than other memories. The cross-cultural comparison was expected to show that relative to Taiwanese, Euro-Americans, who grow up in a cultural context that attributes great importance to personal remembering, would have memories from an earlier age, would recall proportionately more specific one-moment-in-time episodes as opposed to generic events, and would focus more on their personal autonomy in all memories.

**METHOD**

**Participants**

The participants were 52 undergraduate students (35 females; all from Euro-American cultural backgrounds) at Cornell University and 59 undergraduate students (39 females; all ethnic Chinese) at National Chengchi University, Taiwan. They were recruited from introductory psychology classes and received course credit for their participation. Informed consent was obtained from each participant.

**Procedure**

Participants met with a researcher in small groups and received questionnaires in their native language. The instructions explained that they would read five cue words, one on each page, and should think of the earliest childhood memory that each word reminded them of. The instructions emphasized that each memory should be the participant’s own memory from early childhood, not something he or she only saw in a picture or heard from someone else. Participants were asked to follow the sequence of the pages, to write down each recalled memory in detail, and to provide an estimate of their age when each event occurred. No time restrictions were placed. The order of the five cue words—self, mother, family, friend, and surroundings—was counterbalanced within each sample.

**Coding**

Coders read participants’ responses in the original languages. Each memory was coded separately using a coding scheme adapted from previous studies (Wang, 2001, 2004). Memories were coded for age, specificity, and content, as follows:

- **Age at earliest memory:** Participants’ age estimates for the recalled memory events were recorded in months.

1Participants also rated each memory on several dimensions, including previous rehearsal, emotionality, vividness, and personal importance. These ratings were for other research purposes and are not reported here.

2The memories were also coded for the degree of elaborativeness, the amount of background information about time and place, and the number of integrative and conflict themes. There were no significant effects pertaining to these variables.
• **Memory specificity**: Each memory was coded as either “specific,” referring to events that happened at a particular point in time (e.g., “Once my mom saved my dog from drowning in the pool!”), or “generic,” referring to events that took place regularly or on multiple occasions (e.g., “My mom fed me broccoli when I was really young”; Pillemer, 1998).

• **Memory content**: Participants’ references to their own emotions, actions, mental states, and agency were counted to index their autonomous orientation (e.g., “I felt scared on the street” and “I realized I had to make choices for myself”). In addition, the number of times participants mentioned themselves and the number of times they mentioned other people were counted in each memory. An other/self ratio for each memory was then calculated to index participants’ social orientation.

Each data set (United States, Taiwan) was coded by an English-Chinese bilingual research assistant who was unaware of the hypotheses. Repeated joint coding sessions were held to ensure that the same definitions were followed for the two data sets. A third bilingual assistant coded 20% of each data set so that reliability estimates could be obtained. Across all variables, intercoder agreement ranged from 84% to 93% (M = 89.7%) for the U.S. data and from 83% to 89% (M = 86.4%) for the Taiwan data. Disagreements were resolved by discussion among the coders.

**RESULTS**

The length of the written memories, indexed by the number of words used, showed no difference between cultures and across memory types (self M = 44; mother M = 45; family M = 46; friend M = 42; surroundings M = 49). A 2 (culture) × 2 (gender) × 5 (memory type) mixed analysis of variance (ANOVA) was conducted for each continuous variable, and significant effects were followed up with univariate analyses. Some participants did not answer all questions, so the degrees of freedom varied slightly across tests.

**Age at Earliest Memory**

A mixed ANOVA showed main effects of culture, F(1, 104) = 10.83, p = .001, ηp^2 = .10, and memory, F(4, 101) = 6.81, p < .0001, ηp^2 = .21. As expected, Euro-Americans recalled earlier memories in response to all cue words than Taiwanese did, Fs > 5.63, ps < .02, ηp^2s > .05. Memory for mother was dated earliest, followed by memories for surroundings, family, and self, and memory for friend was dated latest (see Table 1). The differences were significant between memories for mother and self, memories for mother and family, memories for mother and friend, memories for self and friend, memories for family and friend, and memories for surroundings and friend, Fs > 5.09, ps < .03, ηp^2s > .04. There were no significant interactions.

**Memory Specificity**

Figure 1a illustrates the percentage of specific (as opposed to generic) memories as a function of culture and memory type. Chi-square analyses showed that for each of the cue words, Euro-Americans were significantly more likely than Taiwanese to provide specific memories—self: χ²(1, N = 111) = 5.94, p = .01, φ² = .05; mother: χ²(1, N = 110) = 8.54, p = .004, φ² = .08; family: χ²(1, N = 111) = 17.84, p < .0001, φ² = .16; friend: χ²(1, N = 111) = 7.29, p = .007, φ² = .07; and surroundings: χ²(1, N = 111) = 20.86, p < .0001, φ² = .18. Across the entire sample, memories for surroundings (34.23%) were less likely to be specific events than memories for self (53.15%), χ²(1, N = 222) = 8.13, p = .004, φ² = .04; for mother (52.73%), χ²(1, N = 221) = 7.74, p = .005, φ² = .04; and for family (54.05%), χ²(1, N = 222) = 8.91, p = .003, φ² = .04. Memories for friend (42.34%) did not differ in specificity from any other memory types.

**Memory Content**

Figures 1b and 1c illustrate the mean scores for autonomous and social orientations as a function of culture and memory type. Mixed ANOVAs showed a main effect of culture, F(1, 106) = 4.96, p = .03, ηp^2 = .05, on autonomous orientation, and a main effect of culture, F(1, 106) = 9.44, p = .003, ηp^2 = .08, qualified by a Culture × Memory Type interaction, F(4, 103) = 2.79, p = .03, ηp^2 = .10, on social orientation. Compared with Taiwanese, Euro-Americans expressed significantly more

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**TABLE 1**

Mean Age (in Months) of Earliest Memory by Culture and Memory Type

<table>
<thead>
<tr>
<th>Culture</th>
<th>Self (M, SD)</th>
<th>Mother (M, SD)</th>
<th>Family (M, SD)</th>
<th>Friend (M, SD)</th>
<th>Surroundings (M, SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>United States</td>
<td>54.63 (20.78)</td>
<td>45.92 (14.09)</td>
<td>53.50 (16.49)</td>
<td>60.10 (21.05)</td>
<td>52.48 (20.13)</td>
</tr>
<tr>
<td>Taiwan</td>
<td>69.66 (30.95)</td>
<td>65.00 (33.04)</td>
<td>69.85 (32.79)</td>
<td>76.00 (32.16)</td>
<td>65.93 (36.05)</td>
</tr>
<tr>
<td>Total</td>
<td>62.70 (27.72)</td>
<td>56.02 (27.51)</td>
<td>62.37 (27.63)</td>
<td>66.69 (28.64)</td>
<td>59.45 (30.31)</td>
</tr>
</tbody>
</table>

Note. Standard deviations are given in parentheses. In the last row, means that do not share subscripts differed at p < .05 in univariate analyses.

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^Note that the variances were larger for the Taiwanese sample than for the U.S. sample. To ensure homogeneity of variance, I used a square root transformation of the age of earliest memories. Analyses of the original and transformed data yielded identical patterns of results. I therefore report results for the original data.
autonomy in memories for mother, family, and surroundings, $F_s > 5.03, ps < .03, \eta^2_p > .04$, and focused less on the roles of other people as opposed to themselves in memories for mother and family, $F_s > 5.10, ps < .03, \eta^2_p > .05$.

In addition, there were main effects of memory type for both autonomous orientation, $F(4, 103) = 21.98, p < .0001, \eta^2_p = .46$, and social orientation, $F(4, 103) = 21.16, p < .0001, \eta^2_p = .45$. Memory for family focused least on the rememberer's autonomy and most on the roles of others ($M_s = 1.28$ and $1.30$, $SD_s = 1.71$ and $1.06$), followed by memories for friend ($M_s = 1.33$ and $1.14$, $SD_s = 1.95$ and $0.81$), mother ($M_s = 1.79$ and $0.93$, $SD_s = 2.12$ and $0.90$), and surroundings ($M_s = 2.07$ and $0.71$, $SD_s = 2.79$ and $0.87$); memory for self showed the greatest autonomous and the least social orientation ($M_s = 3.19$ and $0.45$, $SD_s = 2.59$ and $0.53$). The differences were significant, $F_s > 4.00, ps < .05, \eta^2_p > .04$, except for differences in both autonomous and social orientations between memories for family and friend and between memories for mother and surroundings.

Table 2 lists memory examples to illustrate the cultural differences in memory specificity and content.

**DISCUSSION**

The present study took a novel approach to examining the nature of early event memory and memory-self interplay. The findings relate to many issues of interest to researchers in diverse fields, including cognitive, developmental, personality, social, and cultural psychology.

As predicted, participants’ memory for mother was earlier (by approximately half a year) than memory for self. Memory for family dated from about the same age as memory for self and was later than memory for mother, possibly because mothers are often the primary caregivers in both cultures (Miller, Wiley, Fung, & Liang, 1997) and thus the social self in relation to mother may develop earlier than the social self in relation to other family members. Also as predicted, memory for friend was retrieved from the latest age, supporting the notion that the social self in relation to friends develops late in the preschool years (Dunn et al., 2002), and then serves to organize and retain event memories about friends. Memory for physical surroundings was almost as early as memory for mother, suggesting that the early development of knowledge about the physical world (Spelke, 1995) may provide children with mental structures or schemata that help them understand and represent relevant event information. In addition, as expected, memories for mother, family, and friend were more socially oriented than memories about the self or surroundings. The patterns of results contrasting memories of self versus memories of self-in-relation were consistent across the two cultural groups.

These findings have important implications for infantile amnesia and memory-self interplay. They support the theoretical view that the personal self arises after the social self, when the child has developed interactional schemata and can take the perspective of others significant in his or her first years of life (Harter, 1998; Mead, 1982). As a result, event memory pertaining to the social self (particularly the self in relation to mother) can be formed at an earlier age than event memory pertaining to the personal self. Conceivably, self-representations are semantically structured in relation to one’s physical-psychological attributes (e.g., being pretty, happy, and outgoing).
TABLE 2

Memory Examples

<table>
<thead>
<tr>
<th>Memory type</th>
<th>United States</th>
<th>Taiwan</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self</td>
<td>Preschool learning to tie my shoes on my own and playing with all those “skills games” with shapes and hand-eye coordination. I got a gold star and realized my friend didn’t. So, myself was all I could appreciate for doing something on my own.</td>
<td>Ever since I was little, my relatives would compare me with my girl cousin. Everyone said that I was the more sensible one. My girl cousin and I were 4 months apart in age. Perhaps it’s because of the influence of the environment, especially my mom!</td>
</tr>
<tr>
<td>Mother</td>
<td>My mother dressed me up as a queen for Purim at my preschool. She let me wear all her fake jewelry—very long beads &amp; makeup. I wore a long white shirt as a dress with a belt &amp; a paper crown. I was very happy when she walked into school with me.</td>
<td>My mom was always smiling. She was always working, and didn’t have time to talk to me or listen to me. Even in my memory she was always busy walking around, and never stopped to take a rest.</td>
</tr>
<tr>
<td>Family</td>
<td>Going to Niagara Falls on a family trip. I was young so I still asked my parents if I got the Shampoo out of my hair. My dad said I did. However, when we walked behind the falls in caves, my hair started to bubble because I didn’t get it all out.</td>
<td>Grandpa, grandma, dad, mom, my little brother, and our family’s puppy. The whole family was having breakfast in the dining room one morning. We had congee that day. I still remember the dishes: shredded pork, clam. . .</td>
</tr>
<tr>
<td>Friend</td>
<td>In second grade, my best friend moved on my birthday. She called me on the phone to say goodbye, and I cried. My mother still made me practice the piano that night, and that made me angry and more upset.</td>
<td>In kindergarten, I had a pretty good relationship with a little girl who lived near my neighbor. Her family raised ducks for a living. Often, after school, we would play in the field behind her house or play hide and go seek in her house.</td>
</tr>
<tr>
<td>Surroundings</td>
<td>3 years old, lying on my “comfort blanket.” The room had a carpet then (sky blue). My 1/2 crib had all sorts of stuffed animals. It was mid afternoon and raining. Because the light was on. My brother and I were playing with blocks.</td>
<td>In the park, there were four or five different recycle bins. There were mothers and their children taking a walk and chatting. I was just about to go to preschool. We learned a children’s song “Tiger Lady” at preschool.</td>
</tr>
</tbody>
</table>

and various social roles (e.g., being a daughter, a sister, and a friend; Trafimow, Silverman, Fan, & Law, 1997; Wagar & Cohen, 2003; Wang & Ross, 2005). These self-structures come to function at different ages and then serve to encode and organize event information pertaining to self or self-in-relation in long-term memory.

The age and content variations across types of memories from adults’ childhood recollection may reflect at least two levels of memory-self interplay. On one level, memory retrieval entails a process of active reconstruction in which an individual’s current self-concept may substantially shape the accessibility and content of memories (e.g., Greenwald, 1980). On another level, the central constructs of the self may act directly on memory encoding by affecting an individual’s attention, perception, emotion, and meaning analysis during an ongoing event, and thus determining how, what, and whether event information is encoded in memory. Early childhood recollections, then, may “reflect the operation at encoding of the themes of a (past) active or working self” (Conway, 1996, p. 75). Recent research has set out to disentangle the encoding and retrieval processes to elucidate how different aspects of the self influence remembering (e.g., Wang & Ross, 2005).

The findings also support the proposal that the emergence of a personal event memory system not only requires a conceptual self to be in place, but also may be facilitated or inhibited by the perceived importance of personal remembering across cultures. As predicted, Euro-Americans recalled earlier first memories (13 to 19 months earlier) than did Taiwanese. Euro-Americans also frequently reported memories of specific, one-moment-in-time events and focused on their own roles and autonomy, even when recalling memories about mother and family. In contrast, Taiwanese often described early experiences of generic, routine events with a salient social orientation. These results agree with previous findings of cultural differences in the age, specificity, and content of adults’ earliest childhood recollections (MacDonald, Uesiliana, & Hayne, 2000; Mullen, 1994; Wang, 2001). They further indicate that such differences are persistent across memory topics. The striking consistency in the pattern of cultural differences across word cues is particularly intriguing given that, because of cultural orientations toward autonomy versus relatedness, one might expect Euro-Americans to have earlier and more specific self memories than Taiwanese, but not necessarily earlier and more specific interpersonal (mother, family, friend) memories. It appears that the degree of importance of personal event memory in these two cultures may affect whether and to what extent cognitive resources are channeled into the early development of a unique, detailed personal history, as well as what type of information is likely to be attended to, encoded, and retrieved. An emphasis on individuality in Euro-American culture may drive the early emergence of a personal event memory system that serves to construct the distinctiveness of the individual, whereas an emphasis on interconnectedness in Chinese culture may direct cognition to social knowledge for maintaining existing social orders and conven-
tions, rather than to the early development of personal event memories.

This cultural influence on personal remembering is enacted in family narrative practices early in a child’s life (e.g., Miller et al., 1997; Mullen & Yi, 1995; Wang & Fivush, 2005). When sharing memories with their young children, Euro-American mothers often adopt a child-centered, elaborative conversational style in which they provide embellished information to scaffold their children’s participation and frequently refer to their children’s personal roles, preferences, and feelings. Such conversations may help children see the importance of remembering past experiences, and may model to children the culturally desirable form and content of autobiographical memory to highlight one’s uniqueness. Asian mothers, in contrast, tend to use a mother-centered, pragmatic conversational style in which they take a leading role in posing pointed questions, frequently discuss social norms and behavioral expectations, and focus on the roles of significant others. Such conversations may encourage children to abide by rules and to develop a sense of belonging, while downplaying the use of memory to construct one’s unique individual identity. Thus, early narrative practices seem to embody cultural messages to prioritize the development of personal remembering or social knowledge, and these practices may contribute to cultural differences in the content and long-term accessibility of personal event memory.

The ages of earliest memories were substantially later in the current study than in previous studies using free-recall tasks (Mullen, 1994; Wang, 2001) or asking participants to answer questions about targeted events such as the birth of a sibling (Eacott & Crawley, 1998; Usher & Neisser, 1993). Obviously pointed questions for targeted recall may prompt retrieval of early event information (e.g., “Who told you that your mother was leaving for the hospital to give birth to your younger sibling?”). The differences between the current study and previous studies requiring open-ended reports are particularly interesting. Conceivably, retrieving memories related to a specific content theme, as in the current study, may require participants to contemplate event episodes coherent in meaning, rather than recall memory fragments of isolated images or sensations (e.g., an image of oneself sitting in a crib) with no before-and-after context and meaningful integration. And there is evidence that memory fragments can be retrieved from an earlier age than event memories can be retrieved (Bruce et al., in press; Mullen, 1994). For instance, Bruce et al. (in press) conducted a series of experiments comparing early event memories—recollections of personal episodes that occurred at a particular time and place and had a beginning and an end—and memory fragments—disconnected memory moments having no event context. They found that first fragment memories were dated approximately 8 months earlier than first event memories. Perhaps when participants are simply asked to recall their earliest childhood memory in response to open-ended questioning (Mullen, 1994; Wang, 2001), they are more inclined to retrieve memory fragments than when they are asked about earliest memories of specific content themes. This issue merits further investigation, and examination of both the accessibility and the content of early memories elicited in different experimental paradigms will be necessary to unravel the mystery of infantile amnesia (Fivush & Haden, 1997; Neisser, 2004; Van Albada & Bauer, 2005).

One limitation of the current study is that the recalled memories were not confirmed by an external criterion of accuracy. It has been shown, however, that both the content and age estimates of early childhood memories tend to be confirmed when the memories are submitted to external sources such as adults present at the time of the events (Bruce, Dolan, & Phillips-Grant, 2000; Eacott & Crawley, 1998; Howes et al., 1993). Although individuals do make errors in dating memories, especially memories from the distant past, the dates are generally accurate and show little systematic bias (Larsen, Thompson, & Hansen, 1996; Rubin, 1982). And there is evidence that Asians and Caucasians use similar strategies, such as relating memories temporally to landmark events, when dating earliest childhood memories (Mullen, 1994). Together, these data suggest that the individual and cultural variations in the age of earliest memories found in the current and previous studies cannot be simply attributed to systematic dating errors. Still, researchers need to develop strategies to verify the accuracy of participants’ dates for early memories in cross-cultural studies.

In conclusion, the present findings reveal the importance of studying memories of both self and others to gain understanding of the phenomenon of infantile amnesia and the nature of the personal event memory system. The self is a multifaceted construct that may be semantically structured to encode and store event information pertaining to specific content themes. The different aspects of the self may emerge at different paces during ontogeny and vary in emphasis across cultures. These differences, in turn, influence the age and content of earliest childhood memories of self and significant others.

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