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# Remembering the good and bad and the self and others in a culturally modulated self-memory system

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**ABSTRACT**

Wang and Conway (2006, Autobiographical memory, self, and culture. In L.-G. Nilsson, & N. Ohta (Eds.), *Memory and society: Psychological perspectives* (pp. 9–27). Psychology Press) posit that remembering takes place in a culturally modulated self-memory system in which working self-goals are shaped by society and, in turn, influence the encoding and construction of memories in a culturally canonical fashion. The current research examined the self-goal of competence, which manifests through self-enhancement versus self-improvement motivations, in influencing remembering in different cultural contexts. We conducted two cross-cultural studies to examine memories for personal successes and failures (Study 1) and autobiographical and vicarious experiences (Study 2) in connection with individuals' positive self-views. European Americans recalled a greater number of success than failure memories (Study 1) and US participants recalled a greater number of autobiographical than vicarious memories (Study 2), which was further associated with positive self-views at the individual level. In contrast, Asian (Study 1) and Chinese participants (Study 2) recalled even-handedly the different types of memories, and the memory retrieval was unrelated to individuals' self-views. We discuss the findings in light of the different manifestations of the competence goal in shaping memory in the culturally modulated self-memory system.

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Self-memory system; culture; success and failure memories; autobiographical memory; vicarious memory; self-goals

In their 2006 article, Wang and Conway discussed in the context of culture the mutually constructive relation between autobiographical memory and the self in the self-memory system and highlighted the role of the working self that manifests during remembering. Through critical examination of the cross-cultural literature, they demonstrated that motives or goals of the working self are shaped by society and, in turn, contribute to the encoding and construction of memories in a culturally canonical fashion. As such, Wang and Conway (2006) concluded that culture modulates the self-memory system. In support of the theorisation, extensive research has shown that the culturally modulated self-memory system influences memory accessibility and content in line with the working-self goals of autonomy and relatedness variably prioritised in different cultures (e.g., Wang, 2001; Wang & Ross, 2005; for reviews, see Wang, 2013, 2016). Less attention has been paid to how the self-goal of competence – another fundamental human motive (Deci & Ryan, 2000) – may shape memory in the cultural context. Research on this topic will provide further evidence for the role of the culturally modulated self-memory system in remembering. Thus, we conducted two studies to examine memories for personal successes and failures (Study 1) and autobiographical and vicarious experiences (Study 2) in connection with individuals' positive self-views in different cultural contexts.

## The culturally modulated self-memory system

According to Conway's Self-Memory System (SMS) Model of autobiographical memory (Conway, 2005; Conway & Pleydell-Pearce, 2000), memory and the self mutually construct each other. On the one hand, autobiographical memory serves as the data base of the self, grounding the self in remembered reality and constraining what the self can be. On the other hand, memory is constrained by working-self goals that manifest during remembering, where working-self goals prioritise encoding and access to goal-relevant information and inhibit and even distort information inconsistent with the self-goals. As a result, only highly goal-relevant memories will become well integrated in the self-memory system and endure for long-term retention. This dynamic, reciprocal relation between autobiographical memory and the self highlights the constructive nature of remembering.

Importantly, the interplay between memory and the self does not just take place in the mind or the brain of

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an isolated individual but is situated in the cultural context (Bruner, 1990; Wang, 2013). Different societies, given their ecological characteristics and philosophical, religious, and cultural traditions, tend to prioritise different self-goals (Markus & Kitayama, 1991; Shweder et al., 1998), which can in turn shape the process of autobiographical remembering (Wang, 2013, 2016). Autonomous and relational self-goals have been most frequently investigated to date in relation to autobiographical memory. Many Western, particularly North American, cultures ascribe paramount importance to individuality, where individuals are encouraged to pursue their autonomous self-goals such as to be distinct and to exercise control and free choice. In contrast, many non-Western cultures, such as East Asia, value social harmony and prioritise relational self-goals, where individuals strive to relate to significant others and to fit in with their social groups (Markus & Kitayama, 1991; Shweder et al., 1998). During information processing, these culturally prioritised self-goals then privilege the encoding and retention of information supporting the goals and thus determine "which memories and which aspects of the memories are most likely to be accessible and enduring" (Wang & Conway, 2006, p. 9).

Indeed, extensive cross-cultural research has shown that in line with their autonomous self-goals, European Americans often recall autobiographical memories with greater idiosyncratic details and focus more on their own roles, feelings, and perspectives in personally unique experiences than do East Asians, who tend to recall memories that highlight interpersonal relations, group activities, and social routines in line with their relational self-goals (e.g., Wang, 2001, 2006a; Wang & Conway, 2004). Compared with East Asians, Europeans and European Americans also exhibit a greater accessibility to childhood experiences – a critical ingredient for personal uniqueness and individual identity, whereby they recall their earliest childhood memory from a younger age and access a greater number of early memories (Wang, 2001, 2006a; Wang et al., 2004), and they tend to recall more event details from autobiographical experiences more generally (Wang et al., 2011). These cultural differences in memory content and accessibility have been observed in children as young as 3 or 4 years of age and persist into adulthood (Peterson et al., 2009; Wang, 2004, 2006b; Wang & Conway, 2004). Furthermore, at the individual level, children and adults who exhibit more salient autonomous self-goals recall memories that are more self-focused and detailed than those who exhibit more salient relational self-goals (Wang, 2001, 2004, 2006b; Wang & Ross, 2005). Thus, culture conditions the self-memory system in which culturally prioritised working-self goals constrain autobiographical memories in a culturally canonical fashion.

### *Memories for feeling good about oneself*

Beyond autonomous and relational self-goals, the goal of competence, that is to achieve a sense of self-efficacy (Deci & Ryan, 2000), although universal, manifests differently across cultures and can in turn shape remembering (Wang, 2013, 2016). Western cultures endorse the maintenance and enhancement of a positive sense of self, where the pursuit of happiness is regarded as a central goal of life. High self-esteem or self-worth is considered not only a positive personal trait but also an indicator of psychological well-being. In contrast, Asian cultures encourage individuals to learn from past mistakes and to seek actual change and improvement in the self that eventually benefits the collective (Hampton & Varnum, 2018; Heine & Hamamura, 2007; Oishi, 2002; Ross et al., 2005). The goal of competence thus manifests through the motivations for self-enhancement versus self-improvement respectively emphasised in these cultures, which can, in turn, influence memory retrieval (Wang, 2013, 2016). For instance, after experiencing the same event (e.g., performing an academic task, shooting a basketball), European Americans tend to recall the event as being more pleasant than they have experienced them, whereas Asians tend to remember the event as being about as good as they actually were (Oishi, 2002; Oishi & Diener, 2003). European Americans also tend to recall experiencing positive emotions more frequently in retrospect than do their East Asian counterparts, despite that there are no cultural differences in daily emotional experiences (e.g., Diener et al., 1995; Kitayama et al., 2000; Oishi, 2002). From a functional perspective, recalling memories in an enhanced positive light facilitates the maintenance of positive self-views important for Westerners, whereas remembering events as they were or even-handedly helps Asians receive diagnostic information for self-improvement.

A few cross-cultural studies have examined positive and negative memories that may have particularly important consequences for positive self-views. Endo and Meijer (2004) asked their American and Japanese participants to recall as many personal success and failure events as they could from their lifetime. Whereas Americans recalled significantly more success than failure memories, this positive bias was not observed among Japanese. Zhang and Cross (2011) observed that when recalling and evaluating the most important success and failure events in their lives, Americans viewed the success event as more enhancing for their self-esteem than did Chinese, whereas Chinese viewed the failure event as more tolerable, less problematic for their goals, and less damaging to their self-esteem than did Americans. Ross and colleagues (2005) examined memories for proud and embarrassing events in Canadian and Japanese college students. Whereas Canadians reported that embarrassing events felt further away in time and were more difficult to recall than similarly distant proud events, Japanese found the two kinds of events being equal in subjective temporal distance and memorability. It appears that Western individuals may be motivated to dwell on and remember past events that boost their positive self-views, whereas East Asians are

just as likely to attend to and remember events that provide opportunities for self-reflection and the feeling-good events. Still, empirical evidence to connect memory retrieval and relevant self-motives is required.

In addition to memory events that have direct implications for positive self-views, remembering autobiographical versus vicarious events may also be influenced by individuals' tendency to feel good about themselves (Wang, 2013). Whereas autobiographical memories involve the rememberer themselves as the protagonist in the remembered event, vicarious memories involve others as the protagonist (Fivush, 2019; Pillemer et al., 2015, 2024; Reese et al., 2017; Thomsen & Pillemer, 2017). The emphasis on self-enhancement goes hand-in-hand with the construal of the self as independent and separate from others in Western cultures (Heine & Hamamura, 2007; Markus & Kitayama, 1991; Wang, 2013). To achieve and maintain positive views about oneself as a unique and agentic being, individuals are motivated to focus more on information relevant to themselves and less on others. In contrast, the Asian cultural emphasis on self-improvement often serves a social purpose for the benefit of the collective (Cohen & Gunz, 2002; Hampton & Varnum, 2018; Wagar & Cohen, 2003). Individuals may therefore attend equally to events happening to themselves and those happening to others. Although extensive cross-cultural research has examined the self- versus other-focused content of autobiographical memories (e.g., Peterson et al., 2009; Wang, 2001; Wang & Conway, 2004; Wang & Ross, 2005), no study that we know of has directly contrasted autobiographical and vicarious memories in the cultural context; and how the memory retrieval may be associated with self-motives is yet to be examined.

### The present research

The present research aims to examine the relation of positive self-views to memory retrieval and thus provide further evidence for the role of the culturally modulated self-memory system in remembering (Wang, 2013; Wang & Conway, 2006). Across two cross-cultural studies, we examined memories for personal successes and failures (Study 1) and autobiographical and vicarious events (Study 2) in connection with individuals' positive self-views that were indexed by two different measures (i.e., self-worth and self-esteem), with the hope of demonstrating the robustness of the link from culturally prioritised self-goals to ways of remembering. In both studies, a memory fluency task was used in which European American and Asian (Study 1) and US and Chinese (Study 2) participants were asked to recall as many success and failure memories (Study 1) or autobiographical and vicarious memories as they could (Study 2) within a limited timeframe. Participants then rated the phenomenological characteristics of the memories (e.g., personal importance, emotional intensity, vantage perspective). Their self-worth (Study 1) or self-esteem (Study 2) was measured to index positive self-views and self-enhancement (Diener et al., 1995; Ross et al., 2005; Zhang & Cross, 2011).

Importantly, culture is a system of shared meanings and practices that coheres social groups; its influence on psychological functioning can be studied at multiple levels of analysis (Markus & Kitayama, 1991; Shweder et al., 1998; Wang, 2018). Here, Study 1 was conducted within the US, contrasting European Americans and Asians residing in the US who have been shown to exhibit differences in self-goals and memories in line with their respective cultural origins (Leger & Gutchess, 2021; Wang, 2006b; Wang & Ross, 2005). Study 2 took the comparison further to contrast a diverse sample of US participants and Chinese participants from China: Despite within-culture variations across ethnic groups, Americans have been shown to differ from people in Asian countries in beliefs and cognitive processes given the influence of the larger societal environment (Mert et al., 2023; Swallow & Wang, 2020). The within- and between-country comparisons are both important in revealing the impact of culture on memory and cognition (Wang, 2018).

Given their cultural emphasis on self-enhancement, we predicted that European Americans would recall a greater number of success than failure memories (Study 1) and that US participants would recall a greater number of autobiographical than vicarious memories (Study 2), which would be further associated with positive self-views at the individual level. In contrast, given their cultural emphasis on self-improvement, we hypothesised that Asians and Chinese participants would remember even-handedly success and failure memories (Study 1) and autobiographical and vicarious memories (Study 2), and that memory retrieval would not be linked to individuals' positive self-views. Furthermore, we explored cultural effects on the phenomenological characteristics of memories that might also reflect varied cultural emphases on self-enhancement (e.g., recalling success memories more from a 1st person perspective than failure memories) versus self-improvement (e.g., recalling success and failure memories from a similar vantage perspective). Given the lack of prior data, however, we did not make a priori predictions.

### Data accessibility

The research protocol was reviewed and approved by the Cornell University Institution Review Board (IRB), and participants provided informed consent. Research data and materials can be accessed at https://osf.io/v4zuy. Statistical analyses were conducted using JMP Pro 16, and R (R Core Team, 2023, Version 4.3.0) was used to verify the analyses, calculate effect sizes ($\eta_p^2$), and perform generalised linear mixed models (the *lme4* (Bates et al., 2015; Version 1.1-33), *emmeans* (Lenth, 2023; Version 1.8.6), and *afex* (Singmann et al., 2023; Version 1.3-0) packages).

## Study 1: Remembering successes and failures

### Method

#### Participants

The study used a 2 (Culture: European American vs. Asian) × 2 (Memory Type: success vs. failure) mixed-model design, with culture being a between-subjects factor and memory type being a within-subjects factor. An a priori power analysis (G*Power 3.1; Faul et al., 2007) showed that a sample size of 266 would be needed to achieve a power of .90 to detect effects with a size of $f = .10$ and $\alpha = .05$. Given the lack of prior research and the consideration of potential attrition, we recruited a larger sample to ensure sufficient power. The final sample consisted of 307 undergraduate students at Cornell University, including 158 European Americans (117 females, 41 males; $M_{age} = 20.68$ years, $SD = 1.15$) and 149 Asians or Asian Americans (hereinafter referred to as Asians) of Asian origins (111 females, 38 males; $M_{age} = 20.82$ years, $SD = 1.23$). Among the Asians, 57% were born in the US and the rest moved to the US at an average age of 13.23 years ($SD = 6.15$), with 62 of Chinese origin, 34 Korean, 19 Indian, 30 from other East and South-East Asian regions, and 4 not providing the information. All participants indicated that they were proficient in English. Participants received extra course credits for their participation. An additional 10 participants did not complete the survey and were excluded from the final sample.

#### Procedure and measures

Participants completed the tasks via a Qualtrics survey that took approximately 30 min. A memory fluency task was used to assess the accessibility of success and failure memories (Wang et al., 2004). Participants were asked to recall events of success and failure (e.g., winning a math competition, failing a biology exam) that they had experienced in their lives and, for each type of event, to recall as many memories as they could within 3 min. The order of recalling success and failure memories was counterbalanced. Participants were instructed to write a word or short phrase for each memory that would remind them later of which memory they brought to mind. After the fluency task, participants were presented with the word or short phrase they wrote for each memory and were asked to report their age when the event occurred (which was later converted to how long ago the event happened), rate the event's personal importance (1 = *not important*, 5 = *most important*) and emotional intensity (1 = *no emotion*, 5 = *most intense*), and indicate whether their recollection of the event was as if they were re-experiencing it (1st person) or as if they were watching the event "happen" to somebody else (3rd person).

Following the memory task, participants completed the 8-items Flourishing Scale that measures self-worth and psychological resources (Diener et al., 2010). Participants rated each item (e.g., "I lead a purposeful and meaningful life") on a 7-point scale from 1 = strongly disagree to 7 = strongly agree. The scale had excellent internal consistency in the current sample, with Cronbach's $\alpha = .91$ for the entire sample and for each cultural group separately. The summed score that indexes self-worth was later submitted to analysis.[1] At the end, participants provided demographic information.

### Results

#### Preliminary analyses

A total of 5270 memories were collected, including 2932 success memories and 2338 failure memories. There was no significant gender effect or Culture × Gender interaction on the memory recall measures. Among the Asian participants, those born in the US and those born outside the US did not differ significantly in any memory measure, and the age of moving to the U.S. did not correlate significantly with any memory measure. These variables were therefore not considered further in analysis. The descriptive data of memory recall and ratings as a function of culture are reported in Table 1.

#### Success and failure memories and the role of the self

To examine the accessibility of success and failure memories across cultures, a 2 (Culture: European American vs. Asian) × 2 (Memory Type: success vs. failure) mixed-model analysis with culture as a between-subjects factor, memory type as a within-subjects factor, and subject as a random factor was conducted on the number of memories recalled. The main effect of culture did not reach significance, $F(1, 305) = 3.77$, $p = .053$, $\eta_p^2 = .12$, but there was a significant effect of memory type, $F(1, 305) = 31.05$, $p < .0001$, $\eta_p^2 = .092$, qualified by a Culture × Memory type interaction, $F(1, 305) = 7.66$, $p = .0060$, $\eta_p^2 = .025$ (see Figure 1). Post-hoc Tukey HSD tests ($p < .05$) showed that whereas European Americans recalled more success than failure memories, 95% CI = [1.62, 4.09], Asians recalled similar numbers of success and failure memories, 95% CI = [−0.31, 2.23]. Also, European Americans recalled more success memories than did Asians, 95% CI = [0.36, 3.16],

**Table 1.** Mean recall and memory ratings by culture.

| | | Success | | Failure | |
|---|---|---|---|---|---|
| | | Mean | SD | Mean | SD |
| Asian | # of Memories | 8.64 | 4.58 | 7.68 | 4.93 |
| | Memory age (year) | 2.65 | 2.10 | 2.59 | 2.25 |
| | Personal importance | 3.59 | 0.65 | 3.22 | 0.74 |
| | Emotional intensity | 3.53 | 0.60 | 3.46 | 0.72 |
| | % 1st person | 77.85 | 26.02 | 76.52 | 28.17 |
| European American | # of Memories | 10.41 | 5.38 | 7.55 | 3.95 |
| | Memory age (year) | 2.57 | 1.95 | 2.67 | 2.22 |
| | Personal importance | 3.58 | 0.57 | 3.07 | 0.75 |
| | Emotional intensity | 3.44 | 0.62 | 3.42 | 0.67 |
| | % 1st person | 76.05 | 22.79 | 75.95 | 25.91 |

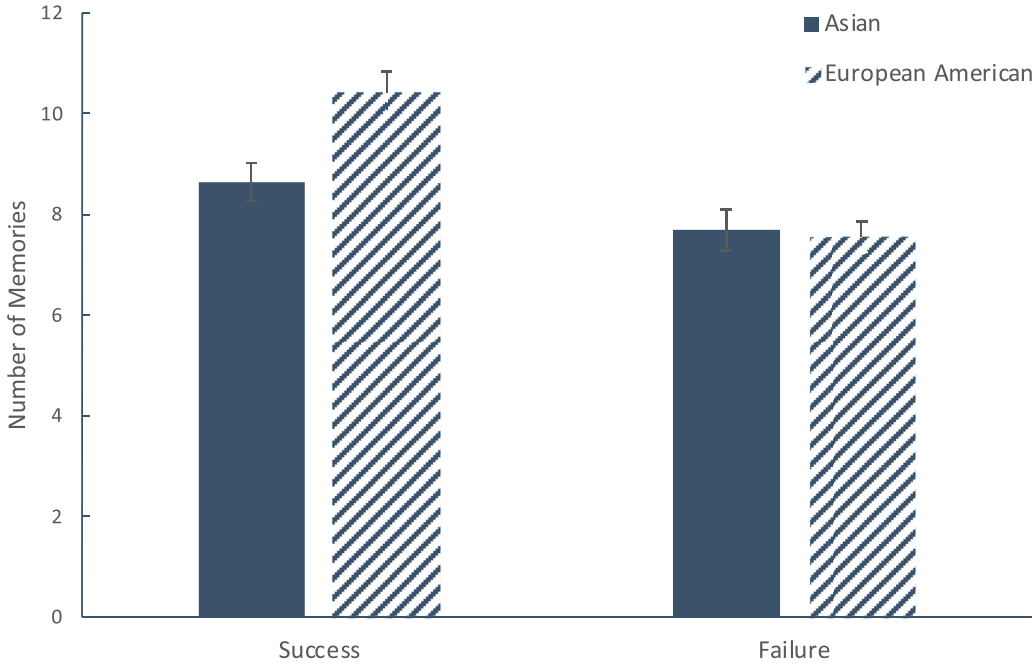


**Figure 1.** Retrieval of success and failure memories by culture. Error bars represent the standard errors of the means.

while there was no significant cultural difference for failure memories, 95% CI = [−1.26, 1.53].

To examine the relation of self-worth (i.e., flourishing score) to recalling success relative to failure memories, a composite memory score was computed by subtracting the number of failure memories from the number of success memories for each participant (i.e., success – failure memories).[2] European Americans ($M = 46.03$, $SD = 6.81$) scored higher on self-worth than did Asians ($M = 43.07$, $SD = 7.48$), $t(305) = 3.63$, $p = .0003$, 95% CI = [1.35, 4.56]. A culture × self-worth regression analysis on the composite memory score revealed a significant culture effect, $t = 2.38$, $b = .83$, $SE = .35$, $p = .018$, whereby, consistent with the above findings, European Americans ($M = 2.85$, $SD = 6.08$) recalled significantly more success relative to failure memories than did Asians ($M = .96$, $SD = 5.90$), 95% CI = [0.29, 3.03]. The effect of self-worth, $t = 1.72$, $b = .082$, $SE = .048$, $p = .087$, and the Culture × Self-worth interaction, $t = 1.19$, $b = .057$, $SE = .048$, $p = .24$, did not reach significance. In line with our research question on the self-memory link in different cultural contexts pertaining to the goals for self-enhancement versus self-improvement, a simple slope analysis was conducted for each group in the full regression model. It was found that self-worth significantly predicted the composite memory score among European Americans, $t = 1.99$, $b = .14$, $SE = .070$, $p = .047$, but not among Asians, $t = .39$, $b = .025$, $SE = .066$, $p = .700$. These results suggest that whereas European Americans who scored higher on self-worth recalled more success relative to failure memories, Asians' recall of success relative to failure memories was unrelated to their self-worth.

### Memory ratings

Finally, 2 (culture) × 2 (memory type) mixed-model analyses on memory ratings yielded no significant main effect or interaction on how long ago the memory events took place ($M_{success} = 2.61$ years, $SD = 2.02$; $M_{failure} = 2.63$ years, $SD = 2.23$), emotional intensity ($M_{success} = 3.48$, $SD = 0.61$; $M_{failure} = 3.44$, $SD = 0.69$), and the percentage memories in 1st person perspective ($M_{success} = 77\%$, $SD = 0.24$; $M_{failure} = 76\%$, $SD = 0.27$). Across both cultural groups, participants rated success memories ($M = 3.58$, $SD = 0.61$) as more personally important than failure memories ($M = 3.14$, $SD = 0.75$), $F(1, 305) = 104.29$, $p < .0001$, $\eta_p^2 = .25$.

## Discussion

Consistent with our hypotheses, European Americans recalled a greater number of success than failure memories, whereas Asian participants recalled even-handedly success and failure memories. While the two groups recalled similar numbers of failure memories, European Americans recalled more success memories than did Asians. These results are consistent with prior findings of greater accessibility to success than failure memories among Americans but not Asians (Endo & Meijer, 2004; Ross et al., 2005). Furthermore, as predicted, at the individual level, European Americans who scored higher on self-worth recalled more success relative to failure memories, whereas the recall of success relative to failure memories was unrelated to self-worth among Asians. However, given that the interaction between culture and self-worth on the composite memory score was not significant, these results should be interpreted with caution and

require future corroboration. The lack of significant interaction might reflect the nature of the comparison between two subcultural groups residing in the same society.

Interestingly, although European Americans recalled significantly more success relative to failure memories than did Asians, both groups rated success memories as more personally important than failure memories. This may be related to the current sample of college students to whom success episodes have important implications for their futures, at least at the explicit knowledge level as measured by the rating task. It may also reflect the universal self-motive for competence, mastery, and efficacy (Deci & Ryan, 2000). On the other hand, European Americans scored higher on self-worth than did Asians, consistent with prior findings pertaining to the varied cultural emphases on self-enhancement (Heine & Hamamura, 2007; Ross et al., 2002; Wang et al., 2015).

While Study 1 focused on memories for personal success versus failure in relation to positive self-views, Study 2 focused on memories for autobiographical versus vicarious events in relation to positive self-views. We recruited a community sample from the US and China to examine how the retrieval of autobiographical relative to vicarious memories would be associated with individuals' tendency to feel good about themselves. We further asked participants to recall positive and negative memories to test whether the link between memory retrieval and self-views would be consistent across memory valence.

## Study 2: Memories of the self and others

### Participants

The study used a 2 (Culture: US vs. Chinese) × 2 (Memory type: Autobiographical memory-AM vs. Vicarious memory-VM) × 2 (Valence: positive vs. negative) mixed-model design, with culture being a between-subjects factor and memory type and valence being within-subjects factors. An a priori power analysis (G*Power 3.1; Faul et al., 2007) showed that a sample size of 180 would be needed to achieve a power of .90 to detect effects with a size of $f = .10$ and $\alpha = .05$. Given the lack of prior research and the consideration of potential attrition, we recruited a larger sample to ensure sufficient power. The final sample consisted of 116 US (56 females, 56 males, and 4 other; $M_{age} = 34.71$ years, $SD = 12.00$, range = 18.58 to 65.92) and 141 Chinese participants (84 females and 57 males; $M_{age} = 39.55$ years, $SD = 13.35$, range = 18.58 to 70.83). Chinese participants were older than US participants, $t(255) = 3.03$, $p = .003$. All US participants were US citizens and proficient in English, including 80 White, 8 Asian, 9 Black, 11 mixed racial, 6 of other ethnicities, and 2 not reporting the information. Among them, 49.1% had a college degree, 20.7% a graduate degree, 25% a high-school degree, and 5.2% other educational levels. Among the Chinese participants, 65.2% had a college degree, 12.1% a graduate degree, 17% a high-school degree, and 5.7% other educational levels. US participants were recruited via Prolific (prolific.com) and were each compensated with $5. Chinese participants were recruited via CloudResearch Prime Panels (cloudresearch.com, an online platform that samples research participants worldwide) and received compensation in accordance with the agreed-upon amount through the survey platform in China that they used to participate. An additional 4 US and 16 Chinese participants were excluded for failing the attention check or not completing the task as instructed (e.g., making nonsense entries).

### Procedure

The data collection took place in mid 2023, when both the US and China had ended their shutdowns. Participants completed an online survey. The survey was prepared in English and then a translation-back translation procedure was carried out by two Chinese-English bilingual research assistants to develop a Chinese version. The two bilingual authors (QW & YT) further reviewed the two language versions to ensure equivalence.

Participants first completed a memory fluency task in which they were asked to recall events that happened to them (for AM) or other people (for VM) and that made them feel good or bad about themselves (other people) during the past 3 years of the COVID-19 pandemic. They were instructed to recall specific incidents that took place at a particular time and place lasting no longer than a day. For the VM recall, participants were additionally instructed that the events should be something in which they were not directly involved. The AM and VM recalls were blocked and counterbalanced, and the order of recalling positive and negative memories was counterbalanced within each memory type. Participants were given 1 min to recall as many events as they could in response to each prompt and were instructed to write a word or short phrase for each memory. After the fluency task, participants reported for each memory how long ago the event happened and rated the frequency they talked about the event (1 = *never*, 5 = *most frequently*), personal importance (1 = *not important*, 5 = *most important*), emotional intensity (1 = *no emotion*, 5 = *most intense*), and psychological distance of the event (1 = *very close*, 5 = *very far away*). Participants also indicated their vantage perspective (first person or third person) in AMs, and reported to whom the event happened (i.e., a family member, a friend, an acquaintance, someone they don't personally know, and other) and how they learned about the event (i.e., heard from others, personally witnessed, from social media, other) for VMs.

Following the memory task, participants completed the Rosenberg Self-Esteem Scale (Rosenberg, 1965). The scale consists of 10 items (e.g., "I feel that I have a number of good qualities") to which participants indicated their

agreement on a 4-point scale from 1 (*strongly disagree*) to 4 (*strongly agree*). The internal consistency of the scale was Cronbach's $\alpha = .87$ ($\alpha_{US} = .92$, $\alpha_{Chinese} = .80$) in the current sample. A sum score was calculated for each participant.[3] Finally, participants answered demographic questions and rated their general experience during the COVID-19 pandemic (1 = *very negative*, 5 = *very positive*) and the severity of COVID-19 infection in their residential area (1 = *very light*, 5 = *very severe*).

## Results

### Preliminary analyses

Participants provided a total of 3276 memories, including 884 positive and 871 negative AMs and 733 positive and 788 negative VMs. There was no significant gender effect or Culture × Gender interaction on the memory recall measures. There was also no significant effect of education or reported COVID severity in residential area on memory recall, nor was there a significant cultural difference in reported COVID severity (US: $M = 3.30$, $SD = 1.01$; Chinese: $M = 3.05$, $SD = 1.16$). These variables were therefore not considered further in analysis. Age was negatively correlated with the number of memories recalled, $r_{p\text{-}AM} = -.24$, $p = .0001$, $r_{n\text{-}AM} = -.22$, $p = .0004$, $r_{p\text{-}VM} = -.28$, $p < .0001$, and $r_{n\text{-}VM} = -.21$, $p = .0006$, whereby younger participants recalled more memories across all categories than did older participants. In addition, participants who rated more positively their general experience during the COVID-19 pandemic recalled fewer negative AMs and VMs, $r_{n\text{-}AM} = -.21$, $p = .0006$, and $r_{n\text{-}VM} = -.17$, $p = .0056$. Also, Chinese participants ($M = 2.92$, $SD = 1.08$) rated their pandemic experience more positively than did US participants ($M = 2.53$, $SD = 0.99$), $t(254) = 3.00$, $p = .0030$, 95% CI = [0.13, 0.65]. Age and pandemic experience were therefore included as covariates in the analysis of the number of memories recalled. The descriptive data of memory recall and ratings as a function of culture are reported in Table 2.

### AM and VM and the role of the self

A 2 (Culture: US vs. Chinese) × 2 (Memory type: AM vs. VM) × 2 (Valence: positive vs. negative) mixed model analyses with culture as a between-subjects factor, memory type and valence as within-subjects factors, subject as a random factor, and age and pandemic experience as covariates on the number of memories recalled revealed main effects of culture, $F(1, 252) = 38.59$, $p < .0001$, $\eta_p^2 = .13$, and memory type, $F(1, 762) = 29.75$, $p < .0001$, $\eta_p^2 = .038$, qualified by a Culture × Memory type interaction, $F(1, 762) = 5.07$, $p = .025$, $\eta_p^2 = .007$ (see Figure 2). Post-hoc Tukey HSD tests ($p < .05$) showed that whereas US participants recalled more AMs than VMs, 95% CI = [0.34, 1.00], Chinese recalled similar numbers of AMs and VMs, 95% CI = [−0.02, 0.57]. Also, US participants recalled both types of memories more than did Chinese participants, 95% CI = [0.82, 1.86] for AM, 95% CI = [0.43, 1.48] for VM. There was no significant effect pertaining to memory valence. Age was a significant covariate, $F(1, 252) = 15.61$, $p = .0001$, $\eta_p^2 = .058$, but pandemic experience was not.[4]

To examine the relation of self-esteem to recalling AMs relative to VMs, a composite memory score was computed by subtracting the number of VMs from the number of AMs for each participant (i.e., AMs – VMs). Age and pandemic experience were unrelated to the composite score ($rs < -.03$, $ps > .68$) and therefore not considered in subsequent analyses. In addition, European Americans ($M = 27.77$, $SD = 6.57$) and Chinese ($M = 28.44$, $SD = 5.08$) did not differ significantly in self-esteem, $t(255) = 0.93$, $p = .36$, 95% CI = [−2.10, 0.76]. A culture × self-esteem regression analysis on the composite memory score revealed a significant culture effect, $t = 2.09$, $b = .41$, $SE = .20$, $p = .038$, whereby, consistent with the above findings, Americans ($M = 1.34$, $SD = 3.68$) recalled significantly more AMs relative to VMs than did Chinese ($M = .55$, $SD = 2.69$), 95% CI = [0.047, 1.60]. The effect of self-esteem did not reach significance, $t = 1.11$, $b = .038$, $SE = .034$, $p = .27$. Furthermore, there was a significant Culture × Self-esteem interaction, $t = 2.42$, $b = .083$, $SE$

**Table 2.** Mean recall and memory ratings by culture.

| | | Autobiographical Memory | | | | Vicarious Memory | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Positive | | Negative | | Positive | | Negative | |
| | | Mean | SD | Mean | SD | Mean | SD | Mean | SD |
| Chinese | # of Memories | 2.70 | 1.74 | 2.77 | 1.73 | 2.39 | 1.52 | 2.52 | 1.60 |
| | Memory age (month) | 12.06 | 8.42 | 11.50 | 6.99 | 12.56 | 8.32 | 12.17 | 7.60 |
| | Prior sharing | 3.48 | 0.94 | 3.46 | 0.97 | 3.45 | 0.90 | 3.41 | 0.94 |
| | Personal importance | 4.05 | 0.71 | 3.96 | 0.81 | 3.72 | 0.86 | 3.58 | 0.91 |
| | Emotional intensity | 3.53 | 0.87 | 3.79 | 0.86 | 3.52 | 0.84 | 3.63 | 0.82 |
| | Subjective distance | 2.34 | 1.11 | 2.39 | 1.18 | 2.60 | 1.13 | 2.65 | 1.01 |
| | % 1st person | 85.82 | 28.41 | 85.58 | 29.37 | – | – | – | – |
| US | # of Memories | 4.34 | 2.35 | 4.15 | 2.07 | 3.41 | 2.12 | 3.72 | 2.07 |
| | Memory age (month) | 17.67 | 8.87 | 20.88 | 8.32 | 18.09 | 8.28 | 19.75 | 8.24 |
| | Prior sharing | 2.99 | 0.92 | 2.78 | 1.07 | 2.73 | 0.87 | 2.75 | 0.84 |
| | Personal importance | 3.73 | 0.85 | 3.41 | 1.06 | 2.87 | 0.90 | 3.05 | 0.99 |
| | Emotional intensity | 3.26 | 0.87 | 3.51 | 0.97 | 2.92 | 0.91 | 3.26 | 0.96 |
| | Subjective distance | 2.58 | 0.88 | 2.91 | 1.02 | 3.12 | 0.97 | 3.03 | 1.05 |
| | % 1st person | 80.38 | 29.74 | 75.20 | 33.37 | – | – | – | – |

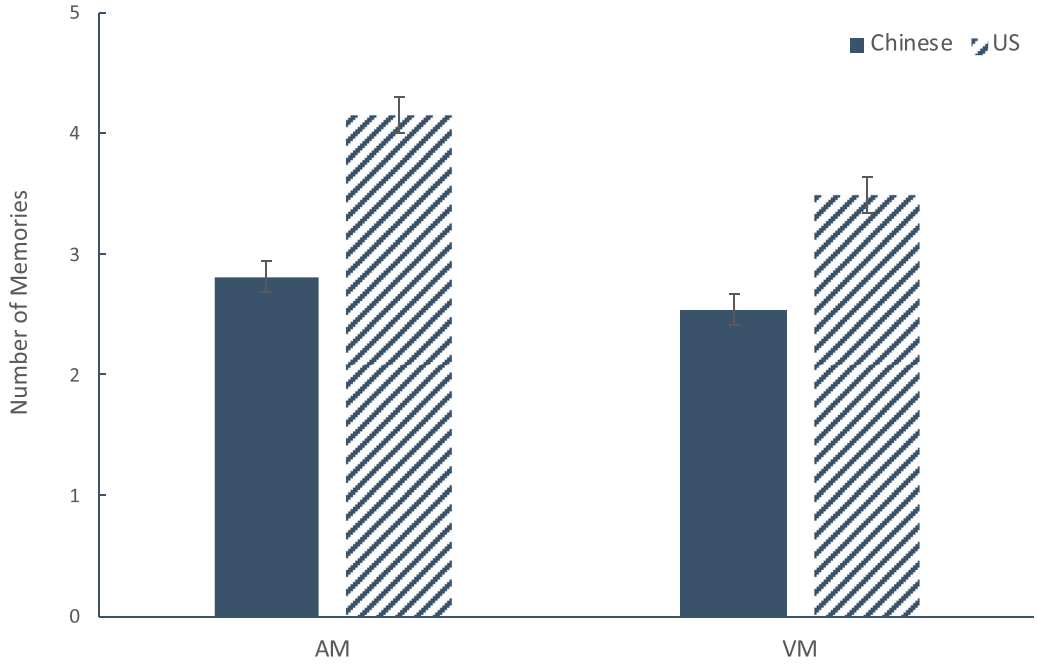


**Figure 2.** Retrieval of autobiographical (AM) and vicarious memories (VM) by culture. Error bars represent the standard errors of the means.

= .034, $p$ = .016. A simple slope analysis for each group in the full regression model showed that self-esteem significantly predicted the composite memory score among Americans, $t$ = 2.72, $b$ = .12, $SE$ = .045, $p$ = .0070, but not among Chinese, $t$ = −.86, $b$ = −.045, $SE$ = .052, $p$ = .39. Thus, whereas Americans who scored higher on self-esteem recalled more AMs relative to VMs, there was no reliable evidence that Chinese's recall of AMs relative to VMs was related to their self-esteem.

### *Memory ratings*

Two (culture) × 2 (memory type) × 2 (valence) mixed-model analyses with culture as a between-subjects factor, memory type and valence as within-subjects factors, subject as a random factor were conducted on memory ratings (see Table 2). For how long ago the memory events took place, the analysis yielded main effects of culture, $F$(1, 253.5) = 66.12, $p$ < .0001, $\eta_p^2$ = .21, and valence, $F$(1, 723.5) = 9.71, $p$ = .0019, $\eta_p^2$ = .013, qualified by a Culture × Valence interaction, $F$(1, 723.5) = 27.71, $p$ < .0001, $\eta_p^2$ = .037. Post-hoc Tukey HSD tests ($p$ < .05) showed that US participants recalled negative memories from a longer time ago than positive memories, 95% CI = [1.44, 3.82], whereas Chinese participants recalled positive and negative memories from a similar distance, 95% CI = [−0.42, 1.77]. In addition, US participants recalled both positive, 95% CI = [3.08, 7.87], and negative memories, 95% CI = [6.38, 11.18], from a longer time ago than did Chinese participants, which may reflect the different timelines of COVID showdown in the two countries.

For prior memory sharing, Chinese participants reported more frequent sharing of their memories than did US participants, $F$(1, 253.1) = 46.70, $p$ < .0001, $\eta_p^2$ = .16, and participants reported more frequent sharing of AMs than VMs, $F$(1, 728.4) = 5.24, $p$ = .022, $\eta_p^2$ = .007.

For ratings on personal importance, the analysis yielded main effects of culture, $F$(1, 249.7) = 44.33, $p$ < .0001, $\eta_p^2$ = .15, memory type, $F$(1, 724.2) = 122.79, $p$ < .0001, $\eta_p^2$ = .14, and valence, $F$(1, 724.3) = 4.38, $p$ = .037, $\eta_p^2$ = .006, qualified by Culture × Memory type, $F$(1, 724.2) = 7.88, $p$ = .0051, $\eta_p^2$ = .011, Memory type × Valence, $F$(1, 724.1) = 5.80, $p$ = .016, $\eta_p^2$ = .008, and Culture × Memory type × Valence interactions, $F$(1, 724.1) = 9.25, $p$ = .0024, $\eta_p^2$ = .013. Tukey HSD tests ($p$ < .05) showed that US participants considered positive AMs more important to them than negative AMs, 95% CI = [0.038, 0.58], both of which were rated as more important than corresponding VMs, 95% CI = [0.57, 1.12] for positive memories, 95% CI = [0.095, 0.64] for negative memories. In contrast, Chinese participants considered positive and negative AMs equally important to them, 95% CI = [−0.17, 0.34], although they also rated positive and negative AMs respectively more important than positive and negative VMs, 95% CI = [0.081, 0.59], and 95% CI = [0.13, 0.65].

For emotional intensity, there were main effects of culture, $F$(1, 252.1) = 19.81, $p$ < .0001, $\eta_p^2$ = .073, memory type, $F$(1, 727.4) = 19.56, $p$ < .0001, $\eta_p^2$ = .026, and valence, $F$(1, 727.6) = 32.46, $p$ < .0001, $\eta_p^2$ = .043, as well as a Culture × Memory type interaction, $F$(1, 727.4) = 5.21, $p$ = .023, $\eta_p^2$ = .007. Negative memories were rated as more emotionally intense than positive memories, 95% CI = [0.16, 0.34]. Tukey HSD tests ($p$ < .05) further showed that US participants rated AMs more emotionally intense than VMs, 95% CI = [0.13, 0.46], whereas Chinese rated AMs and VMs similarly, 95% CI = [−0.059, 0.25]. In addition, Chinese rated AMs and VMs respectively more intense

than did US participants, 95% CI = [0.030, 0.51], and 95% CI = [0.23, 0.72].

For subjective distance, the analysis yielded main effects of culture, $F(1, 253.2) = 13.68$, $p = .0003$, $\eta_p^2 = .051$, and memory type, $F(1, 726.6) = 42.05$, $p < .0001$, $\eta_p^2 = .055$, qualified by Memory type × Valence, $F(1, 727.5) = 4.92$, $p = .027$, $\eta_p^2 = .007$, and Culture × Memory type × Valence interactions, $F(1, 727.5) = 6.03$, $p = .014$, $\eta_p^2 = .008$. Tukey HSD tests ($p < .05$) showed that US participants rated positive AMs as feeling closer to them than negative AMs, 95% CI = [0.034, 0.63], and they rated positive AMs as feeling closer to them than positive VMs, 95% CI = [0.25, 0.86]. In contrast, Chinese participants rated positive and negative AMs as feeling equal in distance, 95% CI = [−0.25, 0.30], and they rated negative AMs feeling closer to them than negative VMs, 95% CI = [0.014, 0.57].

In addition, for AMs, a 2 (culture) × 2 (valence) mixed-model analysis showed that Chinese participants recalled on average a greater percentage of memories in 1st person perspective than did US participants, $F(1, 254.9) = 5.79$, $p = .017$, $\eta_p^2 = .022$.

For VMs, we conducted a series of 2 (culture) × 2 (valence) generalised linear mixed models on the categorical variables concerning to whom the events happened (i.e., target person) and how participants learned about the events (i.e., memory source; see Table 3). Regardless of valence, US participants were more likely than Chinese to recall events happening to a friend, $\beta = -.38$, SE = .10, $p < .001$, $z = -4.04$., OR (odds ratio) = 2.16, 95% CI = [1.49, 3.13]. whereas Chinese were more likely than US participants to recall events happening to an acquaintance, $\beta = .26$, SE = .11, $p = .015$, $z = 2.44$, OR = .60, 95% CI = [0.39, 0.90], or someone they did not personally know, $\beta = .71$, SE = .18, $p < .001$, $z = 3.93$, OR = .24, 95% CI = [0.12, 0.49]. Both US and Chinese participants were more likely to recall positive than negative events involving a family member, $\beta = -.14$, SE = .06, $p = .024$, $z = -2.26$, OR = 1.33, 95% CI = [1.04, 1.71], but more likely to recall negative than positive events about an acquaintance, $\beta = .22$, SE = .09, $p = .010$, $z = 2.58$, OR = .64, 95% CI = [0.46, 0.90], or someone they did not know, $\beta = .23$, SE = .09, $p = .011$, $z = 2.56$, OR = .63, 95% CI = [0.45, 0.90].

For memory source, the analysis revealed main effects of culture, $\beta = -.20$, SE = .10, $p = .046$, $z = -2.00$, and valence, $\beta = .23$, SE = .07, $p < .001$, $z = 3.44$, and a Culture × Valence interaction, $\beta = .15$, SE = .07, $p = .024$, $z = 2.26$, on events heard from others. US participants were more likely than Chinese to hear about positive events from others, OR = 2.02, 95% CI = [1.24, 3.32], whereas there was no significant cultural difference for negative events, OR = 1.12, 95% CI = [0.71, 1.77]. Chinese were more likely to hear about negative than positive events from others, OR = .47, 95% CI = [0.32, 0.70], while there was no significant difference for US participants, OR = .87, 95% CI = [0.62, 1.19]. For events that participants personally witnessed, the analysis revealed a main effect of valence, $\beta = -.27$, SE = .06, $p < .001$, $z = -4.33$, whereby participants of both cultures were more likely to recall personally witnessed positive than negative events, OR = 1.71, 95% CI = [1.34, 2.18]. There was no significant effect pertaining to events learned through social media.

## Discussion

In line with our hypotheses, US participants recalled a greater number of AMs than VMs, whereas Chinese recalled even-handedly AMs and VMs, regardless of event valence. European Americans also recalled significantly more AMs relative to VMs than did Chinese. Furthermore, at the individual level, European Americans who scored higher on self-esteem recalled more AMs relative to VMs, whereas this relation was absent among Chinese. Interestingly, US participants recalled both types of memories more than did Chinese. Past research has also found that US participants show greater accessibility to different types of memories (e.g., memories for specific and general events; memories for autobiographical and fictional events) than do Asians (Peterson et al., 2009; Wang, 2009). There has been some evidence that in addition to culturally prioritised self-goals, other factors may also contribute to cultural differences in general memory accessibility (e.g., perceptual styles and event segmentation; Swallow & Wang, 2020; Wang, 2021).

Important findings also emerged for the phenomenological characteristics of memory. Participants of both

**Table 3.** Target person and memory source in vicarious memories.

| | Chinese | | US | |
|---|---|---|---|---|
| Target Person (%) | Positive | Negative | Positive | Negative |
| Family | 37.69 | 27.97 | 36.11 | 34.51 |
| Friend | 26.71 | 25.42 | 42.42 | 36.62 |
| Acquaintance | 12.76 | 15.25 | 7.32 | 12.68 |
| Not personally know | 18.99 | 28.25 | 10.35 | 12.44 |
| Other | 3.86 | 3.11 | 3.79 | 3.76 |
| Memory Source (%) | Positive | Negative | Positive | Negative |
| Heard from others | 20.77 | 32.02 | 31.82 | 34.98 |
| Personally witnessed | 60.83 | 46.35 | 50.25 | 46.01 |
| From social media | 17.80 | 21.07 | 14.39 | 15.49 |
| Other | 0.59 | 0.56 | 3.54 | 3.52 |

*Note*: For each variable, the percentages in each column add up to 100%.

cultures rated AMs as more personally important and reported more frequent sharing of AMs than VMs, which may reflect the greater self-relevance of AMs than VMs (Fivush, 2019; Pillemer et al., 2015, 2024; Reese et al., 2017; Thomsen & Pillemer, 2017). However, US participants recalled positive memories from the more recent past than negative memories, considered positive AMs more personally important than negative AMs, rated AMs as more emotionally intense than VMs, and reported positive AMs as feeling closer to them than negative AMs and positive AMs as feeling closer than positive VMs. In contrast, Chinese participants recalled positive and negative memories from a similar time period, considered positive and negative AMs equally important to them, rated AMs and VMs as similar in emotional intensity, and reported positive and negative AMs as feeling equal in psychological distance and negative AMs as in fact feeling closer than negative VMs. These cultural differences complement the main findings of memory retrieval and highlight the self-enhancement tendency among US participants and an even-handedness among Chinese in personal event remembering (Hampton & Varnum, 2018; Heine & Hamamura, 2007; Oishi, 2002; Wang, 2013).

In addition, Chinese participants recalled a greater percentage of autobiographical memories from a 1st person perspective than did US participants, which may reflect the fact that their memories were from more recent times than those of US participants and therefore more likely to remain a field vantage point (St. Jacques, 2024). Also, whereas US participants were more likely than Chinese to recall events happening to a friend, Chinese were more likely than US participants to recall events happening to an acquaintance or someone they did not personally know. US participants were more likely than Chinese to recall positive events heard from others, and Chinese were more likely to recall negative than positive events heard from others. Both US and Chinese participants were more likely to recall personally witnessed positive than negative events. In general, a majority of the vicarious memories concerned family members and friends and were personally witnessed by participants. These original findings enrich the current understanding of vicarious memories (Pillemer et al., 2015, 2024; Reese et al., 2017).

Taken together, findings from Study 2 are in line with our theoretical analysis that the emphasis on self-enhancement – which goes hand-in-hand with the pursuit of individuality (Heine & Hamamura, 2007; Kitayama & Markus, 1991; Wang, 2013) – in Western cultures motivates individuals to focus on and remember autobiographical events in which they were the protagonists, which in turn helps them maintain positive self-views. In contrast, the emphasis on self-improvement in Chinese culture motivates individuals to seek and remember diagnostic event information, whether it concerns the self or others, from which they can learn lessons and achieve improvement.

## General discussion

Memory and the self mutually construct each other in the Self-Memory System (SMS) (Conway, 2005; Conway & Pleydell-Pearce, 2000), which is further saturated in the cultural context that defines and regulates working self-goals and in turn shapes autobiographical remembering (Wang, 2013; Wang & Conway, 2006). The current research yielded original findings pertaining to the goal of competence (Deci & Ryan, 2000) as it manifests through self-enhancement versus self-improvement motivations and further relates to memory retrieval in cultural contexts. Study 1 extends previous cross-cultural findings regarding memories for success and failure events (Endo & Meijer, 2004; Zhang & Cross, 2011), examining the connection between retrieving success relative to failure memories and positive self-views in different cultures. Furthermore, Study 2 is the first that we know of to examine autobiographical and vicarious memories in the cultural context and to relate the memory retrieval to self-motives for competence.

Prior cross-cultural research has focused on autonomous and relational self-goals that are variably emphasised in different cultures and in turn influence the content and accessibility of autobiographical memory (e.g., Wang, 2001; Wang & Conway, 2004; Wang & Ross, 2005). The goal of competence, although universal and fundamental in all human societies (Deci & Ryan, 2000), manifests in different forms across cultures in self-enhancement versus self-improvement and thus may also play an important role in shaping memory (Wang, 2013, 2016). The prioritised goals for self-enhancement in Western cultures motivate individuals to remember events to feel good about oneself (Endo & Meijer, 2004; Hampton & Varnum, 2018; Heine & Hamamura, 2007; Oishi, 2002). As such, European American participants in Study 1 remembered more success than failure episodes and US participants in Study 2 remembered more events happening to themselves than to others, which were further associated with their positive self-views. In contrast, the prioritised goals for self-improvement in Asian, such as Chinese, cultures motivate individuals to attend to and remember diagnostic information to better oneself (Oishi & Diener, 2003; Ross et al., 2005). As a result, Asian and Chinese participants in our studies remembered even-handedly success and failure episodes and autobiographical and vicarious events; retrieving success relative failure memories or autobiographical relative to vicarious memories bore no significant relation with individuals' positive self-views. These findings lend important support to the notion that culture modulates the self-memory system such that culturally prioritised working self-goals determine what memories are likely to be retained and accessible (Wang, 2013; Wang & Conway, 2006).

By examining different types of memories, using different measures, and targeting different comparison groups, the current studies provided converging evidence

for the link from culturally prioritised self-goals to ways of remembering. Still, there are some important limitations to the studies. First of all, the data are correlational in nature and may reflect the mutual influence between memory and the self in the Self-Memory System (Conway, 2005; Conway & Pleydell-Pearce, 2000). Future research may utilise experimental designs to further understand the role of working self-goals in modulating memory processes as well as how memories contribute to the formation and solidification of the self and identity in cultural contexts. In addition, given the lack of significant interaction in Study 1 between culture and self-worth in predicting memory retrieval, the findings should be replicated in a larger cross-cultural sample. Furthermore, although remembering success relative to failure and remembering autobiographical relative to vicarious events were positively associated with positive self-views among European American and US participants (but not Asians and Chinese), the effects were generally small or moderate. This is consistent with previous studies examining individual-level relations between self-goals and memories (Wang, 2001, 2004), which may reflect the notion that both the self and memory are complex constructs being influenced by many factors (Conway, 2005; Conway & Pleydell-Pearce, 2000; Wang, 2021).

Interestingly, although Study 1 revealed the effect of retrieving memories for success (positive) versus failure (negative) events, Study 2 showed no significant effect of valence on memory retrieval. Conceivably, this is because that, different from success and failure memories, the positive and negative memories that participants recalled from the pandemic period often concerned mundane events (e.g., adopting a new pet, getting sick) that did not have direct implications for one's self-views or views about others pertaining to competence. Whether the findings were specific to the pandemic context needs to be addressed through future replications. Nevertheless, the phenomenological characteristics of autobiographical and vicarious memories showed important variations by valence across cultures in line with respectively self-enhancement and self-improvement motivations. It appears that culture moderated the effect of valence on the subjective experience of, but not accessibility to, autobiographical relative to vicarious memories. It would be important to examine other aspects of remembering (e.g., detailedness) in future research in relation to the self-goal of competence. In addition, future studies may also go beyond the West–East comparisons and examine remembering in the culturally modulated self-memory system in diverse and underrepresented cultural communities. Finally, additional culturally shaped self-goals and motives (e.g., relational mobility, Wang & Suo, 2023) should be identified and examined in relation to event memories pertaining to oneself, others, and the community.

In conclusion, Martin Conway made monumental, unparalleled contributions to our understanding of autobiographical memory. His theorisation of the Self-Memory System has provided a guiding foundation for the study of autobiographical memory across diverse fields (Conway, 2005; Conway & Pleydell-Pearce, 2000). Wang and Conway (2006) further posit that culture modulates the self-memory system such that culture prioritises certain working-self goals and in turn privileges the encoding and retention of memories in line with the goals. The current studies yielded original findings and provided additional evidence for the role of the culturally modulated self-memory system in remembering.

## Notes

1. This study was part of a larger project that investigated success and failure memories across cultures. Participants also completed the Self-Construal Scale (Singelis, 1994), the Self-Motive Scale (Gregg et al., 2011), and the Scale of Positive and Negative Experience (SPANE) (Diener et al., 2010). These measures were for separate research questions and were not included in this study.
2. Although both difference and proportion scores may index relative accessibility to success versus failure memories, their meanings and usages differ. We used difference scores given that our research question and method (with within-subjects, repeated measures) focused on how many memories participants recalled pertaining to success relative to failure, rather than how likely participants recalled success relative to failure memories.
3. Participants also completed the Self-Construal Scale (Singelis, 1994) that was for separate research questions and not included in this study.
4. The pattern of results was identical with or without the covariates. Age did not interact with culture or other independent variables. The pattern of results also remained the same after participants over 65 years old (1 US and 9 Chinses) were excluded from analyses.

## Disclosure statement

No potential conflict of interest was reported by the author(s).

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