RESEARCH ARTICLE

Culture, psychological proximity to the past and future, and self-continuity

Li-Jun Ji*, Emily K. Hong*, Tieyuan Guo†, Zhiyong Zhang‡, Yanjie Su‡ & Ye Li§

* Department of Psychology, Queen's University, Kingston, Ontario, Canada
† Department of Psychology, University of Macau, Macau, China
‡ School of Psychological and Cognitive Sciences, Beijing University, Beijing, China
§ Department of Psychology, Central China Normal University, Wuhan, China

Correspondence
Li-Jun Ji, Department of Psychology, Queen's University, Kingston, Ontario K7L 3N6, Canada.
E-mail: lijunji@queensu.ca

Received: 22 May 2017
Accepted: 11 September 2018

https://doi.org/10.1002/ejsp.2544

Conflict of Interest Statement
The authors declare that there are no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Ethical Statement
Ethical clearance was obtained and ethical procedures were followed for all the studies reported here.

Transparency Statement
The data and study materials are being archived at Queen's University Scholar Portal dataverse (https://doi.org/10.5683/sp2/nxtb6j).

Abstract

The present research explores how culture influences individuals' psychological proximity to the past and future, which may predict differences in perceived self-continuity across time. In Studies 1 and 2, we hypothesized and found that Chinese participants saw the past and future as more connected and subjectively closer to the present compared to Euro-Canadians. Following this, we expected and found in Studies 3 and 4 that Chinese participants perceived greater self-continuity over time than Euro-Canadians. Additionally, perceived closeness to the past mediated the effect of culture on past–present self-continuity, which subsequently predicted present–future self-continuity. Study 5 further documented a causal effect of perceived distance to the past on self-continuity. These results suggest that cultural differences in temporal attention to the past and future play a pivotal role in people's sense of self-continuity across time. This has important implications for temporal focalism, intertemporal discounting, and social interactions between Chinese and Euro-Canadians.

Keywords: culture, temporal distance, past, future, self-continuity

Time passes continuously, from the past to the present, and then to the future. Yet despite this continuity in the passage of time, the present tends to loom larger than the past and future. We tend to emphasize the here and now, even though the past helped to determine where we are at present, and the future will be shaped by our present actions. This article examines how culture may affect the degree to which we attend to the past and future, and how cultural differences in attending to the past and future are linked to our perceived self-continuity.

Culture and Temporal Information Focus

Culture shapes the way people think and reason (Nisbett, 2003; Nisbett, Peng, Choi, & Norenzayan, 2001; Peng & Nisbett, 1999). For example, East Asians (including Chinese, Japanese, and Koreans) tend to think holistically, focusing on the relationships between objects and their context, as well as the relatedness among different objects. In contrast, European North Americans think more analytically, attending to objects in separation from other entities and contexts (Nisbett et al., 2001). As a result, European North Americans are better than East Asians at disassociating an object from the background, whereas East Asians' judgments are more influenced by the relationship between the object and its background (e.g., Ji, Peng, & Nisbett, 2000; Kitayama, Duffy, Kawamura, & Larsen, 2003). This cultural discrepancy in perception was illustrated by Masuda and Nisbett (2006). They presented participants with photos and animated vignettes that had changes in focal objects or in the surrounding context. They found that Americans were more sensitive to changes in focal objects than to changes in the context, whereas East Asians were more sensitive to

Social Science and Humanities Research Council of Canada (SSHRC) 410-2009-0904435-2012-1279

contextual changes than to focal object changes. These findings demonstrate that culture influences perception and the focus of individuals' attention.

Importantly, cultural differences in analytic and holistic thinking may also generalize to the temporal dimension. Given that people think of time in terms of space (Casasanto & Boroditsky, 2008), it is possible that East Asians pay more attention to the past and future than European North Americans because the past and future represent the "context" or "background" of the present. Ample evidence supports such a prediction pertaining to the past (Ji, Lee, & Guo, 2010). For example, in a study by Ji, Guo, Zhang, and Messervey (2009), Canadian and Chinese participants imagined a hypothetical theft scenario and then read past or present behavioral information regarding the potential suspect. Chinese participants considered past behavior to be more relevant when making judgments, and they remembered more information from the past than did Canadians. Furthermore, when predicting future events, European North Americans focused more on the recent event, whereas East Asians considered more information from the remote past and the overall trend (Ji, 2005; Ji, Nisbett, & Su, 2001; Ji, Zhang, & Guo, 2008). Similarly, Cheng and Schweitzer (1996) found that Chinese TV commercials are more likely than American commercials to emphasize experiences of the past. These findings indicate that Chinese people attend to the past more than Euro-North-Americans do, which is consistent with the stronger past orientation among Chinese people than among North Americans (Kluckhohn & Strodtbeck, 1961).

No research, to our knowledge, has examined directly whether East Asians attend more to the future than European North Americans, although indirect evidence suggests that this would be the case. For example, Maddux and Yuki (2006) showed participants a picture of a person making a shot in a game of pool, and asked participants to indicate the impact of such a shot on some future shots and the overall outcome of the game. They reported that Japanese participants expected a single pool shot to have a greater impact on a distal shot (e.g., the sixth shot after the focal shot) and a distal event (e.g., overall outcome of the game) than the European American participants. Thus, East Asians showed greater awareness of the indirect and distal consequences of the event than European Americans did. Likewise, Shechter, Durik, Miyamoto, and Harackiewicz (2011) found that East Asians were more motivated to learn a technique that could help them with long-term or distal goals than proximal goals. In contrast, Euro-Americans were more motivated to learn a technique that was useful for their proximal, rather than distal, goals. Additional research on cultural perception of the future has shown that East Asians perceive the future to be more proximal to the present than European Americans (Lee, Lee, & Kern, 2011). The results support the view that East Asians are more long-term oriented and forward-looking than Americans are (Briley, 2009; Cheng, O'Leary, & Page, 1995; Hofstede, 2001; but see Graham, 1981; Kluckhohn & Strodtbeck, 1961).

The literature reviewed above suggests that compared to Euro-North Americans, East Asians not only see the past as more relevant and closer to the present, but are also more likely to link the future to the present and to appreciate the future consequences of a current event. Cultural differences in the experience of psychological connectedness to the past and future may have implications for self-continuity.

Self-Continuity

Self-continuity refers to perceiving oneself as a unified entity that transcends the feeling of "here and now," by temporally extending both backwards into the past and forwards into the future (Chandler, 1994). The sense of self-continuity primarily enables an individual to maintain the view of "sameness" in the self, despite vicissitudes in the past and uncertainty in the future (Lampinen, Odegard, & Leding, 2004). It can be described as a "backbone of the self" (Sadeh & Karniol, 2012, p. 93) that synthesizes one's fluid and malleable self-concepts in the past, present, and future into an enduring sense of personal identity.

Self-continuity can be constructed in different ways. One approach is the "essentialist" approach (Chandler, Lalonde, Sokol, & Hallett, 2003), which emphasizes stability of the self over time. From the essentialist perspective, people achieve self-continuity by focusing on the attributes that endure over time and denying or trivializing changes. This approach is related to the belief that a person has an underlying and fixed essence. Self-continuity, derived from stability of the self, correlates with the passage of time (Lampinen et al., 2004; Parfit, 1971). To illustrate, a person likely feels greater continuity in the self from yesterday to today, than from a year ago to today (Peetz & Wilson, 2013). This might be due to actual differences in the changes between short and long temporal frames, or a lay belief that there must be more changes in a longer time frame. Regardless, if people feel proximal to the past or future, they are more likely to think that they have undergone fewer changes, thereby attaining a greater sense of self-continuity.

Another way to construct or maintain self-continuity is through the narrative approach (Chandler et al., 2003). Change and instability in self are almost inevitable, but individuals can construct their sense of self-continuity by developing narratives or stories to account for change or instability. Through narratives, people can make sense of changes, connect different experiences, and achieve meaning and coherence of the self (Becker et al., 2018; Chandler et al., 2003). This approach emphasizes the relatedness or connectedness between things and experiences, rather than "to imagine the existence of anything enduring or immune to time" (Chandler et al., 2003, p. 9).

People can also strengthen their self-continuity by making associative links to the past (Becker et al., 2018). Without explicitly reasoning about stability or storylines, people can derive a sense of self-continuity "from thoughts, feelings, actions or objects that remind them of, or make them feel close to, their past selves" (Becker et al., 2018, p. 3). For example, Sedikides, Wildschut, Routledge, and Arndt (2015) showed that recalling a nostalgic autobiographic event enhances people's perceived connection between the past and present selves (compared to recalling a neutral autobiographic event). They concluded that nostalgia counteracts self-discontinuity and increases self-continuity.

All these different approaches help foster self-continuity. Becker et al. (2018) found in a cross-cultural study that holding an identity that is stable, construing one's life as a story, and making an associative link to the past were all associated with greater connectedness to the past, present, and future, and greater self-continuity. They also found that self-continuity could manifest in different ways depending on personal and cultural beliefs about personhood. Specifically, individual beliefs on lower mutability are associated more with stability-based self-continuity. Cultural beliefs on higher mutability are associated more with narrative-based self-continuity.

Overview of the Present Studies

Despite the previous attempts to examine self-continuity across culture (Becker et al., 2018; Chandler et al., 2003; Kung, Eibach, & Grossmann, 2016), to our knowledge, little research has examined cultural differences in attending to both the past and future in the same study, or investigated the implication of cultural differences in temporal focus on self-continuity. The present research attempts to fill this gap by exploring how culture-driven temporal focus predicts a sense of self-continuity through comparisons between Chinese and Euro-Canadian participants. We decided to examine various bases of self-continuity across different studies, as we were interested in the general sense of self-continuity and our predictions were not limited to one specific type or source of self-continuity.

We predicted cultural differences in psychological proximity to the past and future, such that Chinese people would perceive both the past and future to be closer to the present compared to Euro-Canadians. Furthermore, we predicted that greater psychological temporal proximity among Chinese people would result in greater perceived self-continuity across time compared to Euro-Canadians. In a series of studies, we examined whether past/future events (Study 1a), and past/future time points (Study 1b), would be perceived as closer to the present by Chinese people than by Euro-Canadians, and whether events in the more distant past and future would be more accessible to Chinese people than to Euro-Canadians (Study 2). Studies 3 and 4 then examined whether this difference in temporal focus and proximity would be linked to cultural differences in self-continuity. Study 5 directly tested the causal link between subjective temporal distance and self-continuity. Ethical clearance was obtained and ethical procedures were followed for all the studies reported here.

Studies 1a and 1b

Studies 1a and 1b adapted Ross and Wilson's (2002) approach. We measured participants' subjective ratings of the temporal distance of the past and the future to determine their temporal focus. As holistic thinkers (such as Chinese people) generally are more sensitive to the context than analytic thinkers (such as Euro-Canadians), we expected Chinese people to be more likely than Euro-Canadians to attend to the context along the temporal dimension. One may argue that the past and future serve as the context for the present, which is more salient. It follows that as more attention is paid to information about past and future events, the closer to the present those events would be perceived. Thus, we predicted that the past and future should feel closer to the present for Chinese people than for Euro-Canadians, due to culturally moderated attention to the past and future.

Study 1a Methods

Participants. Fifty-eight Euro-Canadian students (37 women and 21 men; M_{age} = 20.14, SD = 1.76) in Canada and 61 Chinese students (39 women and 22 men; M_{age} = 20.74, SD = 1.76) in China participated in Study 1a.[1] All participants were tested in their native language. Testing materials in Chinese were translated from English independently by two bilingual researchers to ensure accuracy and cross-cultural equivalence. Discrepancies were resolved through discussion. The same procedure was followed for all of the studies in this article.

Procedure. Approximately 1 month before the final exam period, Canadian and Chinese students were invited to participate in a questionnaire study.

The study had a 2 (Culture) × 2 (Time) mixed design, with time being a within-participant factor. Participants were asked to think about a past exam

[1]Studies 1a and 2 were conducted prior to 2008, for which we aimed at 60 participants in each cultural group (thus 120 participants in total; in reality we had 119 Ps in Study 1a and 130 Ps in Study 2). Study 1b was conducted in 2010; Studies 3 and 4 were conducted in 2016; Study 5 was conducted in 2017. Based on Study 1a, the effect size on average was close to medium or large ($.41 < d < 1.12$). Using G*Power 3 software (Faul, Erdfelder, Lang, & Buchner, 2007), we needed a sample of at least 172 Ps for Studies 1b, 3, 4, and 5 to have adequate power ($1-\beta > .90$) in order to detect a medium effect size. We tried to get at least 172 Ps for each study or get as close as possible within our resource, and ended up with 173 (Study 1b), 230 (Study 3), 226 (Study 4), and 126 (Study 5).

they took at the end of the previous term (past exam), and an upcoming exam they were going to write. For each exam, following Ross and Wilson's (2002) approach, we measured subjective temporal distance in two ways. First, participants were told, "future (past) events may feel quite close or far away, regardless of when they will actually occur (occurred)." Next, participants indicated the subjective temporal distance of the exam ("How far away do you feel this final exam is?") on a scale ranging from 1 (*feels like tomorrow/yesterday*) to 7 (*feels very far away*). In addition, they were given a line that was 150 mm long, with the starting point labeled "feels like tomorrow (yesterday)" and the ending point labeled "feels very far away." Participants placed a vertical slash through the line where they felt the final exam fell along the timeline. Past research showed that personal, positive events may feel closer and negative events may feel farther, at least to North Americans (Ross & Wilson, 2002). To control for this factor, participants also indicated their expected performances on the future exam ("How do you think you will do on the final exam?") or actual performance on the past exam on a 7-point scale ranging from −3 (*extremely poorly*) to 3 (*extremely well*). Participants also indicated when the exam would take place (or had taken place).

Study 1a Results

Two Canadians' data were excluded from the following analyses as they reported two exams in the future instead of one past exam and one future exam, and a third Canadian participant was excluded because she wrote about a past exam that took place 2 years earlier instead of in the previous term (including their data in the future exam analyses did not change the overall pattern of the results). There were some missing data, and thus the degree of freedom varied across tests. A 2 (Culture) × 2 (Time) mixed-design ANOVA revealed that, overall, Chinese participants reported feeling closer to their exams than Canadians did, $F(1,110) = 36.13$, $p < .001$, $d = 1.15$, and future exams felt closer than past exams, $F(1,110) = 42.62$, $p < .001$, $d = 1.25$, which was expected as future exams were in reality closer in time (1 month away) than past exams (about 4 months away). The interaction effect of Culture and Time was significant, $F(1,110) = 4.15$, $p = .044$, $d = .40$, reflecting a stronger cultural difference for future exams than for past exams. The similar pattern emerged with the continuous line scale: Fs > 17.74, ps < .001 for the main effects of Culture and Time, and $F(1, 108) = 3.03$, $p = .085$ for the interaction effect.[2] Separate analyses for past and future exams are reported below.

Past exams. Despite the fact that the actual distance of the past exam was slightly further for Chinese ($M = 140$ days, $SD = 74$) than for Canadian participants ($M = 117$ days, $SD = 76$), $F(1, 98) = 2.21$, $p = .14$, the past exams felt significantly closer to the present for Chinese ($M = 4.70$, $SD = 1.58$) than for Canadian participants ($M = 5.58$, $SD = 1.30$), $F(1, 110) = 10.31$, $p = .002$, $d = .63$, 95% CI of mean difference = [0.34, 1.42].

A similar pattern was found when the line distance was used as the indicator of subjective temporal distance (in fact, the two measures of subjective temporal distance were highly correlated, $r(102) = .92$, $p < .001$). That is, Chinese participants ($M = 90.52$ mm, $SD = 39.69$) felt that the past exam was significantly closer than did the Canadians ($M = 105.62$ mm, $SD = 32.70$), $F(1, 109) = 4.78$, $p = .031$, $d = .41$, 95% CI of mean difference = [1.41, 28.80].

Future exams. As we conducted the study about a month before the final exam weeks in both countries, the actual distances of the final exams were comparable across cultures ($M = 33$ days, $SD = 9$ for Chinese, $M = 34$ days, $SD = 12$ for Canadians), $F(1, 110) = 0.16$, $p = .690$. We anticipated that Chinese participants would perceive the future as being closer to the present than would Canadian participants. Examining this with the 7-point scale (from *feels like tomorrow* to *feels very far away*), Chinese participants ($M = 3.16$, $SD = 1.46$) indicated that the future exams felt significantly closer to the present than did Canadian participants ($M = 4.78$, $SD = 1.42$), $F(1, 114) = 36.30$, $p < .001$, $d = 1.12$, 95% CI of mean difference = [1.09, 2.15]. A similar pattern was found when the line distance was used as the indicator of subjective temporal distance (again, the two measures of subjective temporal distance were highly correlated, $r(102) = .93$, $p < .001$)). That is, Chinese participants ($M = 56.98$ mm, $SD = 36.26$) felt that the future exam was significantly closer than didCanadian participants ($M = 87.05$ mm, $SD = 34.70$), $F(1, 111) = 20.24$, $p < .001$, $d = .84$, 95% CI of mean difference = [16.83, 43.32].

(Expected) Performance on the exams. Canadians ($M = 1.56$, $SD = 1.48$) reported doing better on the past exam than did Chinese ($M = .86$, $SD = 1.41$), $F(1, 112) = 6.69$, $p = .011$. There was also a nonsignificant trend that Canadian participants ($M = 1.19$, $SD = 1.19$) expected to perform better on the future exam than Chinese participants ($M = .80$, $SD = 1.30$), $F(1, 114) = 2.79$, $p = .098$. When the actual or expected performance was included as a covariate in the analysis, cultural differences in the perceived distance of the past or future exam remained significant, Fs ≥ 4.52, ps ≤ .036. This finding helps to rule out the alternative explanation that Chinese participants perceived past or future events to be closer because they had or expected a better (or worse) performance.

[2]The degrees of freedom varied across tests due to missing data.

Study 1b Methods

The events used in Study 1a were not symmetrical in time (the past event was further away from the present than the future event). Also, exams might be perceived differently in importance by Chinese people than by Canadians. Study 1b used a neutral time point to test people's connectedness to the past and future, with equal distance to the present.

Participants. Eighty Euro-Canadians students (60 women, 19 men, and 1 who did not report gender; M_{age} = 18.06, SD = .75) from a Canadian university and 93 Chinese students (77 women, 15 men, and 1 who did not report gender; M_{age} = 19.74, SD = 1.13) from a Chinese university participated in Study 1b.

Procedure. Study 1b took place in October and November of 2010. Participants were asked to think about the current month next year and the current month last year, and then indicate how far or close these time points felt to the present on a scale from 1 (*feels like tomorrow/yesterday*) to 7 (*feels very far away*).

Study 1b Results

Similar to Study 1a, a 2 (Culture) × 2 (Time – within-subjects) mixed-design ANOVA revealed a significant effect of Culture, F (1, 171) = 17.39, $p < .001$, $d = .63$. The effect of Time and the interaction of Culture and Time were not significant, $Fs \leq 2.61$, $ps \geq .108$. Specifically, the current month 1 year ago felt significantly closer to the present for Chinese participants (M = 4.30, SD = 1.65) than for Canadians (M = 5.12, SD = 1.75), F (1, 171) = 9.98, $p = .002$, $d = .51$, 95% CI of mean difference = [0.31, 1.33]. Likewise, the current month next year felt significantly closer to the present for Chinese participants (M = 4.65, SD = 1.62) than for Euro-Canadians (M = 5.33, SD = 1.51), F (1, 171) = 8.21, $p = .005$, $d = .46$, 95% CI of mean difference = [0.21, 1.16]. These results support the hypothesis that Chinese people feel more connected to both the past and future than do Euro-Canadians.

In sum, in Studies 1a and 1b, Chinese participants indicated that both past and future events felt subjectively closer to the present than Canadians did, even though the actual temporal distances were similar across cultures.

Study 2

To further examine how broadly people attend to information pertaining to the past and future, Study 2 asked participants to generate personal events in the past and future. If Chinese people attend to the past and future more than Euro-Canadians do, events further into the past and future should be more accessible and therefore more likely to be brought to mind by Chinese than by Euro-Canadians.

Method

Participants. Sixty-six Euro-Canadian students (43 women and 23 men; M_{age} = 19.03, SD = 3.68) from a Canadian university and 64 Chinese students (40 women, 23 men, and 1 who did not report gender; M_{age} = 19.54, SD = 1.00) from a Chinese university participated in the study.

Procedure. The procedure was adapted from Spreng and Levine (2006, Study 1). Participants were presented with 9 cue words such as "bird", "window", and "seat" (see the complete word list in Appendix A), and asked to briefly write down a personal event that had already happened to them for each cue word. A personal event was defined as "something that occurs in a certain place and time where you are the main character." After listing all the events, participants were asked to give their best estimate of when each of these events occurred in the past by specifying the year, month, and date.

Similarly, participants were presented with another 9 cue words, such as "world", "boy", and "ship". Then for each cue word, participants briefly wrote down a personal event that would be very likely to happen in the future. Afterward, participants indicated when these future events would occur by specifying the date. They were asked to give their best estimate. The two lists of cue words were counterbalanced, so that each cue word list was used for generating past events for half of the participants and for generating future events for the other half. We also counterbalanced the order of event listing tasks so that half of the participants generated past events first and the other half generated future events first. The dates on which participants completed the study were recorded to be used subsequently for calculating temporal distance of the events listed.

Results

For each event listed by participants, we calculated how far away (in days) the event was from the present time (i.e., when the participant described the event). Then, we calculated the median temporal distance of the nine future and past events that each participant listed. The median temporal distances were used as a measure of how broadly people attend to information pertaining to their past and future (Spreng & Levine, 2006).

The distributions of data were positively skewed within each culture, so we conducted Mann-Whitney U tests, which showed a significant cultural difference for both past and future events. Specifically, we found that personal past events generated by the Chinese participants (M = 2278 days, SD = 1890; *Median* = 2,171 days; M_{rank} = 77.20) were significantly further away from the present than those generated by Euro-Canadians (M = 1176 days, SD = 1295; *Median* = 540 days; M_{rank} = 54.15), U = 1363.00, $p < .001$.

Likewise, Chinese personal future events (M = 2420 days, SD = 2301; *Median* = 2382 days; M_{rank} = 79.92) were significantly further away from the present than were Euro-Canadian personal future events (M = 738 days, SD = 1293; *Median* = 111 days; M_{rank} = 51.52), U = 1189, $p < .001$. Thus, information further into the past and future was more accessible and more likely to be brought to mind for Chinese participants than for Euro-Canadians.

Study 3

Studies 1 and 2 have established that Chinese participants felt greater psychological proximity to both the past and the future, compared to Euro-Canadians. Study 3 explored the implications of psychological temporal proximity for perceived self-continuity. Specifically, we examined whether Chinese participants—who feel closer to the past and future—would feel greater self-continuity across time than Euro-Canadians.

Method

Participants. One hundred and ten Euro-Canadian students (79 women, 30 men, 1 other; M_{age} = 18.95 years, SD = 1.26) from a Canadian university and 120 students (98 women, 13 men, 9 unreported; M_{age} = 19.98 years, SD = 1.32) from a Chinese university participated in the study.

Procedure. Participants reported the perceived past and future self-continuity in two ways. We measured participants' sense of self-continuity and stability of particular traits. The first method involved an adapted version of the Inclusion of the Other in the Self (IOS) scale (Aron, Aron, & Smollan, 1992), which has been used as a measure of sense of self-continuity in previous research (Ersner-Hershfield, Garton, Ballard, Samanez-Larkin, & Knutson, 2009; Hershfield, Cohen, & Thompson, 2012). The scale consisted of nine images (see Appendix B); each image depicted two congruent circles that overlapped to differing degrees (from no overlap at all, to completely overlapping). Participants were asked to choose the image that best described the relationship between their present self and their past (4 months ago) and future selves (4 months later), respectively. They were told that "the greater overlap of the two circles indicates greater commonalities between who you are now and who you used to be (or will be) 4 months ago (or in 4 months)." The second method involved measuring the perceived stability of personal traits across time. Specifically, participants rated the extent to which eight traits (confident, motivated, empathetic, sociable, incompetent, irresponsible, inconsiderate, lonely) described their present self and their past self (4 months ago) or future self (4 months later), on a 7-point scale (1 = *not at all*, 7 = *very much*). Due to time constraints, participants completed the trait task for either their past OR their future self (as randomly assigned), along for their present self. The difference scores between the ratings for the present self and those for the past (or future self) were averaged, which served as an index of past (or future) self-continuity (Peetz & Wilson, 2013).

Results

The results supported our prediction: Chinese participants reported greater self-continuity across time than did Euro-Canadians. With regard to self-continuity measured with IOS, a 2 (Culture) × 2 (Time − within-subjects factor) mixed-design ANOVA revealed a significant Culture main effect: In general, Chinese participants perceived greater self-continuity than Euro-Canadians, $F(1, 228) = 7.62$, $p = .006$, $d = .36$. Moreover, participants generally felt more commonality between their present and past selves than between their present and future selves, $F(1, 228) = 33.81$, $p < .001$, $d = .77$. The interaction between Culture and Time was not significant, $F(1, 228) = .27$, $p = .61$, $d = .06$. Further analyses showed that Chinese participants reported a greater overlap between their present and past selves (M = 6.27, SD = 1.53) than Euro-Canadian participants (M = 5.60, SD = 2.02), $F(1, 228) = 8.06$, $p = .005$, $d = .35$, and a greater overlap between their present and future selves (M = 5.52, SD = 1.70) than Euro-Canadian participants (M = 4.97, SD = 2.26), $F(1, 228) = 4.29$, $p = .04$, $d = .29$.

A 2 (Culture) × 2 (Time − between participant factor) ANOVA on changes in traits over time revealed only a significant Culture main effect, $F(1, 223) = 9.65$, $p = .002$, $d = .41$ (no other effect approached statistical significance, $Fs < .16$, $p > .69$), such that Chinese participants (M = .71, SD = .52) reported less change in their traits across time than did Euro-Canadians (M = .93, SD = .56). Specifically, compared to Euro-Canadians, Chinese participants reported less change from the past to the present (M_{CH} = .70, SD = .53; M_{CAN} = .95, SD = .65), $F(1, 113) = 5.27$, $p = .024$, and anticipated less change from the present to the future (M_{CH} = .71, SD = .52; M_{CAN} = .91, SD = .45), $F(1, 110) = 4.45$, $p = .037$. Thus, compared to Euro-Canadians, Chinese participants reported greater self-overlapping and less change in the self across time, indicating a stronger sense of self-continuity.

Study 4

Studies 1 through 3 provided converging evidence for cultural differences in psychological temporal proximity (Studies 1 and 2) and self-continuity (Study 3). But does psychological temporal proximity contribute to differential self-continuity across cultures, as we proposed? Study 4 tested this possibility.

Our basic proposition was that psychological temporal closeness (or connectedness) would foster self-continuity. That is, if people felt connected to the past, they would experience a greater level of continuity between their past and present self. People should especially rely on psychological connectedness when judging past–present self-continuity. When predicting continuation of the self to the future, however, people may rely on two things: (i) how the past and the present selves are connected and continuing, and/or (ii) psychological proximity (or subjective distance) to the future. Study 4 explored these possibilities.

Method

Participants. One hundred and five Euro-Canadian students (89 women, 16 men; M_{age} =19.43 years, SD = 1.43) from a Canadian university and 121 Chinese students (63 women, 58 men; M_{age} = 20.12 years, SD = 1.50) from a Chinese university participated in the study.

Procedure. Participants first reported their subjective temporal distance to the past and future. As in Study 1b, they indicated the extent to which they felt close to two points in time (i.e., 1 year ago and 1 year later) on a 7-point scale (1 = *not at all close*, 7 = *very close*). They also indicated their perceived self-continuity (i.e., from 1 year ago and to 1 year later) on the circle-overlap IOS scale used in Study 3.

Results

As expected, results from Studies 1 through 3 were replicated. Chinese participants perceived greater proximity to the past and future, and reported greater self-continuity across time, compared to Euro-Canadians. A 2 (Culture) × 2 (Time − within-subjects factor) mixed ANOVA on subjective temporal distance revealed a significant main effect of Time, $F(1, 224) = 7.35$, $p = .007$, $d = .35$, indicating that in general, the past ($M = 4.44$, $SD = 1.79$) felt closer to the present than the future ($M = 4.88$, $SD = 1.80$). The interaction effect was not significant, $F(1, 224) = .60$, $p > .25$. As expected, the Culture main effect was significant, $F(1, 224) = 21.89$, $p < .001$, $d = .63$. Specifically, compared to Euro-Canadians, Chinese participants reported feeling closer to the past ($M_{CH} = 4.14$, $SD = 1.80$; $M_{CAN} = 4.78$, $SD = 1.71$), $F(1, 224) = 7.44$, $p = .007$, $d = .35$, 95% CI = [0.18, 1.10], and to the future ($M_{CH} = 4.46$, $SD = 1.78$; $M_{CAN} = 5.36$, $SD = 1.72$), $F(1, 224) = 14.83$, $p < .001$, $d = .51$, 95% CI = [0.44, 1.36].

A 2 (Culture) × 2 (Time) mixed-design ANOVA on self-continuity showed that Chinese participants felt greater continuity to both the past and future selves, $F(1, 224) = 8.35$, $p = .004$, $d = .39$. Specifically, Chinese participants perceived their self to be continued from the past to the present ($M = 6.08$, $SD = 1.35$), and from the present to the future ($M = 5.80$, $SD = 1.36$), to a greater degree than Euro-Canadian participants ($M = 5.47$, $SD = 1.74$; $M = 5.35$, $SD = 2.01$, for the past and future respectively), $F(1, 224) = 8.96$, $p = .003$, $d = .41$, 95% CI = [0.21, 1.02]; $F(1, 224) = 3.98$, $p = .047$, $d = .29$, 95% CI = [0.01, 0.89] respectively. There was a nonsignificant tendency for a greater past continuity ($M = 5.80$, $SD = 1.57$) than a future continuity ($M = 5.59$, $SD = 1.70$), $F(1, 224) = 3.11$, $p = .079$. The interaction of Culture and Time was not significant, $F(1, 224) = 0.55$, $p = .46$. In summary, compared to Canadian participants, Chinese participants felt closer to the past and future, and perceived greater continuity across time.

Mediation. We used Hayes' (2013) Process Macro to conduct the following analyses based on 5,000 bootstrap samples. First, we examined whether the subjective temporal distance to the past mediated the relationship between culture and past–present self-continuity. Culture (0 = *Canada*, 1 = *China*) significantly predicted the subjective temporal distance to the past ($B = -.64$, $SE = .23$, $t(224) = -2.73$, $p = .007$), and predicted past–present self-continuity ($B = .62$, $SE = .21$, $t(224) = 2.99$, $p = .003$). When culture and the subjective temporal distance to the past were included simultaneously as predictors, both culture ($B = .52$, $SE = .21$, $t(223) = 2.53$, $p = .012$) and temporal distance to the past ($B = -.14$, $SE = .06$, $t(223) = -2.48$, $p = .014$) significantly predicted past–present self-continuity. The bias-corrected bootstrapping procedures confirmed the indirect effect of culture on self-continuity through temporal distance to the past ($B = .09$, $SE = .05$), 95% CI = [0.02, 0.23], indicating that the subjective past distance partially mediated the effect of culture on past–present self-continuity.

We then explored whether subjective temporal distance to the future mediated the effect of culture on present–future self-continuity. The results demonstrated that culture predicted participants' perceived self-continuity, $B = .45$, $SE = .23$, $t(224) = 1.99$, $p = .047$, and subjective temporal distance to the future, $B = -.90$, $SE = .23$, $t(224) = -3.85$, $p < .001$. However, the temporal distance to the future did not significantly predict present–future self-continuity, $B = .04$, $SE = .06$, $t(223) = .67$, $p = .503$.

Subjective temporal distance accounted for cultural differences in past–present self-continuity, but not for cultural differences in present–future self-continuity. Could past–present self-continuity, then, explain cultural differences in present–future self-continuity? We explored this possibility through a serial mediation pathway in which the subjective distance to the past would mediate the effect of culture on the perceived past–present self-continuity (– as we have shown above), which, along with subjective distance to the past, would predict present–future self-continuity (see Figure 1). To test this model, we ran an indirect effect analysis using the PROCESS bootstrapping macro (Model 6, Hayes, 2013) for SPSS with 5,000 resamples. As seen in Figure 1, the total effect of culture

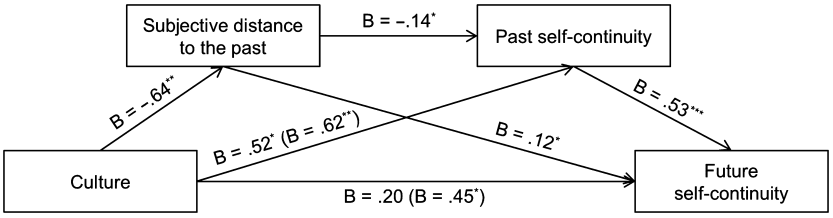


Fig. 1: Serial mediation model (Study 4). All coefficients are nonstandardized. Numbers in parentheses are nonstandardized coefficients when culture was the only predictor in the model (i.e., the total effect of culture on the particular variable). *$p < .05$. **$p < .01$. ***$p < .001$

(0 = *Canadians*, 1 = *Chinese*) on future self-continuity was significant, $B = .45$, $SE = .23$, $t(224) = 1.99$, $p = .047$. The direct effect of culture, however, was not significant when subjective past distance and past–present continuity were added as serial mediators, $B = .20$, $SE = .21$, $t(222) = .97$, $p = .335$, while both distance to the past, $B = .12$, $SE = .06$, $t(222) = 2.01$, $p = .046$, and past–present continuity, $B = .53$, $SE = .07$, $t(222) = 8.05$, $p < .001$, significantly predicted present–future self-continuity. The results of bootstrapping further showed a total indirect effect of the culture on future self-continuity, $B = .25$, $SE = .13$, 95% CI = [0.02, 0.55]. Furthermore, each of the following pathways indicated a significant indirect effect: Culture → Subjective Distance to the Past → Future Self-continuity, $B = -.07$, $SE = .05$, 95% CI = [−0.21, −0.01]; Culture → Subjective Distance to the Past → Past Self-continuity → Future Self-continuity, $B = .05$, $SE = .03$, 95% CI = [0.01, 0.12]; Culture → Past Self-continuity → Future Self-continuity, $B = .28$, $SE = .13$, 95% CI = [0.06, 0.55]. Thus, past self-continuity played a major role in mediating the effect of culture on future self-continuity, while subjective distance to the past might have both facilitated and suppressed the effect of culture on future self-continuity.

The results indicate that culture indirectly predicted present–future self-continuity through subjective temporal distance and, mostly, past–present self-continuity. This indeed is consistent with previous research showing how individuals use the past as a cognitive tool to predict the future. For example, people construe and predict their self based on their past experiences (Markus, 1977). Therefore, when predicting what they would be like in the future, they refer to how they used to feel, think, and behave. The findings on asymmetrical uses of psychological connectedness in judging past and future self-continuity, as well as the explanations here, require further replication and testing in future research.

Study 5

Studies 3 and 4 demonstrated that Chinese participants perceived a greater sense of self-continuity across time than Canadian participants did. Study 4 further showed that feeling closer to the past mediated the effect of culture on past self-continuity, which, along with past proximity, further predicted future self-continuity. The evidence, however, was correlational in nature, which would not allow us to draw a causal link between temporal distance and self-continuity. Study 5 was conducted to examine such a causal link by investigating whether manipulating Canadians' temporal distance would influence their sense of self-continuity across time.

Method

Participants. One hundred and twenty-six students (98 women, 28 men; $M_{age} = 18.49$ years, $SD = 1.28$) from a Canadian university participated in the study.

Procedure. Participants were first induced to feel near or distant to the past depending on the condition they were randomly assigned to. Adapting a paradigm used in Wilson and Ross (2003), we showed participants a horizontal line with two anchors: The right anchor was today, and the left anchor was *birth* (the near condition), or *age 16* (the distant condition). Then, participants were asked to indicate where high school lies on the 100-point bar scale (1 = *birth*/*age 16*; 100 = *today*). Past research (Wilson & Ross, 2001) has indicated that high school would feel closer to the present when the line was anchored at birth than at age 16. Afterward, participants reported their perceived self-continuity using the 4-item personal self-continuity scale (Sedikides et al., 2015) (e.g., "There is continuity in my life"; $\alpha = .85$), on a scale ranging from 1 (*not at all*) to 5 (*very much*). We used this personal self-continuity scale as it captures a general sense of self-continuity that is not limited to the past or future. To control for the objective time from the past, we measured how long ago high school was for each participant in an open format.

Results

Objectively, high school was equally distant for participants in the near condition ($M = 1.14$ years, $SD = 1.16$) as for those in the distant condition ($M = 1.32$ years, $SD = 1.46$), $F(1, 123) = .60$, $p = .440$. We hypothesized that temporal proximity would lead to greater self-continuity. As predicted, participants in the near condition ($M = 2.37$,

SD = 1.05) reported greater self-continuity than those in the distant condition (*M* = 2.05, *SD* = .78), *F*(1, 124) = 3.87, *p* = .051, *d* = .35. These results provide evidence that subjective temporal distance from the past causally predicts self-continuity.

General Discussion

The present research examined whether culture-driven temporal focus predicts individuals' sense of self-continuity through comparisons between Chinese and Euro-Canadian participants. Five studies documented converging evidence for our hypothesis that Chinese participants perceive the past and future to be closer and more connected to the present, resulting in a higher sense of self-continuity for them than for Euro-Canadians. Specifically, Chinese participants felt that past and future events (Study 1a) and past and future time points (Study 1b) were subjectively closer to the present than did Euro-Canadian participants. Furthermore, personal events in the more distant past and future were more accessible to Chinese participants than to Euro-Canadian participants (Study 2). Studies 3 and 4 showed that, compared to Euro-Canadians, Chinese participants reported a greater sense of self-continuity across time. Furthermore, Study 4 found a serial mediational pathway in which, relative to Euro-Canadians, Chinese feeling of proximity to the past contributed to their greater past–present self-continuity, which subsequently predicted their greater present–future self-continuity. Study 5 further demonstrated the causal effect of subjective temporal distance from the past on self-continuity. These results suggest that cultural differences in temporal focus play a pivotal role in people's sense of self-continuity across time.

The present article contributes to research on self-continuity in two further ways. First, we took an expansive approach to examine the effect of culture on self-continuity by measuring different facets of self-continuity. Research on self-continuity posited that self-continuity may be achieved through a variety of ways such as stability, narratives, and associative links (Becker et al., 2018; Chandler et al., 2003). Specifically, we demonstrated that compared to Canadian participants, Chinese participants reported greater self-continuity across various measures or sources of self-continuity: stability (i.e., trait-based measure in Study 3), arguably associative links (i.e., IOS scale in Studies 3 and 4), and general sense of self-continuity (i.e., personal self-continuity scale in Study 5). Second, the present research measured participants' self-continuity in a broader range of time scopes: across past, present, and future selves. Little research has examined self-continuity from the past and to the future simultaneously, with some notable exceptions (e.g., Sokol & Eisenheim, 2016). Consistent with Sokol and Eisenheim (2016), we found that past self-continuity and future self-continuity are positively associated, with correlation coefficients ranging between .48 and .56.

Relevance to Previous Literature

While the current research provides corroborating evidence for East Asians' greater self-continuity over time, other studies seem to suggest the possibility that East Asians may experience self-discontinuity more than European North Americans. To illustrate, research on dialectical thinking showed that East Asians tend to endorse a self-view that is less consistent across situations (e.g., Choi & Choi, 2002; Kanagawa, Cross, & Markus, 2001; Spencer-Rodgers, Peng, Wang, & Hou, 2004; Suh, 2002). We argue that inconsistent or dialectical self-concepts across situations do not necessarily lead to perceived self-discontinuity over time. Indeed, English and Chen (2007, 2011) demonstrated that East Asians' self-concept within contexts was highly stable over time, comparable to that of Euro-Americans. This suggests that East Asians can maintain self-continuity over time while being flexible across situational contexts.

Another line of research that needs to be reconciled with the current findings bears on cultural differences in predicting change. Cross-cultural research has shown that Chinese people tend to believe that events are continuously changing in a non-linear fashion, whereas European North Americans tend to believe in relative stability of events and their development (Ji, 2005, 2008; Ji et al., 2001, 2008). One difference in methodology between the present and past research is whether participants were making predictions pertaining to themselves (e.g., predicting whether they would change in certain attributes over time—from the present to the future) or to others. When making change predictions or judgments for others, people have limited accessibility to the targets' temporal information and temporal connectedness, and thus may turn to other sources of information (such as one's lay beliefs about change) to make judgment for others. Future research should investigate whether and how people may rely on different information when making judgments about self-continuity versus other-continuity.

Limitations

The present research has limitations. First, we only compared two cultures, which differ from each other in many ways. We proposed that analytical versus holistic thinking may lead to cultural differences in temporal proximity and self-continuity, but did not measure thinking styles in the studies reported here. We do, however, have evidence in a separate working paper that shows a causal link between analytic-holistic thinking style and self-continuity (Hong, Ji, & Kim, 2017). Specifically, we found that holistic thinking led to greater self-continuity than analytic thinking. Second, we relied on convenience samples in our studies and had many more women than men in our samples (reflecting the fact that the majority of people in our subject pools were women). Lastly, although Study 5 provided causal evidence on the relationship between

subjective proximity to the past and self-continuity, it is yet to be examined experimentally whether past–present self-continuity contributes to present–future self-continuity. Future research should further explore causal relationships involving self-continuity using gender-balanced samples and in other demographic groups and cultures.

Implications

The present study has several implications. First, Chinese participants showed a broader temporal focus and greater connectedness to the past and future. Would this lead Chinese people to show less temporal "focalism" than Euro-Canadians? Focalism refers to the idea that people focus more on the event in question than on the consequences of other (future) events. It has been proposed to account for the durability bias in affective forecasting (Wilson, Wheatley, Meyers, Gilbert, & Axsom, 2000). Indeed, research has shown that European North Americans show greater focalism than East Asians in affective forecasting (Lam, Buehler, McFarland, Ross, & Cheung, 2005), and decision making (Ji et al., 2008). It will be interesting to further explore the implications of temporal focalism across cultures.

Second, both perceived distance of the future and self-continuity over time have implications for temporal discounting or intertemporal choice: The closer the future is perceived to be to the present, or the more continuous the self feels over time, the less likely it is that people prefer immediate rewards and discount future rewards (Bartels & Rips, 2010; Ersner-Hershfield, Wimmer, & Knutson, 2009). Indeed, research has found that Americans showed a higher discounting rate than Koreans (Kim, Sung, & McClure, 2012). Americans also discounted future monetary payment more than the Japanese or Chinese on various temporal discounting tasks (Du, Green, & Myerson, 2002). Future research should examine whether self-continuity or subjective future distance mediates such cultural differences in temporal discounting.

Lastly, the current findings have implications for everyday social interactions. If Chinese people perceive greater connectedness among the past, present, and future, they may also perceive greater continuity in others' selves. Accordingly, events that occurred long ago in the past may affect their current interactions with others. In addition, expected interactions in the future (or future goals) may affect their current relationships. Thus, cultural differences in temporal connectedness may affect many aspects of social interactions, such as negotiation and relationship development. They may also contribute to the complexity of interpersonal relationships in the Chinese context (e.g., *guanxi*, or relationship social network).

Conclusion

The present research has shown that people from different cultures perceive time and temporal information differently. Compared to Euro-Canadians, Chinese people perceive the past and future as more connected and closer to the present, and as a result they sense greater self-continuity across the past, present, and future.

Acknowledgements

This research was supported by Social Science and Humanities Research Council of Canada (SSHRC) research grants (410-2009-0904, and 435-2012-1279) to Ji. The authors thank Kayla McGeorge and Suhui Yap for their help with data collection. We also thank Jill Jacobson, Sylvia Hains, Ioana Petrar-Silca, Thomas Vaughan-Johnston, and Samantha Drover for their help with earlier versions of the article.

References

Aron, A., Aron, E. N., & Smollan, D. (1992). Inclusion of other in the self scale and the structure of interpersonal closeness. *Journal of Personality and Social Psychology*, *63*, 596–612. https://doi.org/10.1037/0022-3514.63.4.596

Bartels, D. M., & Rips, L. J. (2010). Psychological connectedness and intertemporal choice. *Journal of Experimental Psychology: General*, *139*, 49–69. https://doi.org/10.1037/a0018062

Becker, M., Vignoles, V. L., Owe, E., Easterbrook, M. J., Brown, R., Smith, P. B., … Lay, S. (2018). Being oneself through time: Bases of self-continuity across 55 cultures. *Self and Identity*, *17*, 276–293. https://doi.org/10.1080/15298868.2017.1330222

Briley, D. A. (2009). Looking forward, looking back: Cultural differences and similarities in time orientation. In E. R. S. Wyer, C. Y. Chiu, & Y. Y. Hong (Eds.), *Understanding culture: Theory, research and application* (pp. 311–318). New York, NY: Psychology Press.

Casasanto, D., & Boroditsky, L. (2008). Time in the mind: Using space to think about time. *Cognition*, *106*, 579–593. https://doi.org/10.1016/j.cognition.2007.03.004

Chandler, M. (1994). Self-continuity in suicidal and non-suicidal adolescents. *New Directions for Child and Adolescent Development*, 64, 55–70. https://doi.org/10.1002/(issn)1534-8687

Chandler, M. J., Lalonde, C. E., Sokol, B., & Hallett, D. (2003). Personal persistence, identity development, and suicide: A study of Native and non-Native North American adolescents. *Monographs of the Society for Research in Child Development*, *68*, 1–156.

Cheng, H. P., O'Leary, E., & Page, R. C. (1995). A cross-cultural comparison of the worldviews of American, Chinese (from Taiwan), and Irish graduate counseling students and implications for counseling. *Counseling and Values*, *40*, 45–54. https://doi.org/10.1002/j.2161-007x.1995.tb00386.x

Cheng, H., & Schweitzer, J. C. (1996). Cultural values reflected in Chinese and US television commercials. *Journal of Advertising Research*, *36*, 27–46. https://doi.org/10.1080/00913367.2001.10673653

Choi, I., & Choi, Y. (2002). Culture and self-concept flexibility. *Personality and Social Psychology Bulletin*, *28*, 1508–1517. https://doi.org/10.1177/014616702237578

Du, W., Green, L., & Myerson, J. (2002). Cross-cultural comparisons of discounting delayed and probabilistic rewards. *Psychological Record*, *52*, 479–492. https://doi.org/10.1007/bf03395199

English, T., & Chen, S. (2007). Culture and self-concept stability: Consistency across and within contexts among Asian Americans and European Americans. *Journal of Personality and Social Psychology*, *93*, 478–490. https://doi.org/10.1037/0022-3514.93.3.478

English, T., & Chen, S. (2011). Self-concept consistency and culture: The differential impact of two forms of consistency. *Personality and Social Psychology Bulletin*, *37*, 838–849. https://doi.org/10.1177/0146167211400621

Ersner-Hershfield, H., Garton, M. T., Ballard, K., Samanez-Larkin, G. R., & Knutson, B. (2009). Don't stop thinking about tomorrow: Individual differences in future self-continuity account for saving. *Judgment and Decision Making*, *4*, 280–286 PMID: 19774230.

Ersner-Hershfield, H., Wimmer, G. E., & Knutson, B. (2009). Saving for the future self: Neural measures of future self-continuity predict temporal discounting. *Social Cognitive and Affective Neuroscience*, *4*, 85–92. https://doi.org/10.1093/scan/nsn042

Faul, F., Erdfelder, E., Lang, A. G., & Buchner, A. (2007). G*Power 3: A flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behavior Research Methods*, *39*, 175–191. https://doi.org/10.3758/bf03193146

Graham, R. J. (1981). The role of perception of time in consumer research. *Journal of Consumer Research*, *7*, 335–342. https://doi.org/10.1086/208823

Hayes, A. F. (2013). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach*. New York, NY: Guilford Press.

Hershfield, H. E., Cohen, T. R., & Thompson, L. (2012). Short horizons and tempting situations: Lack of continuity to our future selves leads to unethical decision making and behavior. *Organizational Behavior and Human Decision Processes*, *117*, 298–310. https://doi.org/10.1016/j.obhdp.2011.11.002

Hofstede, G. H. (2001). *Culture's consequences: Comparing values, behaviors, institutions, and organizations across nations*. Thousand Oaks, CA: SAGE.

Hong, E., Ji, L., & Kim, J. (2017, January). *Integral view of the self: Holistic thinking promotes perceived self-continuity*. Poster session presented at the annual meeting of the Society for Personality and Social Psychology, San Antonio, TX.

Ji, L. J. (2005). Culture and lay theories of change. In R. M. Sorrentino, D. Cohen, J. Olson, & M. Zanna (Eds.), *Culture and social behavior: The tenth Ontario symposium* (pp. 117–135). Hillsdale, NJ: Erlbaum.

Ji, L. J. (2008). The leopard cannot change his spots, or can he? Culture and the development of lay theories of change. *Personality and Social Psychology Bulletin*, *34*, 613–622. https://doi.org/10.1177/0146167207313935

Ji, L. J., Guo, T., Zhang, Z., & Messervey, D. (2009). Looking into the past: Cultural differences in perception and representation of past information. *Journal of Personality and Social Psychology*, *96*, 761–769. https://doi.org/10.1037/a0014498

Ji, L. J., Lee, A., & Guo, T. (2010). The thinking styles of Chinese people. In M. Bond (Ed.), *The handbook of Chinese Psychology*, 2nd ed. (pp. 155–167). Oxford, UK: Oxford University Press.

Ji, L. J., Nisbett, R. E., & Su, Y. (2001). Culture, change, and prediction. *Psychological Science*, *12*, 450–456. https://doi.org/10.1111/1467-9280.00384

Ji, L. J., Peng, K., & Nisbett, R. E. (2000). Culture, control, and perception of relationships in the environment. *Journal of Personality and Social Psychology*, *78*, 943–955. https://doi.org/10.1037/0022-3514.78.5.943

Ji, L. J., Zhang, Z., & Guo, T. (2008). To buy or to sell: Cultural differences in stock market decisions based on price trends. *Journal of Behavioral Decision Making*, *21*, 399–413. https://doi.org/10.1002/bdm.595

Kanagawa, C., Cross, S. E., & Markus, H. R. (2001). "Who am I?" The cultural psychology of the conceptual self. *Personality and Social Psychology Bulletin*, *27*, 90–103. https://doi.org/10.1177/0146167201271008

Kim, B., Sung, Y. S., & McClure, S. M. (2012). The neural basis of cultural differences in delay discounting. *Philosophical Transactions of the Royal Society B: Biological Sciences*, *367*, 650–656. https://doi.org/10.1098/rstb.2011.0292

Kitayama, S., Duffy, S., Kawamura, T., & Larsen, J. T. (2003). Perceiving an object and its context in different cultures: A cultural look at new look. *Psychological Science*, *14*, 201–206. https://doi.org/10.1111/1467-9280.02432

Kluckhohn, F. R., & Strodtbeck, F. L. (1961). *Variations in value orientations*. Oxford, UK: Row, Peterson.

Kung, F. Y., Eibach, R. P., & Grossmann, I. (2016). Culture, fixed-world beliefs, relationships, and perceptions of identity change. *Social Psychological and Personality Science*, *7*, 631–639. https://doi.org/10.1177/1948550616652208

Lam, K. C., Buehler, R., McFarland, C., Ross, M., & Cheung, I. (2005). Cultural differences in affective forecasting: The role of focalism. *Personality and Social Psychology Bulletin*, *31*, 1296–1309. https://doi.org/10.1177/0146167205274691

Lampinen, J. M., Odegard, T. N., & Leding, J. K. (2004). Diachronic disunity. In D. R. Beike, J. M. Lampinen, & D. A. Behrend (Eds.), *The self and memory* (pp. 227–253). New York, NY: Psychology Press. https://doi.org/10.4324/9780203337974

Lee, S., Lee, A. Y., & Kern, M. C. (2011). Viewing time through the lens of the self: The fit effect of self-construal and temporal distance on task perception. *European Journal of Social Psychology*, *41*, 191–200. https://doi.org/10.1002/ejsp.765

Maddux, W. W., & Yuki, M. (2006). The "ripple effect": Cultural differences in perceptions of the consequences of events. *Personality and Social Psychology Bulletin*, *32*, 669–683. https://doi.org/10.1177/0146167205283840

Markus, H. (1977). Self-schemata and processing information about the self. *Journal of Personality and Social Psychology*, *35*, 63–78. https://doi.org/10.1037/0022-3514.35.2.63

Masuda, T., & Nisbett, R. E. (2006). Culture and change blindness. *Cognitive Science*, *30*, 381–399. https://doi.org/10.1207/s15516709cog0000_63

Nisbett, R. (2003). *The geography of thought: How Asians and Westerners think differently... and why*. New York, NY: The Free Press.

Nisbett, R. E., Peng, K., Choi, I., & Norenzayan, A. (2001). Culture and systems of thought: Holistic versus analytic cognition. *Psychological Review*, *108*, 291–310. https://doi.org/10.1037/0033-295x.108.2.291

Parfit, D. (1971). On "the importance of self-identity". *The Journal of Philosophy*, *68*, 683–690. https://doi.org/10.2307/2024939

Peetz, J., & Wilson, A. E. (2013). The post-birthday world: Consequences of temporal landmarks for temporal self-appraisal and motivation. *Journal of Personality and Social Psychology*, *104*, 249–266. https://doi.org/10.1037/a0030477

Peng, K., & Nisbett, R. E. (1999). Culture, dialectics, and reasoning about contradiction. *The American Psychologist*, *54*, 741–754. https://doi.org/10.1037/0003-066x.54.9.741

Ross, M., & Wilson, A. E. (2002). It feels like yesterday: Self-esteem, valence of personal past experiences, and judgments of subjective distance. *Journal of Personality and Social Psychology*, *82*, 792–803. https://doi.org/10.1037/0022-3514.82.5.792

Sadeh, N., & Karniol, R. (2012). The sense of self-continuity as a resource in adaptive coping with job loss. *Journal of Vocational Behavior*, *80*, 93–99. https://doi.org/10.1016/j.jvb.2011.04.009

Sedikides, C., Wildschut, T., Routledge, C., & Arndt, J. (2015). Nostalgia counteracts self-discontinuity and restores self-continuity. *European Journal of Social Psychology*, *45*, 52–61. https://doi.org/10.1002/ejsp.2073

Shechter, O. G., Durik, A. M., Miyamoto, Y., & Harackiewicz, J. M. (2011). The role of utility value in achievement behavior: The importance of culture. *Personality and Social Psychology Bulletin*, *37*, 303–317. https://doi.org/10.1177/0146167210396380

Sokol, Y., & Eisenheim, E. (2016). The relationship between continuous identity disturbances, negative mood, and suicidal ideation. *The Primary Care Companion For CNS Disorders*, *18*, 10.4088/PCC.15m01824. http://doi.org/10.4088/PCC.15m01824.

Spencer-Rodgers, J., Peng, K., Wang, L., & Hou, Y. (2004). Dialectical self-esteem and East–West differences in psychological well-being. *Personality and Social Psychology Bulletin*, *30*, 1416–1432. https://doi.org/10.1177/0146167204264243

Spreng, R. N., & Levine, B. (2006). The temporal distribution of past and future autobiographical events across the lifespan. *Memory and Cognition*, *34*, 1644–1651. https://doi.org/10.3758/bf03195927

Suh, E. M. (2002). Culture, identity consistency, and subjective well-being. *Journal of Personality and Social Psychology*, *83*, 1378–1391. https://doi.org/10.1037/0022-3514.83.6.1378

Wilson, A. E., & Ross, M. (2003). The identity function of autobiographical memory: Time is on our side. *Memory*, *11*, 137–149.

Wilson, T. D., Wheatley, T., Meyers, J. M., Gilbert, D. T., & Axsom, D. (2000). Focalism: A source of durability bias in affective forecasting. *Journal of Personality and Social Psychology*, *78*, 821–836. https://doi.org/10.1037/0022-3514.78.5.821

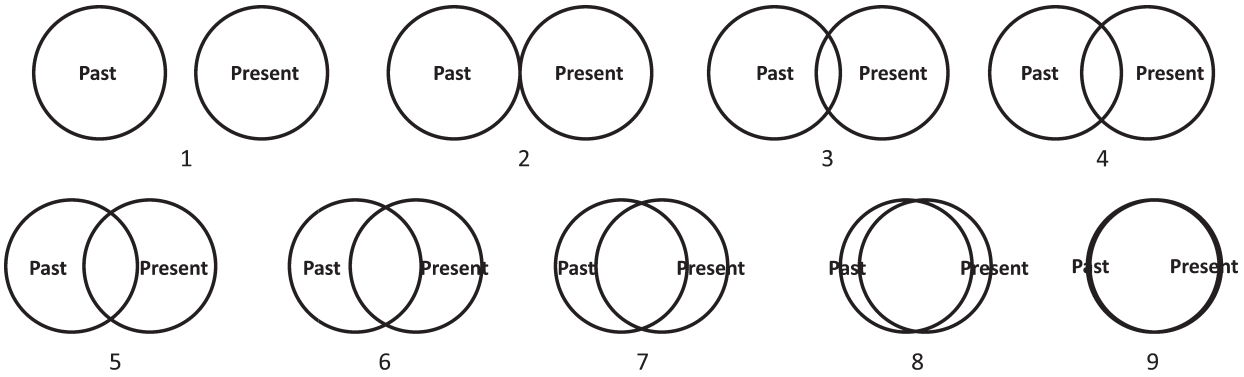
Appendix A

Word lists used in Study 2:

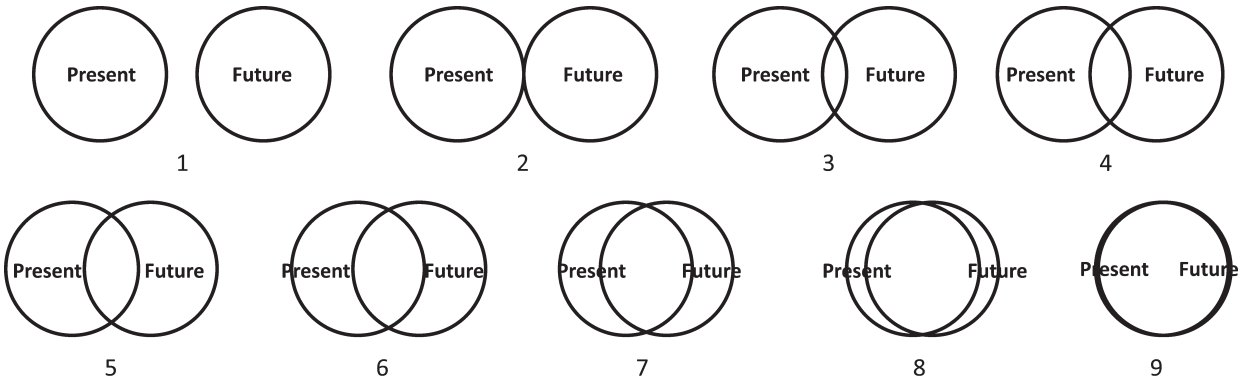
World, Village, Boy, Money, Ship, Child, Trouble, Mother, Fire

Bird, Window, Seat, Water, Bowl, Thief, Hammer, Baby, Lake

Appendix B. THE IOS MEASURE OF SELF-CONTINUITY



Past-present self-continuity used in Studies 3 and 4



Present-future self-continuity used in Studies 3 and 4