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Culture and the Social Clock: Cultural Differences in the Optimal Timing of Life

A Thesis submitted in partial satisfaction of the  
requirements for the degree Master of Arts  
in Psychological and Brain Sciences

by

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March 2024

The thesis of Lu Zang is approved.

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January 2024

Culture and the Social Clock: Cultural Differences in the Optimal Timing of Life

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by

Lu Zang

## ABSTRACT

### Culture and the Social Clock: Cultural Differences in the Optimal Timing of Life

By

Lu Zang

People typically hold personal views regarding the appropriate age ranges for significant life events, such as starting college, getting married, or having kids. Such socially prescribed timetables have been termed the social clock. In this paper, we investigate how and why culture may influence the rigidity (or flexibility) of the social clock. In two studies (one preregistered), participants from China and the U.S. were asked to provide the earliest and the latest ages they think appropriate for engaging in several life events. We operationalized the social clock's rigidity as the width of the time windows for these life events. We found notable cultural differences: the social clock was more rigid in China than in the U.S., and the cultural differences were mediated by filial piety belief. We further assessed negative social emotions of deviance from the social clocks across cultures. Societal implications and future directions were discussed.

*Keywords:* culture, social clock, filial piety, social emotions

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## **Culture and the Social Clock: Cultural Differences in the Optimal Timing of Life**

The Master said: “At fifteen, I had my mind bent on learning.  
At thirty, I stood firm.  
At forty, I had no doubts.  
At fifty, I know the decrees of Heaven.  
At sixty, my ear was an obedient organ for the reception of truth.  
At seventy, I could follow what my heart desired, without transgressing what was right.”  
—from *The Analects of Confucius* (206 BC-220 AD), translated by Legge (1815-1897)

Two thousand five hundred years ago, Confucius, at the sunset of his life, gathered his disciples and shared with them his timing of life, and his teachings still resonate among East Asians (Huang & Charter, 1996; Zhao, 2018). Beyond the laudable goals, what is notable about this teaching is its emphasis on the prescribed age by which one should achieve the goals. Such emphasis is also reflected in current East Asian culture. Terms such as “leftover women”—women who remain unmarried in their late twenties and beyond—are commonly used in China (Spencer, 2016). Despite the changing demographics (e.g., decreasing birthrate) in Korea, Koreans perceive strong pressure to conform to social expectations about life milestones (Cho & LoCascio, 2018). This particular view on age-related expectations starkly contrasts with the view prevalent in most of the Western, educated, industrialized, rich, and democratic (WEIRD) societies (see Henrich et al., 2010). In these cultures, age-based expectations about life milestones are not as strong. It may be deeply ingrained in people’s thinking in Western cultures that it is never too early or late to pursue your dreams, pick up new skills, fall in love, and more. For instance, it is not uncommon to encounter “non-traditional” students (e.g., undergraduate students older than age 25) enroll in schools—cases that have become more prevalent in the West over the past decades (e.g., Bowl, 2001; Casselman, 2013).



These sentiments illustrate that people hold diverse views regarding not only the appropriate ages for significant life events, such as beginning college, getting a full-time job, getting married, or becoming a parent, but also the relative importance of age as a marker of success for these life milestones. Moreover, it raises a possibility that such views systematically vary across cultures. In social psychology, these age-related social expectations have been termed the *social clock* (Neugarten, 1976). However, although the term was introduced half a century ago, it has received relatively scant attention in psychological research.

We reason that this relative absence of empirical attention to the topic of social clock is perhaps because over ninety percent of research in psychology was conducted in predominantly individualistic WEIRD cultures (Jones, 2010) with a more relaxed perspective of age expectations. We propose that the social clock may be an important concept that has significant implications for individual psychological well-being in more collectivistic nations like China. Thus, the present research intends to examine whether the social clock's rigidity differs across cultures, and, if so, what psychological factors explain the cultural difference. We do so by comparing individuals' expectations of the social clock in two countries that represent individualistic and collectivistic cultures. In addition, the current research examines how the social clock's rigidity is linked to social emotions in these cultures, highlighting the psychological consequences of being deviant from the social clock.

### **The Social Clock**

The social clock is defined as a culturally defined timeline for life milestones, such as marriage, having a child, and starting the first job (Neugarten, 1976). As one of the socially prescribed age norms, the social clock influences consecutive changes in behavior and self-

perceptions across time when people compare themselves with close others (e.g., friends and siblings) in deciding whether they have made good progress in achieving life milestones (Helson & McCabe, 1994).

Previous studies showed that the notion of the social clock exists in many cultures (e.g., Lee & Payne, 2010; Saardchom & Lemaire, 2005; Byrd & Breuss, 1992; Gee, 1990; Peterson, 1996). For example, studies in New Zealand and Australia revealed that people have considerable agreement regarding the “correct” age at which people are expected to attain various life milestones (e.g., get married or become a parent) (Byrd & Breuss, 1992; Peterson, 1996). Also, the social clock tends to vary among different types of life events. In a study conducted in two British Columbia cities, proportionately more women provide “right ages” for family events (e.g., getting married and having her first child) than for non-family events. In addition, such age norms may change over time, as data from the United Kingdom, Sweden, Japan, and the U.S. suggest that the average age for marriage has been increasing since the 1970s, presumably due to changes in economic factors (e.g., increasing financial hardship among young adults) and societal value systems (e.g., the rise of individualism) (Lee & Payne, 2010).

Studies have also examined psychological factors (e.g., personality differences) affecting adherence to the social clock as well as consequences of nonadherence to it. For example, women with higher scores on personality traits such as achievement via conformance (i.e., the desire to do well) and intellectual efficiency are more likely to conform to the feminine social clock (Helson et al., 1984). Further, studies have examined psychological implications of deviating from the social clock in the U.S., with results suggesting that while being late in achieving desirable life events based on the statistical age

norms is associated with increased psychological distress, such greater distress was not caused by a lack of social resources or negative social sanctions (Rook et al., 1989). In addition, being on time with life transitions does not invariably offer psychological advantages (Rook et al., 1989), the patterns of which, according to our reasoning, are more likely to occur in more individualistic (compared to more collectivistic) cultures with a presumably more flexible social clock. However, it remains unknown how culture affects the social clock's rigidity and how deviation from the social clock would affect emotional well-being across cultures. In the present research, we focus on cultural orientation of individualism and collectivism to fill the gap in the literature.

### **Role of Individualism-Collectivism**

Just as individuals differ in their viewpoints on life timing (e.g., Helson et al., 1984), there may be cultural differences in how people perceive the social clock. More specifically, we reason that cultural dimension of individualism-collectivism leads to these variations. People from individualistic cultures prioritize their personal goals over the aims of the collective; in contrast, people from collectivistic cultures either put the collective goals ahead of their personal ones or do not make distinctions between individual and collective goals (Triandis et al., 1988). In addition, individualistic cultures encourage the construction of the self as independent, autonomous, agentic, and distinct from others; by contrast, collectivistic cultures encourage an interdependent self-construal that sees the self as socially entrenched, mutually obligated, and committed to benefit the close others (Markus & Kitayama, 1991).

Consequently, people from cultures differing in the individualism vs. collectivism dimension tend to view interpersonal duties differently. Specifically, people from more individualistic cultures are inclined to prioritize self-reliance, uniqueness, and emotional

distance from in-groups over social or interpersonal obligations whereas people from collectivistic cultures are more likely to place a stronger emphasis on social obligation and interpersonal responsibilities (e.g., Triandis et al., 1985; Triandis & Suh, 2002; Hui & Triandis, 1986; Jagers & Mock, 1995; Markus & Kitayama, 1991). That is, in more collectivistic cultures, relative to more individualistic cultures, people consider the desires and needs of those in their social group, feel more connected to their in-group members, adopt a more rigorous view of social responsibilities and judge failure to assist another in moral terms (as compared to matters of personal choice) (Cross et al., 2000; Triandis & Suh, 2002; Miller et al., 1990; Schwartz, 1990).

Accordingly, when thinking of the timing of their lives, people from more individualistic cultures may view the timing of life milestones as a personal choice. By contrast, people from more collectivist societies may consider the timing of their lives secondary to societal objectives, such as the expectations of their family and community. When people consider meeting the social clock their social duties according to shared social expectations, as in more collectivistic cultures, there should be a more clearly defined and rigid social clock based on strong social consensus. When people consider the timing of life milestones as personal choice, the social clock should be weakly defined and flexible. Thus, overall, we predict that more collectivistic (compared to more individualistic) cultures tend to have more rigid social clocks, because of the cultural differences in their respective view on social obligations.

### **Filial Piety**

While cultural importance of social duties and responsibilities is found in many collectivistic cultural contexts, the manifestation of the concept varies in specific cultural

regions (Campos & Kim, 2017). For example, the concept may take the form of familismo in Latin American cultural contexts (e.g., Ayón et al., 2010) or filial piety in East Asian cultural contexts (e.g., Ho, 1996). In the current study, we compare a Western culture (i.e., the U.S.) with an East Asian culture (i.e., China); Thus, we chose a social obligation that is especially important for East Asians as a potential psychological factor explaining the cultural differences—filial piety. Originated in ancient Chinese culture, filial piety is a virtue shared in Confucianism, Chinese Buddhism, and Daoist ethics that highlights beliefs and behaviors that fulfill the duties and responsibilities as a member of the younger generation in one’s family of respecting and taking care of one’s parents and elders (e.g., Ho, 1996; Chan & Tan, 2008; Li et al., 2021; Sung, 1998). In cultures that value filial piety, individuals are responsible for bestowing honor upon their family and carrying out their parents’ desires and dreams even after their deaths (Yeh & Bedford, 2004; Kohn, 2004).

Over thousands of years, in Chinese and other East Asian countries, filial piety has been a crucial cultural attribute (Chan & Tan, 2008) that prevails even in Americans of Asian descent (Yeh & Bedford, 2003). Given the commonalities between filial piety and collectivism, researchers have claimed that filial piety, communalism, and familism are “birds of a collectivist feather” that cluster into a single latent construct referred to as *family or relationship primacy* that emphasizes interdependence and interpersonal obligations, which is central to collectivism (Schwartz, 2007; Schwartz et al., 2010).

In East Asian cultures that cherish the virtue of filial piety, the timing of an individual’s life may be essential for their entire family. This is perhaps because life events such as getting married and having children are vital to continuing the family line and producing descendants in defense against existential threats such as the threat of mortality

(Qi, 2022). Besides, life events such as attending college and acquiring a full-time job can bring honor to one's family and secure resources for the family. As such, in collectivistic cultures, the social clock is likely to be more precise and rigid to better serve as a guideline for individuals to fulfill their social obligations, given that fulfilling life milestones is one of the effective ways to practice filial piety. By contrast, in individualistic cultures where independence and uniqueness are cherished (Kim & Markus, 1999; Markus & Kitayama, 1991), as filial piety, or more broadly, individuals' sense of duties to their family, is less commended, the timings to essential life milestones may have less to do with the expectations of one's extended family. Therefore, we reason that filial piety mediates the influence of culture on the rigidity of the social clock.

### **Social Clock and Emotional Well-being**

Given that filial piety is an important specific manifestation of collectivism in East Asian cultures, filial piety practice could also matter for emotional well-being in those cultures, as people who adhere closely to it are inclined to feel guilty and shameful if they go against the principles of filial piety (see Bedford, 2004; Bedford & Hwang, 2003). Consequently, in more collectivistic cultures, those whose personal life timing deviates from the social clock may experience more emotional distress, such as heightened shame and regret, because failing to achieve life milestones indicates failing to uphold filial piety. Importantly, the negative emotions we measure, such as shame and guilt, belong to the category of *self-conscious emotions* (e.g., Tracy & Robins, 2004; Tracy et al., 2009). We focus on self-conscious emotions because deviation from the social clock may contribute to a discrepancy between one's actual self and ought self, which can produce specifically anxiety-related emotions, such as guilt and fear, instead of broad negative affect (Higgins, 1987). We

propose that people would have better emotional well-being if their personal life timing better coincided with the social clock salient in their culture. We also propose that it would be easier for people from individualistic cultures to “fit in” the more flexible social clock; and even if people from individualistic cultures either failed to or chose not to adhere to the social clock, they may find it less unsettling than those from collectivistic cultures. Taken together, we reason that culture would impact the link between fitting in the social clock (as a specific manifestation of cultural fit), such that in more collectivistic cultures, it would be more strongly linked to emotional well-being than in more individualistic cultures, and filial piety would mediate such cultural differences.

### **The Present Research**

In two studies, the present research examines whether and how culture affects the social clock’s rigidity (or flexibility). To our best knowledge, no prior work has shed light on these inquiries. By examining aspects of the social clock, our research presents a cultural perspective on an important yet often overlooked factor that influences individuals’ emotional well-being.

We measure the social clock’s rigidity using the width of “time windows” for specific life events. The narrower the time windows for life events, the more rigid the social clock is. Likewise, the wider the time windows are, the more flexible the social clock is. We ask participants to provide the earliest and latest age they think is appropriate for accomplishing various life milestones. The time window for each life event is calculated by subtracting the earliest age from the latest age.

Although each culture exhibits individual-level variations in how people view the time window, the current study primarily focuses on patterns of variances at the national or

cultural level. In Hofstede's (1978, 2009, 2011) studies, the U.S. scored considerably higher in individualism than China. More recently developed Global Collectivism Index (Pelham et al., 2022) also indicates China to be more collectivistic than the U. S. Thus, we compare the social clock in the U.S. and China to contrast their respective social clock's rigidity.

In both studies, we compared the time windows for several life events in the U.S. and China to examine whether and how culture affects the social clock's rigidity. We also measured how deviating from the social clock would impact emotional well-being. For both studies, we hypothesized that the social clock would be more rigid in China than in the U.S., and endorsement of filial piety would mediate such cultural differences. Besides, we hypothesized that deviation from the social clock would result in more negative emotional outcomes in China than in the U.S., and similarly, such cultural differences would be mediated by filial piety.

Study 1 was exploratory. The hypotheses, analysis plans, and sampling method (and exclusion rules) for Study 2 were preregistered ([https://aspredicted.org/7R8\\_GXN](https://aspredicted.org/7R8_GXN)). Materials and de-identified data for all studies, along with their codebooks and data analysis scripts, are made publicly available at

[https://osf.io/qn23k/?view\\_only=fe6763115a4d4c48b1e36442ba58ed78](https://osf.io/qn23k/?view_only=fe6763115a4d4c48b1e36442ba58ed78). Additional

measures and results can be found in our supplementary materials at

[https://drive.google.com/file/d/14c40p0MPCBt9t3Pc2PkrvRL9ow3xyu7B/view?usp=share\\_link](https://drive.google.com/file/d/14c40p0MPCBt9t3Pc2PkrvRL9ow3xyu7B/view?usp=share_link).

## **Study 1**

In Study 1, we compared the variations in the widths of the time windows suitable for engaging in four life events (career- or family-related) between the U.S. and China to test the



hypothesis that the widths of the time windows for engaging in career-related and family-related life events would be broader in the U.S. than in China, and beliefs in filial piety would mediate such cultural differences. Moreover, we examined how deviating from the social clock would impact individuals' emotional well-being across cultures. We hypothesized that deviating from the social clock would have more detrimental impacts on the emotional well-being of the Chinese than Americans.

## **Participants**

Informed by studies on comparable topics (e.g., Peterson, 1996; Helson et al., 1984), we set our sample size for Study 1 at 600 (300 per culture)<sup>1</sup>. We recruited 478 participants in the U.S. via the Prolific platform ( $N = 167$ ) or an introductory psychology subject pool at a research university ( $N = 311$ ) and 574 participants in China via WeChat, a Chinese social media platform. Participants who failed to complete the survey or declined to share anonymous data were excluded from the analyses. Participants who listed a lower value for the upper limit than the value for the lower limit were also excluded. Our final sample ( $N = 640$ ) contains 343 American participants born and raised in the U.S. ( $M$  age = 21.73,  $S.D.$  age = 4.35; 37.9% male, 58.9% female, 3.2% non-binary or other; 43.1% European American, 28.6% Hispanic or Latino American, 12.8% Asian/Asian Americas or Pacific Islander, 9.3% multiracial or biracial American, 3.2% black or African American, 2.6% other, and 0.3% Native American or Alaskan) and 297 Chinese participants who were born in China and were of Chinese nationality ( $M$  age = 24.20,  $S.D.$  age = 5.19; 43.4% male, 56.2% female, 0.3% non-binary or other; 96.0% Han Chinese, 4.0% ethnic minorities).

## **Measures**

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<sup>1</sup> These previous studies had a sample size of 130-141 per study. We over-sampled in this exploratory study to increase reliability and thus doubled the sample size per culture.

After completing the consent form, participants completed an online survey titled “Online Social Psychology Study” with items following the subsequent order. The English version was translated into simplified Chinese for Chinese participants. The content of the Chinese version is identical to that of the English version, except for some demographic questions, given national differences in these measures (e.g., in education systems).

### ***Time Window Blocks***

**Perceptions of the Social Clock.** Participants were presented with six time-window blocks. In each block, we first measured participants’ perceptions of the social clock by asking them to provide the earliest and the latest ages they thought appropriate for engaging in a particular event (Table 1). For example, participants read the description: “Assuming a person wants to attend a college. Please provide a range of ages that you think is appropriate for the person to start attending a college.” Then, participants were instructed to scroll two sliders (ranging from 10 to 90) to indicate the earliest (or the lower bound) and the latest (or the upper bound) ages they thought appropriate for the person to start attending college, respectively.

As family-related life events may be gender-dependent, we measured participants’ perceptions of the earliest and the latest ages appropriate for a male or a female to participate in each life event. The structure and phrasing of questions were similar to those for career-related life events, with the only difference being the use of gender-specific pronouns. The time window for each life event is calculated by deducting the earliest age (or lower bound age) from the latest age (or upper bound age).

### **Anticipated Negative Emotional Outcomes of Deviance from the Social Clock.**

We measured the negative emotions resulting from deviation from the social clock. For

instance, participants read: “Assuming you want to attend a college—Imagine you didn’t start attending college by the time you are reaching *this upper bound* of the appropriate age for attending college (i.e., by age [quoting the numeric value of the upper bound age they entered previously]). Please indicate how much you would feel the following emotions if you are not fulfilling the age-appropriate expectation.” Participants were presented with four emotional states, i.e., “regretful,” “ashamed,” “anxious,” and “guilty,” and reported how much they would feel each emotion on a 5-point Likert-type scale (1 = *not at all* to 5 = *a great deal*). The structure and phrasing of questions were comparable in all blocks. As the reliabilities of participants’ ratings of the negative emotions were high in all blocks ( $\alpha > 0.85$ ), we averaged the ratings of the four negative emotions into one composite score in each block.

**Table 1**

*Sequences of the questions measuring time windows in Study 1.*

	Block 1	Block 2	Block 3	Block 4	Block 5	Block 6
Life event subcategories	Career-related life events		Family-related life events			
Specific life event	Starting college	Getting a full-time job	Getting married (male)	Getting married (female)	Having a first child (male)	Having a first child (female)

***Filial Piety Beliefs***

Filial piety beliefs were measured by the filial piety scale (Fu et al., 2020) with 12 items measuring the extent to which one endorses the value of caring for parents, familial entirety, and familial aspiration, which are core to the practice of filial piety (Fu et al., 2020). Example scale items include “Children should ask after their parents’ well-being,” and “Children should try their best to complete their parents’ unachieved goals” (Fu et al., 2020).

Participants reported their agreement or disagreement with each statement on a 5-point Likert-type scale (1 = *strongly disagree*, 5 = *strongly agree*). The item scores were averaged to create a composite score ( $M = 3.38$ ,  $S.D. = .69$ ,  $\alpha = 0.88$ ). Higher scores indicated a higher endorsement of filial piety.

### ***Additional Measures***

The study included a few additional measures, such as the intersubjective perceptions of the social clock for future exploratory analysis, and BIS/BAS (Carver & White, 1994), cooperative/competitive strategy (Simmons et al., 1988), etc. as alternate mediators. None of these measures mediated the results (see supplementary materials at [https://drive.google.com/file/d/14c40p0MPCBt9t3Pc2PkrvRL9ow3xyu7B/view?usp=share\\_1](https://drive.google.com/file/d/14c40p0MPCBt9t3Pc2PkrvRL9ow3xyu7B/view?usp=share_1) [ink](#) (pp. 2-3)).

### ***Demographic Covariates***

Basic demographic information, including age, gender (-1 = male, 1 = female, and 0 = non-binary, third gender, or other), education, and subjective socioeconomic status (SES), were measured as potential covariates. We coded participants' highest education level as 1, below undergraduate degree, 2, undergraduate degree (e.g., an associate's or bachelor's degree), and 3, postgraduate degree (e.g., a master's or a Ph.D. degree). Subjective SES was measured using the SES ladder with ten rungs with level 10 being the highest level of social standing (Adler et al., 2000).

## **Results**

### ***Correlations between Variables***

We first calculated the means and standard deviations of the variables and bivariate correlations between them in the U.S. and China (see Table 2).

**Table 2**

*Means and standard deviations of the variables and bivariate correlations in the U.S. and China in Study 1.*

	The U.S. (N = 343)							China (N = 297)								
	M (SD)	1	2	3	4	5	6	7	M (SD)	1	2	3	4	5	6	7
1. Time window for career-related life events	39.36 (19.09)	-							17.69 (16.79)	-						
2. Time window for family-related life events	29.79 (14.16)	.60 ***	-						15.77 (12.44)	.69 ***	-					
3. Filial piety beliefs	3.13 (.60)	-.24 ***	-.29 ***	-					3.66 (.67)	-.42 ***	-.41 ***	-				
4. Negative emotional outcomes resulting from deviation from the career-related social clock	3.13 (1.03)	-.15 **	-.19 ***	.11 *	-				3.07 (.99)	-.38 ***	-.28 ***	.21 ***	-			
5. Negative emotional outcomes resulting from deviation from the family-related social clock	2.60 (1.06)	-.11 *	-.17 **	.26 ***	.52 ***	-			2.54 (1.04)	-.31 ***	-.31 ***	.46 ***	.58 ***	-		
6. Age	21.73 (4.35)	.14 *	.13 *	-.11 *	-.22 ***	-.23 ***	-		24.20 (5.19)	-.03	-.01	-.01	-.11	.02	-	
7. SES	5.65 (1.78)	-.06	-.06	.24 ***	.12 *	.19 ***	-.31 ***	-	5.64 (1.61)	-.01	.05	-.01	-.04	-.07	.10	-

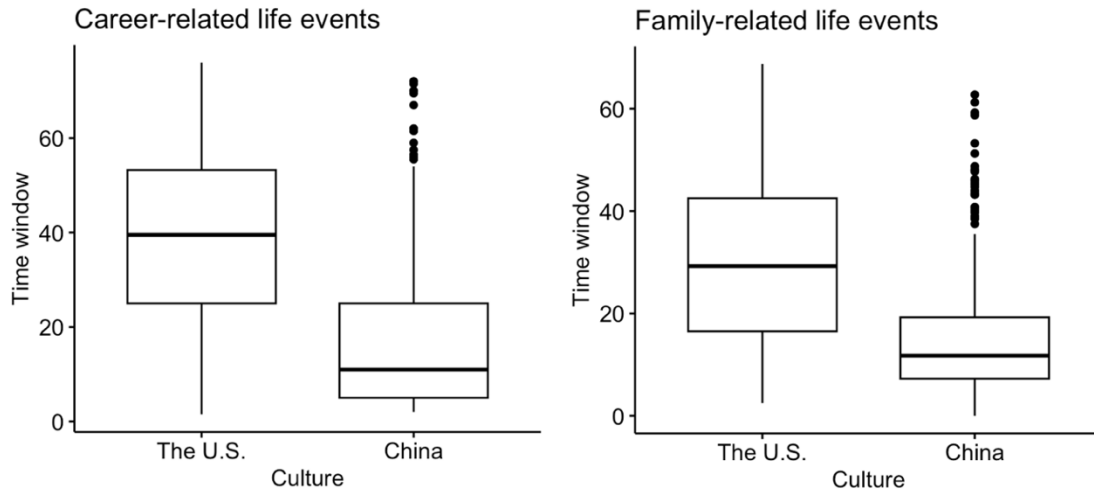
\*\*\*  $p < .001$ , \*\*  $p < .01$ , \*  $p < .05$ .

### ***Cultural Differences in the Time Windows***

To test our key hypothesis, we examined whether culture affects the social clock's rigidity by looking at the time windows for career-related and family-related life events (Figure 1).

#### **Figure 1**

*The widths of the time windows for career-related and family-related life events in the U.S. and China in Study 1.*



We first examined the cultural differences in the time window for career-related life events. A univariate ANOVA on the time window for career-related life events with culture (the U.S. vs. China) as a fixed factor and age, gender, SES, and education as covariates revealed a significant main effect of culture,  $F(1, 634) = 177.57, p < .001, \eta^2_p = .22 [.17, .27]$  ( $M_{\text{American}} = 39.36, SD_{\text{American}} = 19.09; M_{\text{Chinese}} = 17.69, SD_{\text{Chinese}} = 16.79$ )<sup>2</sup>. We then examined the cultural differences in the time window for family-related life events. We ran a univariate ANOVA on the time window for family-related life events with culture (the U.S. vs. China) as a fixed factor and age, gender, SES, and education as covariates. Similarly, we found a significant main effect of culture,  $F(1, 634) = 123.39, p < .001, \eta^2_p = .16 [.11, .21]$  ( $M_{\text{American}} = 29.79, SD_{\text{American}} = 14.16; M_{\text{Chinese}} = 15.77, SD_{\text{Chinese}} = 12.44$ ) (see Table 3 for descriptive statistics and pairwise comparisons).

**Table 3**

*Descriptive statistics and pairwise comparisons for each life event in Study 1.*

Specific life event	Culture	Lower bound age Mean (SD)	Upper bound age Mean (SD)	Time window Mean (SD)	Pairwise comparison
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<sup>2</sup> The significance patterns of all reported results in Studies 1 and 2 are consistent with or without covariates, and will not be mentioned further.

			Mean (SD)		
Starting a college	The U.S.	17.35 (2.91)	60.26 (23.78)	42.91 (24.29)	$t = 11.23, p < .001$
	China	17.43 (2.16)	37.72 (21.89)	20.29 (22.36)	
Getting a full-time job	The U.S.	18.45 (2.41)	54.27 (20.91)	35.81 (21.42)	$t = 11.32, p < .001$
	China	21.74 (3.28)	36.82 (14.96)	15.08 (15.85)	
Getting married (male)	The U.S.	22.70 (4.02)	64.87 (21.65)	42.17 (22.85)	$t = 11.03, p < .001$
	China	24.10 (5.00)	43.33 (18.31)	19.23 (18.95)	
Getting married (female)	The U.S.	21.80 (3.43)	61.10 (22.84)	39.30 (23.48)	$t = 8.80, p < .001$
	China	22.82 (3.23)	41.96 (19.90)	19.14 (20.08)	
Having a first child (male)	The U.S.	24.19 (3.90)	44.41 (9.94)	20.23 (11.06)	$t = 8.07, p < .001$
	China	26.13 (3.52)	39.94 (10.33)	13.80 (10.80)	
Having a first child (female)	The U.S.	23.01 (3.54)	40.48 (8.98)	17.47 (9.19)	$t = 9.35, p < .001$
	China	24.55 (3.23)	35.45 (7.57)	10.90 (7.42)	

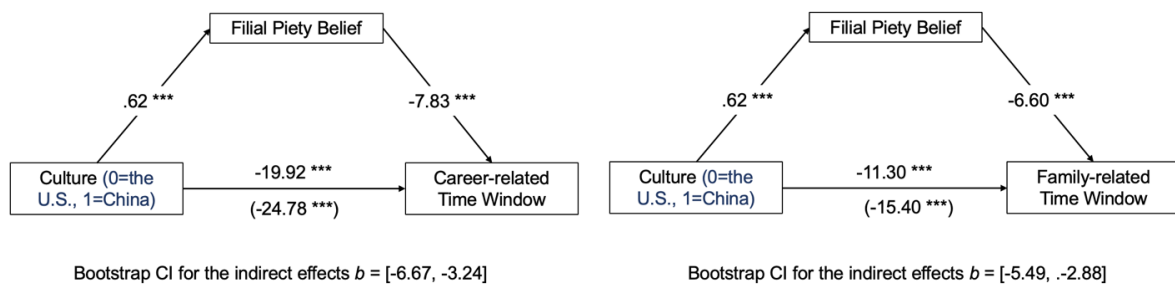
### ***Psychological Mediators Explaining the Cultural Differences in the Time Windows***

Then, we examined if the cultural differences in the widths of the time windows could be explained by beliefs in filial piety (Fu et al., 2020). We conducted a mediation analysis using ordinal least squares regression (path analysis) via the PROCESS macro in

SPSS (Hayes, 2018), in which filial piety beliefs mediate the effect of culture on the time windows (for both career-related and family-related life events), controlling for age, gender, SES, and education. See Figure 2 for the summary of results testing the mediation hypothesis.

**Figure 2**

*The mediation results in Study 1 (N = 639). The total effects were shown in parentheses. Path coefficients are unstandardized regression coefficients. \*\*\* p < .001.*



When the outcome variable was the time window for career-related life events, culture predicted the time window ( $\beta = -1.18$ ,  $b = -24.78$  [-28.43, -21.13],  $p < .001$ ) and filial piety beliefs ( $\beta = .91$ ,  $b = .62$  [.50, .74],  $p < .001$ ). Chinese participants were more likely to view the time window for career-related life events as narrower and to endorse beliefs in filial piety. Beliefs in filial piety, in turn, predicted a narrower time window for career-related life events ( $\beta = -.26$ ,  $b = -7.83$  [-10.10, -5.55],  $p < .001$ ). A bootstrap confidence interval (based on 5,000 samples) for the indirect effects did not include zero, 95% CI for  $b = [-6.67, -3.24]$ , although after controlling for filial piety beliefs, there was still a significant direct association between culture and the time window for career-related life events ( $\beta = -.95$ ,  $b = -19.92$  [-23.72, -16.11],  $p < .001$ ). Thus, filial piety beliefs partially mediated the cultural difference in the time window for career-related life events.



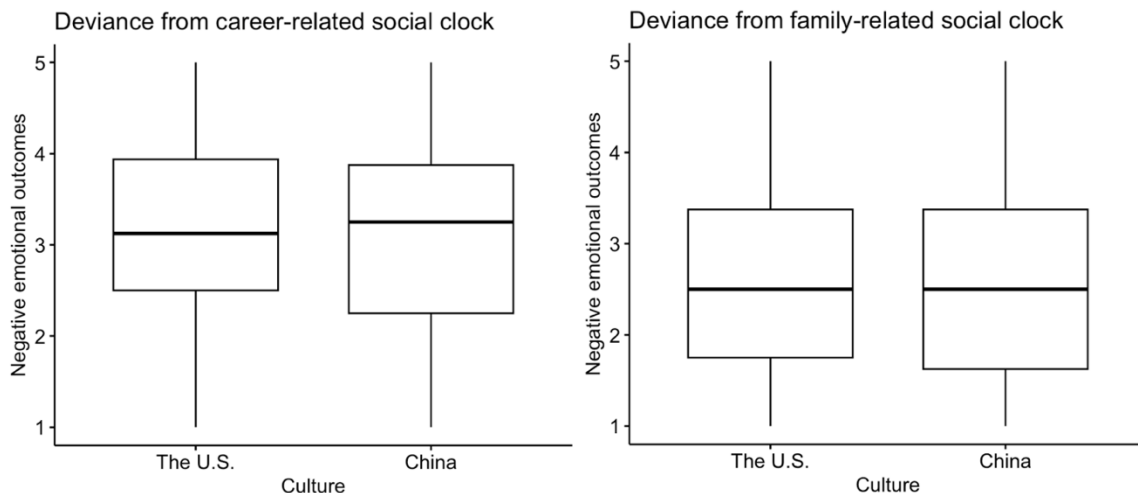
When the outcome variable was the time window for family-related life events, culture predicted the time window ( $\beta = -1.02$ ,  $b = -15.40$  [-18.12, -12.68],  $p < .001$ ) and filial piety beliefs ( $\beta = .91$ ,  $b = .62$  [.50, .74],  $p < .001$ ). Similarly, Chinese participants were more likely to view the time window for family-related life events as narrower and to endorse beliefs in filial piety. Beliefs in filial piety, in turn, predicted a narrower time window for family-related life events ( $\beta = -.30$ ,  $b = -6.60$  [-8.27, -4.92],  $p < .001$ ). A bootstrap confidence interval (based on 5,000 samples) for the indirect effects did not include zero, 95% CI for  $b = [-5.49, -2.88]$ , although after controlling for filial piety beliefs, there was still a significant direct association between culture and the time window for family-related life events ( $\beta = -.75$ ,  $b = -11.30$  [-14.11, -8.50],  $p < .001$ ). Thus, filial piety beliefs partially mediated the cultural difference in the time window for family-related life events.

***Negative Emotional Outcomes of Deviance from the Social Clock***

In addition, we examined whether culture affects negative emotional outcomes resulting from deviance from the social clock (Figure 3).

**Figure 3**

*Negative emotional outcomes in Study 1 resulting from deviance from the social clock varying by culture (the U.S. vs. China).*



We first looked at negative emotional outcomes predicted by deviation from the career-related social clock. A univariate ANOVA on negative emotional outcomes resulting from deviation from the career-related social clock with culture (the U.S. vs. China) as a fixed factor and age, gender, SES, and education as covariates did not reveal a significant main effect of culture,  $F(1, 634) = .34, p = .561, \eta^2_p = .001 [.000, .001]$  ( $M_{\text{American}} = 3.13, SD_{\text{American}} = 1.03; M_{\text{Chinese}} = 3.07, SD_{\text{Chinese}} = .99$ ). Then, we repeated the same analysis with deviance from the family-related social clock. Similarly, we did not find a significant main effect of culture,  $F(1, 634) = 2.53, p = .113, \eta^2_p = .004 [.000, .019]$  ( $M_{\text{American}} = 2.60, SD_{\text{American}} = 1.06; M_{\text{Chinese}} = 2.54, SD_{\text{Chinese}} = 1.04$ ).

## **Discussion**

Study 1 provided the initial evidence about the cultural differences in the social clock. Consistent with our hypothesis, the social clock was more flexible in the U.S. than in China, and such differences were mediated by beliefs in filial piety. However, contrary to our hypothesis, deviance from the social clock resulted in comparable negative emotional outcomes in both cultures. We reason that this is perhaps because the participants in this study were mostly young adults ( $M \text{ age} = 22.88, S.D. \text{ age} = 4.91$ ) who may not necessarily have real-life experiences regarding failure to achieve specific life milestones within the appropriate time windows. In addition, American participants in this study were more ethnically diverse than the national representatives, which may dilute the cultural main effect. Therefore, in Study 2, we recruited participants with a wider range of age who are more accurately reflecting the national ethnic breakdown.

## **Study 2**

Study 2 aimed to replicate the findings of Study 1 and to increase the external validity of those findings with participants from a wider age range. The hypotheses, analysis plans, and sampling method (and exclusion rules) were preregistered ([https://aspredicted.org/7R8\\_GXN](https://aspredicted.org/7R8_GXN))<sup>3</sup>.

## Participants

Based on power analyses<sup>4</sup>, we set our sample size at  $N = 100$  per culture. We recruited 107 participants in the U.S. via the Prolific platform and 102 participants in China via the Credamo platform (comparable to the Prolific platform in China). The data exclusion rules were the same as in Study 1. Our final sample ( $N = 198$ ) contains 98 American participants who were born in the U.S. and were of U.S. nationality ( $M$  age = 34.80,  $S.D.$  age = 11.10; 50% male, 44.9% female, 5.1% non-binary, third gender, or other; 72.4% European American, 10.2% Asian/Asian Americas or Pacific Islander, 8.2% Hispanic or Latino American, 7.1% black or African American, and 2.0% multiracial or biracial American) and 100 Chinese participants who were born in China and were of Chinese nationality ( $M$  age = 34.59,  $S.D.$  age = 12.73; 52.0% male, 48.0% female; 98.0% Han Chinese, 2.0% ethnic minorities).

## Measures

After consenting, participants completed an online survey with the name “online social psychology study.” The procedure and measures (i.e., time window blocks, measures of filial piety, and demographic covariates) were the same as in Study 1, except for removing

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<sup>3</sup> Another measure, the intersubjective perceptions of the social clock, was preregistered, but is not included as a part of this paper.

<sup>4</sup> Based on the results of Study 1,  $R = .52$ , we calculated the effect size  $f^2 = R^2/(1 - R^2) = .38$ . We then ran the power analysis using the G\*Power software (Erdfeider et al., 1996) using an  $F$  test, A Priori, where  $f^2 = .38$ ,  $\alpha = .05$ , Power  $(1 - \beta) = .95$ , number of predictors = 3. It yields a total sample size of 50. We decided to over-sample to increase reliability and doubled the minimum sample size needed per culture.

all additional measures that were not central to the hypothesis. The reliabilities of ratings of the four negative emotions (i.e., regretful, ashamed, anxious, and guilty) were high in all time window blocks ( $\alpha > 0.88$ ), and thus we averaged the ratings of the four negative emotions into one composite score in each time window block reflecting the negative emotional outcomes. Filial piety beliefs were measured using the same scale (Fu et al., 2020) as in Study 1 ( $M = 3.53$ ,  $S.D. = .70$ ,  $\alpha = 0.90$ ).

## Results

### *Correlations between Variables*

Similarly, we calculated the means and standard deviations of the variables and bivariate correlations between them in the U.S. and China (see Table 4).

**Table 4**

*Means and standard deviations of the variables and bivariate correlations between them in the U.S. and China in Study 2.*

	The U.S. (N = 98)									China (N = 100)						
	M (SD)	1	2	3	4	5	6	7	M (SD)	1	2	3	4	5	6	7
1. Time window for career-related life events	43.00 (18.69)	-							9.75 (10.09)	-						
2. Time window for family-related life events	34.73 (14.22)	.62 ***	-						10.58 (6.52)	.51 ***	-					
3. Filial piety beliefs	3.12 (.67)	-.28 **	-.34 ***	-					3.94 (.44)	-.23 *	-.19	-				
4. Negative emotional outcomes resulting from deviation from the career-related social clock	2.60 (1.09)	-.33 ***	-.23 *	.11	-				3.59 (.90)	-.17	-.09	.34 ***	-			
5. Negative emotional outcomes resulting from deviation from the family-related social clock	2.14 (.99)	-.20 *	-.16	.36 ***	.58 ***	-			3.25 (.97)	-.08	-.11	.36 ***	.61 ***	-		
6. Age	34.80 (11.10)	.10	-.03	.37 ***	-.32 **	-.03	-		34.59 (12.73)	-.14	-.01	.04	-.19	-.01	-	
7. SES	4.85 (1.66)	.08	.13	-.01	-.05	.01	.07	-	5.33 (1.16)	-.03	.21 *	.17	.10	.08	.18	-

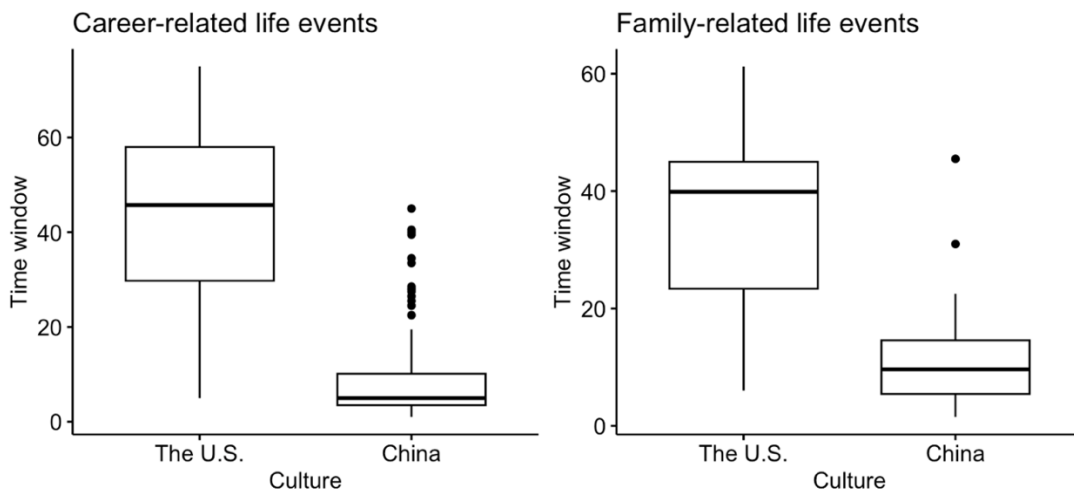
\*\*\*  $p < .001$ , \*\*  $p < .01$ , \*  $p < .05$ .

### *Cultural Differences in the Time Windows*

We first examined the cultural differences in the time window for career-related life events. A univariate ANOVA on the time window for career-related life events with culture (the U.S. vs. China) as a fixed factor and age, gender, SES, and education as covariates revealed a significant main effect of culture,  $F(1, 192) = 230.35, p < .001, \eta^2_p = .55 [.45, .62]$  ( $M_{\text{American}} = 43.00, SD_{\text{American}} = 18.69; M_{\text{Chinese}} = 9.75, SD_{\text{Chinese}} = 10.09$ ), replicating results of Study 1. We then examined the cultural differences in the time window for family-related life events. We ran a univariate ANOVA on the time window for family-related life events with culture (the U.S. vs. China) as a fixed factor and age, gender, SES, and education as covariates. Similarly, replicating the results of Study 1, we found a significant main effect of culture,  $F(1, 192) = 237.63, p < .001, \eta^2_p = .55 [.46, .62]$  ( $M_{\text{American}} = 34.73, SD_{\text{American}} = 14.22; M_{\text{Chinese}} = 10.58, SD_{\text{Chinese}} = 6.52$ ) (see Figure 4 and Table 5).

**Figure 4**

*The widths of the time windows for career-related and family-related life events varying by culture (the U.S. vs. China) in Study 2.*



**Table 5**

*Descriptive statistics and pairwise comparisons for each life event in Study 2.*

Specific life event	Culture	Lower bound age Mean (SD)	Upper bound age Mean (SD)	Time window Mean (SD)	Pairwise comparison
Starting college	The U.S.	17.19 (1.44)	64.70 (21.15)	47.51 (21.55)	$t = 13.69,$ $p < .001$
	China	17.70 (1.91)	28.51 (14.28)	10.81 (14.66)	
Getting a full-time job	The U.S.	18.08 (2.34)	56.57 (20.85)	38.49 (21.48)	$t = 12.42,$ $p < .001$
	China	21.59 (2.68)	30.28 (7.73)	8.69 (7.99)	
Getting married (male)	The U.S.	22.46 (4.06)	73.41 (19.72)	50.95 (21.28)	$t = 17.38,$ $p < .001$
	China	24.24 (2.72)	35.74 (8.57)	11.50 (8.65)	
Getting married (female)	The U.S.	21.36 (3.54)	69.26 (23.49)	47.90 (23.82)	$t = 14.48,$ $p < .001$
	China	22.94 (2.87)	33.75 (9.84)	10.81 (9.96)	
Having a first child (male)	The U.S.	24.29 (4.26)	46.11 (11.25)	21.83 (12.58)	$t = 7.31,$ $p < .001$
	China	25.80 (2.89)	36.52 (6.36)	10.72 (6.37)	
Having a first child (female)	The U.S.	22.71 (3.94)	40.98 (7.90)	18.27 (8.56)	$t = 8.41,$ $p < .001$
	China	24.09 (2.75)	33.38 (5.03)	9.29 (5.38)	

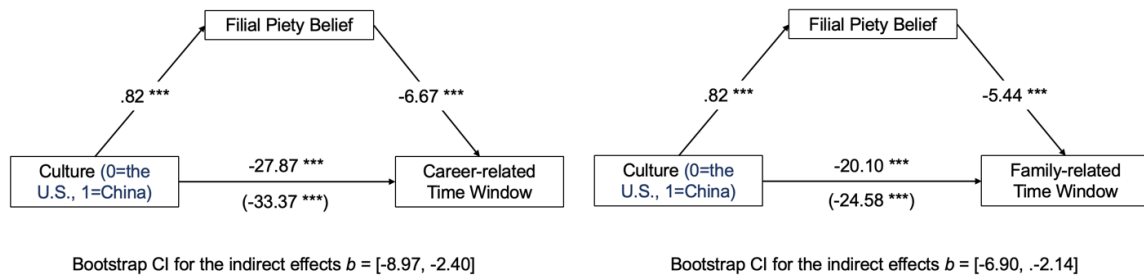
### ***Psychological Mediators Explaining the Cultural Differences in the Time Windows***

As in Study 1, we conducted a mediation analysis using ordinal least squares regression (path analysis) via the PROCESS macro in SPSS (Hayes, 2018), in which beliefs

in filial piety mediate the effect of culture on the time windows, controlling for age, gender, SES, and education (see Figure 5).

**Figure 5**

*The mediation results in Study 2 (N = 198). The total effects were shown in parentheses. Path coefficients are unstandardized regression coefficients. \*\*\* p < .001.*



When the outcome variable was the subjective time window for career-related life events, culture predicted the time window ( $\beta = -1.49$ ,  $b = -33.37 [-37.71, -29.03]$ ,  $p < .001$ ) and filial piety beliefs ( $\beta = 1.18$ ,  $b = .82 [.66, .99]$ ,  $p < .001$ ). Chinese participants were more likely to view the subjective time window for career-related life events as narrower and to endorse beliefs in filial piety. Beliefs in filial piety, in turn, predicted a narrower subjective time window for career-related life events ( $\beta = -.21$ ,  $b = -6.67 [-10.32, -3.03]$ ,  $p < .001$ ). A bootstrap confidence interval (based on 5,000 samples) for the indirect effects did not include zero, 95% CI for  $b = [-8.97, -2.40]$ , although after controlling for filial piety beliefs, there was still a significant direct association between culture and the subjective time window for career-related life events ( $\beta = -1.25$ ,  $b = -27.87 [-33.04, -22.71]$ ,  $p < .001$ ). Thus, replicating the results of Study 1, filial piety beliefs partially mediated the cultural difference in the time window for career-related life events.

When the outcome variable was the subjective time window for family-related life events, culture predicted the time window ( $\beta = -1.50$ ,  $b = -24.58 [-27.72, -21.43]$ ,  $p < .001$ )

and filial piety beliefs ( $\beta = 1.18, b = .82 [.66, .99], p < .001$ ). Chinese participants were more likely to view the subjective time window for family-related life events as narrower and to endorse beliefs in filial piety. Beliefs in filial piety, in turn, predicted a narrower subjective time window for family-related life events ( $\beta = -.23, b = -5.44 [-8.06, -2.82], p < .001$ ). A bootstrap confidence interval (based on 5,000 samples) for the indirect effects did not include zero, 95% CI for  $b = [-6.90, -2.14]$ , although after controlling for filial piety beliefs, there was still a significant direct association between culture and the subjective time window for family-related life events ( $\beta = -1.23, b = -20.10 [-23.81, -16.38], p < .001$ ). Thus, filial piety beliefs partially mediated the cultural difference in the time window for family-related life events, replicating the results of Study 1.

### ***Anticipated Negative Emotional Outcomes of Deviance from the Social Clock***

Similar to Study 1, as an exploratory analysis, we examined whether there are cultural differences in anticipated emotional outcomes resulting from deviation from the social clock. We first looked at negative emotional outcomes resulting from deviation from the career-related social clock. A univariate ANOVA on negative emotions resulting from deviation from the career-related social clock with culture (the U.S. vs. China) as a fixed factor and age, gender, SES, and education as covariates revealed a significant main effect of culture,  $F(1, 192) = 42.00, p < .001, \eta^2_p = .18 [.09, .27]$  ( $M_{\text{American}} = 2.60, SD_{\text{American}} = 1.09; M_{\text{Chinese}} = 3.59, SD_{\text{Chinese}} = .90$ ) In addition, we tested negative emotional outcomes resulting from deviation from the family-related social clock using a univariate ANOVA on negative emotional outcomes resulting from deviation from the family-related social clock with culture (the U.S. vs. China) as a fixed factor and age, gender, SES, and education as covariates. Similarly, we found a significant main effect of culture,  $F(1, 192) = 51.36, p <$

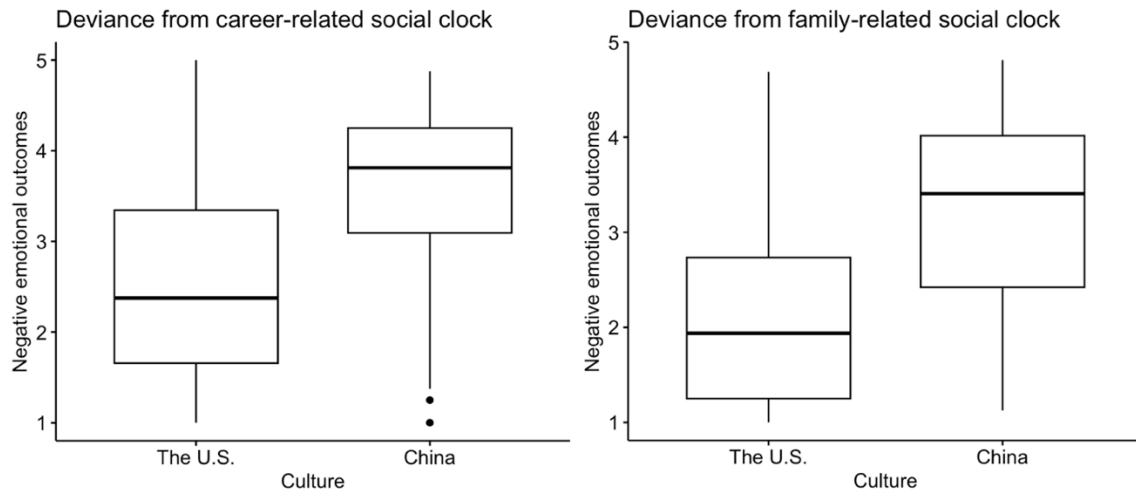


.001,  $\eta^2_p = .21$  [.12, .31] ( $M_{\text{American}} = 2.14$ ,  $SD_{\text{American}} = .99$ ;  $M_{\text{Chinese}} = 3.25$ ,  $SD_{\text{Chinese}} = .97$ )

(see Figure 6).

### Figure 6

*Negative emotional outcomes in Study 2 resulting from deviance from the social clock varying by culture (the U.S. vs. China).*



The descriptive statistics (means and standard deviations) of negative emotional outcomes resulting from deviance from the social clock varying by culture (the U.S. vs. China) for each life event in Study 2, as well as pairwise comparisons between negative emotional outcomes resulting from deviance from the social clock in the U.S. and China can be found in our supplementary materials at

[https://drive.google.com/file/d/14c40p0MPCBt9t3Pc2PkrvRL9ow3xyu7B/view?usp=share\\_link](https://drive.google.com/file/d/14c40p0MPCBt9t3Pc2PkrvRL9ow3xyu7B/view?usp=share_link) (p. 3).

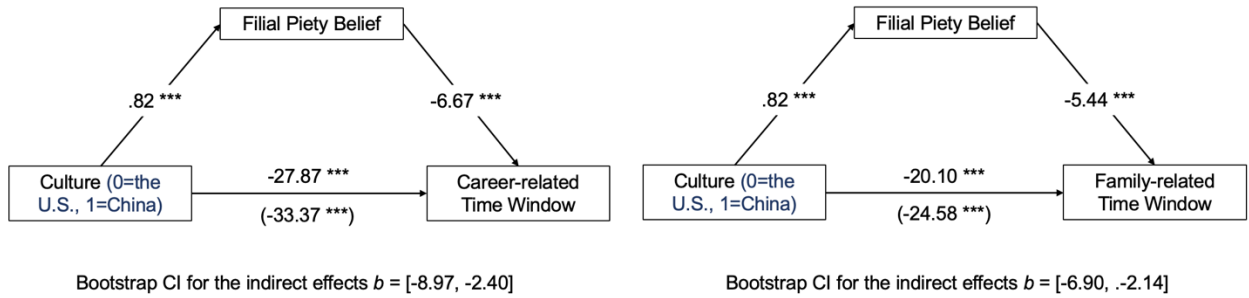
### ***Psychological Mediators Explaining the Cultural Differences in Emotional Outcomes***

Then, we examined if the cultural differences in anticipated emotional outcomes resulting from deviation from the social clock could be explained by beliefs in filial piety (Fu et al., 2020). We conducted mediation analyses using ordinal least squares regression (path analysis) via the PROCESS macro in SPSS (Hayes, 2018), in which beliefs in filial piety

mediate the effect of culture on the time windows, controlling for age, gender, SES, and education (see Figure 7).

**Figure 7**

The mediation results in Study 2 ( $N = 198$ ). The total effects were shown in parentheses. Path coefficients are unstandardized regression coefficients. \*\*\*  $p < .001$ .



With the anticipated emotional outcomes resulting from deviation from the career-related social clock, culture predicted negative emotional outcomes ( $\beta = .86, b = .95 [.66, 1.24], p < .001$ ) and filial piety beliefs ( $\beta = 1.18, b = .82 [.66, .99], p < .001$ ). Chinese participants were more likely to report negative emotional outcomes resulting from deviation from the career-related social clock and endorse filial piety beliefs. Beliefs in filial piety, in turn, predicted more negative emotional outcomes ( $\beta = .30, b = .47 [.23, .71], p < .001$ ). A bootstrap confidence interval (based on 5,000 samples) for the indirect effects did not include zero, 95% CI for  $b = [.15, .65]$ , although after controlling for filial piety beliefs, there was still a significant direct association between culture and negative emotional outcomes ( $\beta = .51, b = .56 [.22, .91], p = .001$ ). Thus, filial piety beliefs partially mediated the cultural difference in negative emotional outcomes resulting from deviance from the career-related social clock.

When the outcome variable was negative emotional outcomes resulting from deviation from the family-related social clock, culture predicted negative emotional

outcomes ( $\beta = .95, b = 1.07 [.77, 1.36], p < .001$ ) and filial piety beliefs ( $\beta = 1.18, b = .82 [.66, .99], p < .001$ ). Chinese participants were more likely to report negative emotional outcomes resulting from deviance from the family-related social clock and endorse filial piety beliefs. Beliefs in filial piety, in turn, predicted more negative emotional outcomes ( $\beta = .40, b = .65 [.41, .88], p < .001$ ). A bootstrap confidence interval (based on 5,000 samples) for the indirect effects did not include zero, 95% CI for  $b = [.30, .77]$ , although after controlling for filial piety beliefs, there was still a significant direct association between culture and negative emotional outcomes ( $\beta = .48, b = .53 [.20, .87], p = .002$ ). Thus, filial piety beliefs partially mediated the cultural difference in negative emotional outcomes resulting from deviance from the family-related social clock.

## **Discussion**

Study 2 replicated Study 1 findings that the social clock tends to be more rigid in China than in the U.S. and that such cultural differences were mediated by filial piety beliefs. In addition, unlike Study 1, we found that deviance from the social clock would be more distressing for Chinese than Americans, despite that Americans' average upper age bound is higher than that of Chinese, and that such cultural differences were also mediated by filial piety beliefs. We reason that this is because, in Study 2, we recruited participants from a more diverse age group with an older average age ( $M$  age = 34.69,  $S.D.$  age = 11.92) who may have more real-life experience (either direct or vicarious) regarding failure to achieve specific life milestones within the appropriate time windows. In addition, we recruited a sample in the U.S. that better represents the national demographics. As such, we believe Study 2 is more likely to represent the actual cultural differences in how deviance from the social clock affects emotional well-being.

## **General Discussion**

### **Summary**

The present research examined how and why cultures differ in the social clock's rigidity. Across two studies, we found that the social clock was more rigid in China than in the U.S., partly because Chinese people value filial piety more. These findings supported our hypotheses that more collectivistic (compared to more individualistic) cultures tend to have tighter social clocks and that such cultural differences would be mediated by perceived interpersonal duties and responsibilities, for example, responsibilities towards one's parents and elders (i.e., filial piety), a social obligation important for East Asians (Schwartz et al., 2010).

We also examined how deviating from the social clock would impact emotional well-being. Study 2, with participants from nationally representative ethnic backgrounds in the U.S. and a broader age range, confirmed our hypothesis that deviating from the social clock would be more distressing for the Chinese than Americans, and that filial piety mediates such cultural differences. Participants were asked about their emotional well-being outcomes, specifically, how they would feel if they failed to achieve specific life milestones by the upper bound age they perceived. Despite the intuitive expectation that Americans would report more distress due to reflecting on not reaching life milestones at an older age (the mean upper bound age was higher in the U.S.), it was the Chinese who reported more negative emotional outcomes. This finding highlights the role of culture in how fitting in the social clock is linked to emotional well-being as it offsets the potential effect (to the opposite direction) driven by the upper bound age differences across cultures.

### **Theoretical Contribution and Societal Implication**

Our findings contribute to the literature on societal expectations about ages for specific life milestones (e.g., getting married) (e.g., Jones, 2017; Lee & Payne, 2010; Peterson, 1996; Helson & McCabe, 1994). These previous studies primarily focused on the average age at which people engage in certain life events and provided demographic and economic explanations. The current research, looking at societal expectations about age and life events, suggests a novel social psychological explanation—filial piety, a specific form of social duties. Leveraging cultural differences in the importance of fulfilling social duties, we were able to show that value of social duties underlies individuals' endorsement of social clock.

Methodologically, to our best knowledge, the present research is the first to extend the point estimates (i.e., mean ages, or mean upper bound and lower bound ages) (e.g., Peterson, 1996) to the interval estimates (i.e., free-response time windows beyond fixed intervals) of the age expectations for achieving specific life milestones across cultures. This methodology allows us to examine not only when social clocks are set but also how rigid social clocks are in different societies.

The current research also advances the understanding of the timings in the human life cycle, governed by both the biological clock (e.g., Friese et al., 2006; Leader, 2006) and the social clock. One of the biological clock examples is the pressure to have a child during one's most fertile years, as age is the most important determinant of fertility (Leader, 2006). Different from the biological clocks, which are roughly universal across cultures based on neural-physical development, the current study suggests that the social clock tends to vary systematically across the culture in which we live. Therefore, the present research advances our understanding of the timings in the human life cycle by identifying a culturally

dependent element (i.e., the social clock) (Neugarten, 1976) in addition to the well-studied culturally constant element (i.e., the biological clock) (e.g., Friese et al., 2006; Leader, 2006).

The findings of the current research could have significant societal implications. On one hand, a more rigid social clock may lead to undesirable social consequences. For instance, a more rigid social clock in China echoes pervasive age discrimination in the Chinese job market, where companies sometimes limit the age of applicants to younger than 35 years. At the societal level, it may lead to age discrimination and the loss of more experienced employees and a lack of innovation as people are reluctant to switch to new fields. Moreover, an extremely rigid social clock may backfire, causing generational rifts and societal problems, when the younger generation decided to “rebel” against strong social norms, either due to pragmatic or ideological reasons. For example, Korea and Japan have the lowest birthrates in the world and population shrinkage is now a serious social problem (e.g., Yun et al., 2022). On the other hand, however, a more rigid social clock may be collectively adaptive and desirable in certain cultures as it may help stabilize employment and birth rates by motivating people to remain employed and have children within a specific time window. The current study could remind policymakers in societies with rigid age expectations to examine if, behind the back of a tighter social clock, there lurks more intensive social issues to be addressed.

In addition, the current study findings can guide sojourners or immigrants in their acculturation process as they come prepared for the differences in the social clock’s rigidity across cultures.

### **Limitations and Future Directions**

While we found cultural differences in the social clock's rigidity, these effects were only partially explained by beliefs in filial piety, suggesting that there may be additional mediators, such as tightness/looseness (Gelfand et al., 2011), which reflects the strength of perceived social norms and tolerance of deviance (which may include tolerance of being "off" the social clock). Future work could explore more psychological mediators or gather qualitative data using interviews or open-ended questions to gain more insight into the explanatory factors underlying cultural differences. We reason that other specific types of social duty (e.g., familismo, a central Latinx cultural value, see Ayón et al., 2010) or religious duty (e.g., Judaism religious duties, see Cohen et al., 2013, for religion and spirituality of Jews) may be relevant among non-East Asian collectivistic cultures. Besides, future researchers could consider implementing the study in more cultures to see if the social clock's rigidity (or flexibility) varies systematically across cultures differing in the individualism vs. collectivism dimension. Aside from extending the cultures of interest, future studies could also consider garnering cultural life scripts, the culturally shared semantic knowledge of typical life paths (e.g., Anne & Janssen, 2021; Berntsen & Bohn, 2009; Janssen, 2015; Scherman, 2013) or use big data to determine the lower bound age and the upper bound age ideal for engaging in specific life events, as additional analyses.

In addition, future research could investigate the interpersonal consequences of deviation from the social clock. Compared to people from more individualistic cultures, people from more collectivistic may judge the targets whose personal life timing deviated from the social clock more negatively (e.g., less responsible, more selfish, etc.), and the more negative judgments would, in turn, influence social interactions (e.g., people would be less likely to befriend with the targets or to offer jobs to them). This is likely, considering

evidence that people from more collectivistic (compared to more individualistic) cultures rated non-normative behaviors more negatively (e.g., Kinias et al., 2014). We thus encourage future research to investigate interpersonal or social consequences of deviation from the social clock.

Further, the current study investigated negative emotional outcomes resulting from deviation from the social clock. However, as mentioned, a more rigid social clock may be socially adaptive. This concurs with our hypothesis that cultural dimension of individualism-collectivism leads to variations in the social clock's rigidity as it directs the extent to which a culture is ready to attain desirable societal outcomes at the cost of individual emotional well-being. Thus, future research could explore implications, both emotional and societal, associated with deviating from social clocks of varying rigidity, as well as ecological factors that may tighten or loosen social clock.

Finally, the current study measured negative emotional outcomes, assuming participants wanted to achieve certain life milestones yet failed to, whereas it is possible that people may not experience comparable negative social emotions if they have no desire to attain specific life milestones. Future research could investigate whether people who fail to abide by the social clock due to more uncontrollable reasons (e.g., financial restraints) vs. more controllable reasons (e.g., personal choice) differ in their emotional distress (such as guilt and anxiety) resulting from deviation from the social clock.

## **Conclusion**

The present study suggests that people's perceptions of age-related social expectations, and in particular, the rigidity (or flexibility) of the social clock, could be shaped by the culture in which we reside. The current study hopes to serve as a clue to the puzzle,



when people feel an urge to achieve important life milestones before or after a particular age, of where such urge comes from. We believe a better understanding of how and why culture shapes the social clock would be beneficial in the pursuit of “following what one’s heart desired, without transgressing what was right” (adapted from Confucius, 1999).

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