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Are Hong Kongese Still Bicultural? Six Preregistered Replications of the Cultural Priming Effect in Hong Kong

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Are Hong Kongese still bicultural?

Are Hong Kongese Still Bicultural?

Six Preregistered Replications of the Cultural Priming Effect in Hong Kong

Abstract

Cultural priming significantly enhances the internal validity of causal inferences in cultural psychology. Earlier studies showed that bicultural Hong Kongese could alternate between Chinese and Western cultural frames based on priming. However, after more than 25 years since Hong Kong's transfer from the UK to China, this assumption requires reevaluation due to substantial social and political changes. While the late 1990s studies reasonably presumed Hong Kongese were biculturals, the region has since undergone profound transformations. To reassess this, we conducted six preregistered experiments and internal mini meta-analyses. In Experiment 1 ($N = 369$), we aimed to replicate the second and third of Hong et al. (1997) original studies of cultural priming in Hong Kong. In Experiment 2 ($N = 434$), we incorporated design improvements by Ng et al. (2016). In Experiment 3 ($N = 330$), we considered potential cohort effects and targeted a more diverse adult sample. In Experiment 4 ($N = 565$), we made adjustments related to the individual versus group salience in the measurement of the dependent variable. In Experiment 5 ($N = 451$), we increased group salience and fixed the language of the materials to English for Hong Kongese of student age. In Experiment 6 ($N = 522$), we increased group salience, fixed the language of the materials to Chinese, and recruited more general Hong Kong public. The six experiments and the mini meta-analysis consistently failed to replicate the cultural priming effect. Potential reasons for these failed replications are discussed.

Keywords: cultural priming, bicultural, Hong Kong, attribution style, preregistered replication.

Given the increasing interest in cultural contingencies of psychological phenomena, cultural psychologists have provided a wealth of evidence that demonstrates consistent and predictable differences between two of the world's dominant cultures: East and West (Markus & Kitayama, 1991; Nisbett, 2004). Extant research indicates that Westerners tend to perceive themselves as agents who are independent of others, engage in analytical thinking, attribute other people's behavior to their internal traits, and present higher consistency between attitudes and behavior. Easterners tend to perceive themselves as defined in terms of their relationships with their significant others, engage in holistic thinking, attribute other people's behavior to external forces, and present lower consistency between attitudes and behavior.

While these findings have advanced our understandings of cultural contingencies of psychology, causes for the differences remain ambiguous. In particular, cross-cultural data are typically collected in North America (e.g., the US, Canada) and East Asia (e.g., Japan, China). However, even when such cross-cultural data support hypotheses based on cultural psychology, the two sampled countries may differ in many other respects, including political systems, social institutions, and physical as well as socio-ecological environments. In other words, the many potential confounders of cultural effects on psychological outcomes make it challenging to isolate cultures' causal impacts (Ng et al., 2010; Oyserman & Lee, 2008). Cultural priming holds great potential for overcoming this limitation in cross-cultural comparisons. It does so by activating cultural frames for bicultural individuals,¹ using cultural artifacts that symbolize a system of meaning that is widely shared in a culture (Hong et al., 2000, 2003; Ng et al., 2016). Bicultural individuals who have undergone cultural priming present the form of self-presentation (e.g., expressed self-esteem), as well as the thinking style (e.g., causal attribution) characteristic of the primed culture.

For example, Hong et al.'s (1997) second experiment was among the first reports of

1 cultural priming. These investigators presented pictures of cultural artifacts to presumed
2 bicultural individuals (i.e., Hong Kong students). Researchers randomly assigned
3 participants to one of three groups: Chinese pictures group, Neutral pictures group, or
4 American pictures group. The Chinese pictures group was presented with eight cultural icons
5 associated with Chinese culture, such as the Great Wall and a dragon. In contrast, the
6 American pictures group was presented with eight icons associated with US culture, such as
7 Mickey Mouse and the Statue of Liberty. The Neutral pictures group was presented with
8 pictures of natural phenomena, such as clouds. After the manipulation, participants'
9 attribution style was measured using the method developed by Morris and Peng (1994).
10 Specifically, participants were shown a picture of a fish swimming in front of a school of
11 fish, after which they used a 12-point scale to indicate why, in their view, the one fish was
12 swimming in front of the others. Compared with the Chinese pictures group, the American
13 pictures group showed higher confidence in internal attributions (e.g., "the fish is leading the
14 other fish"), the canonical characteristic of Western thinking style. The Neutral pictures
15 group fell in between the American and Chinese pictures groups.

16 The study's implications were significant: Not only can Hong Kongese switch
17 between Eastern and Western frames depending on cultural primes, but cultural priming of
18 bicultural individuals allows "as-if" random assignment of cultures, making it possible to
19 estimate the causal effects of culturally shared systems of meaning. Compared with cross-
20 cultural comparisons, such as surveying two separate cultural groups, this methodology
21 warrants a higher level of internal validity. As such, subsequent studies have frequently used
22 this cultural priming paradigm to probe the cultural contingencies of psychological
23 phenomena (Dalsky, 2010; Morris & Mok, 2011; Sui et al., 2007).

24 It is important to note the underlying processes and boundary conditions of cultural
25 priming. The knowledge activation approach proposed by Higgins and colleagues clarified

that the priming effect does not occur when there is no stored knowledge to be activated by priming (Higgins, 1996). Therefore, if cultural knowledge is unavailable in the first place, the effect of cultural priming will not be observed. Stored cultural knowledge is more likely to be used in responses to subsequent stimuli when priming activates the knowledge (Higgins et al., 1977), but contrast effects rather than assimilation effects may occur when participants are aware of the content of the priming (Martin & Achee, 1992; Ng et al., 2016), or when the content of the priming is unpleasant (Skowronski et al., 1993). Furthermore, the activated knowledge will not be used if participants avoid premature closure (Kruglanski, 1989), if the relevance of the activated knowledge to the stimulus content is too obvious (e.g., racial stereotypes) (Biernat & Vescio, 1993), or if salient features of the stimulus are not applicable to the activated knowledge (Higgins et al., 1977; Higgins & Chaires, 1980). In particular, the issue of applicability is important for cultural priming. Through their experiments with Hong Kongese and Chinese Americans, Hong et al. (2003) found that the effects of cultural priming are significant only when the applicability of the individual versus group context is salient. That is, cultural knowledge activated by cultural priming was used to interpret the subsequent ambiguous stimulus image only when the salience of the context, i.e., whether to focus on the individual (Western frame) or group (Chinese frame), was high (i.e., when applicability was high). This point will be examined in greater detail in Experiments 4–6.

In examining the effects of cultural priming, two primary types of bicultural people have been studied. The first type includes those who moved from East Asia to North America (or vice versa) or ethnically East Asian individuals who were born and grew up in North America (i.e., second- or third-generation Asian Americans). For example, Zou et al. (2008) recruited Chinese American participants to test the effect of cultural priming on attribution style and self-consciousness. The second type encompasses those who grew up in regions where Eastern and Western cultures are experienced in a mixed way for historical reasons.

1 The classic example is Hong Kong, which was under British sovereignty for more than 150
2 years, and thus the Western cultural influence of the suzerain power was blended with the
3 predominant local Chinese culture. Herein, we focused on the latter type, intending to
4 replicate the cultural priming effect with present-day Hong Kongese. Our goal was to
5 determine whether the previously described advantages of cultural priming are still in effect.
6 In other words, our aim was not to articulate “how” and “why” Hong Kongese’s biculturalism
7 has changed, but rather to test whether the biculturalism is still operative under the cultural
8 priming paradigm.

9 10 **Hong Kong Cultural Priming Studies**

11 Studying cultural priming in Hong Kong is important because Hong Kongese have
12 been deemed bicultural with dual cultural selves (Ng, 2007; Ng & Lai, 2011; Nguyen &
13 Benet-Martínez, 2013; Ng et al., 2016), making them suitable for testing the causal impact
14 of culture with high internal validity. Building upon the prototypical cultural priming
15 experimental design, subsequent studies have improved upon the priming stimuli (e.g., Hong
16 et al., 2000; Ng & Lai, 2009; Ng et al., 2010). For instance, because they considered the
17 Chinese icons too nationalistic and the Western icons too American, Ng et al. (2016) replaced
18 the Chinese pictures with more cultural, rather than national, icons and included both
19 American and European elements in the Western images. Hong et al. (2003) modified the
20 causal attribution task (Morris & Peng, 1994) to find that the cultural priming effect was
21 observed only when individual versus group salience was high.

22 However, the basic structure of the experiment remained the same. More importantly,
23 subsequent studies have tended to take for granted that cultural priming makes either Chinese
24 or Western cultural frames salient and have examined the presumably salient cultural frame’s
25 impact on other related variables. For example, Ng et al. (2016) measured self-esteem

1 immediately after culturally priming participants, without checking whether the primed
 2 cultural frame was made salient by the manipulation. That is, the effectiveness of cultural
 3 priming has been assumed, rather than empirically confirmed, in recent cultural priming
 4 studies conducted in Hong Kong.

5 However, Hong Kongese biculturalism may be unwarranted when more than 25 years
 6 have passed since Hong Kong transferred from the UK to China. Though there were good
 7 reasons to assume bicultural Hong Kongese in the late 1990s, when the original studies were
 8 conducted, Hong Kong has since undergone enormous social and political changes. Hong
 9 Kong's economy has become increasingly integrated with that of Mainland China and
 10 China's political influence over Hong Kong has recently strengthened. Simultaneously, the
 11 local Hong Kongese identity, which sometimes includes anti-Mainland China sentiments
 12 (Ma, 2015), has strengthened. Given the withdrawal of British sovereignty and China's
 13 increasing influence, it is plausible that Hong Kongese biculturalism has transformed
 14 significantly since the transfer. It is, therefore, imperative to test whether Hong Kongese are
 15 still bicultural and able to switch between Chinese and Western frames based on cultural
 16 priming. Note that predicting the direction of change falls outside the scope of this study due
 17 to the complex societal changes in Hong Kong. On the one hand, there has been increased
 18 integration with Mainland China, while on the other hand, certain segments of society have
 19 displayed psychological detachment from China. Therefore, our objective is to determine
 20 whether cultural priming is still observed among contemporary Hong Kongese, rather than
 21 explaining the nature and causes of these changes.

23 **The Current Study**

24 We tested Hong Kongese biculturalism in six preregistered experiments. In our first
 25 experiment, we aimed to replicate Hong et al.'s (1997) second and third experiments. These

investigators' original study of Hong Kong cultural priming was the first of its kind, upon which all subsequent studies have been based. In our second experiment, we aimed to replicate the Hong Kong cultural priming effect using the design improvements by Ng et al. (2016). Our third experiment examined potential cohort effects; we targeted a more diverse adult sample to consider the potential that the original priming effect among Hong Kongese who were socialized in a bicultural environment during the late 1990s, and who are now in their 30s and 40s, may not generalize to students today. In the fourth experiment, we enhanced individual versus group salience in the measurement of the dependent variable based on the findings of Hong et al. (2003), creating conditions under which cultural priming was more likely to be observed. In the fifth experiment, we aimed to replicate the fourth experiment by using English as the fixed language and targeting individuals in the student age range, in line with the original study. In the sixth experiment, we again replicated the fourth experiment with the language used fixed to Chinese and targeting the general public of Hong Kong. Finally, we synthesized the findings from the six experiments through two mini meta-analyses. The data sources, languages of materials, sample sizes, and summaries of gender and age for the six experiments are presented in Table 1.²

Experiment 1

We first aimed to replicate Hong et al.'s (1997) second and third experiments. The research design and analytical plan were preregistered.³ The sample size was determined before any data analysis.

Method

The research project was conducted in accordance with general ethical guidelines in

psychology, and all Experiments in the subsequent sections were approved by the lead author's institutional Research Ethics Committee. Undergraduate students attending selected classes at a public university in Hong Kong participated in the study for course credit. Participants who consented to join the study accessed the experimental materials in the classroom using a laptop, smartphone, tablet, or a similar device. The experimental materials were in English. Participants were randomly assigned to one of three groups: American pictures group, Chinese pictures group, or Neutral pictures group. Note that random assignment at the individual level is inconsistent with the original study (Hong et al., 1997), which randomized participants at the class level (i.e., cluster randomization) with students in the same class assigned to the same group. This is not a crucial problem for meeting the goal of replication because standard errors of treatment effect estimations tend to be larger with cluster random assignment. That is, randomization at the individual level herein is an improvement for statistical power, so that any treatment effects that exist are more likely to be replicated.

For this experiment, we used stimuli identical to those in the original study. The American pictures group was presented with eight iconic pictures that represent American culture. One by one, each picture was presented for 20 seconds. Next, participants were asked to write 10 statements describing American culture. Each statement had to have a minimum of 10 characters, including spaces. Likewise, for the Chinese pictures group, eight iconic pictures representing Chinese culture were presented, after which the participants were asked to write 10 statements describing Chinese culture. For the Neutral pictures group, eight pictures of clouds in the sky were presented, after which the participants were asked to write 10 statements describing clouds in the sky.

After cultural priming, participants were shown a picture of a school of fish in which one fish is swimming in front of the others (Morris & Peng, 1994) and were asked to describe,

1 using an open-ended format, why they thought one fish in the image was swimming in front
2 of the others. The explanation had to be at least 40 characters long, including spaces. After
3 answering the open-ended question, participants were asked to use a 12-point scale gauging
4 their confidence in internal attributions, ranging from “[v]ery confident that it is because the
5 one fish is being chased by the other fish” (external attribution) to “[v]ery confident that it is
6 because the one fish is leading the other fish” (internal attribution). Lastly, participants
7 responded to demographic questions and were thanked and debriefed fully.

8 Note that in Experiments 1–3, the picture of the fish used was different from the one
9 used in the original study. This decision was made because the published picture in Hong et
10 al. (1997) was blurry, and a high-resolution version was not available. See Online Appendix
11 1 for detailed information regarding the original and recreated versions of the picture, as well
12 as its potential impact on the applicability of the individual versus group context.

14 **Analysis**

15 Following the preregistered exclusion criteria, we removed participants who were not
16 local Hong Kongese students ($n = 61$). In addition, because the data were collected from
17 multiple classes, there was the potential for students to participate more than once. To
18 identify repeaters, when participants finished the experiment, we asked whether they had
19 joined similar studies. While this was not specified in the preregistration, responses from
20 repeaters ($n = 69$) were also excluded, leaving a final sample size of $N = 369$ for analyses.⁴
21 We tested preregistered hypotheses H2a and H4a because these were both foundational and
22 specific to the original cultural priming findings:

23 H2a: Participants in the Chinese pictures condition will be less confident in the
24 internal explanations for the causal attribution task than participants in the US pictures
25 condition.

1 H4a: Participants presented with pictures of Chinese culture will be less likely to
 2 generate internal explanations for the causal attribution task than participants in the US
 3 pictures condition.

4 To replicate the original study's second experiment, we compared the means of
 5 confidence in internal attribution across the three groups. In both the replication and the
 6 original study, the Chinese pictures group was the least confident in the internal explanation
 7 ($M_{original} = 6.28$, $SD_{original} = 2.51$; $M_{replication} = 8.66$, $SD_{replication} = 2.57$), and the American
 8 pictures group was most confident ($M_{original} = 7.22$, $SD_{original} = 2.44$; $M_{replication} = 8.83$,
 9 $SD_{replication} = 2.41$). The Neutral pictures group fell midway between the Chinese and
 10 American pictures groups ($M_{original} = 6.74$, $SD_{original} = 2.59$; $M_{replication} = 8.73$, $SD_{replication} =$
 11 2.51). Overall, the means of confidence across the three groups were higher in the replication
 12 than in the original study. The between-groups differences were smaller in the replication
 13 than in the original study. To test the differences more formally, a one-way analysis of
 14 variance was performed with confidence in internal attribution as the dependent variable. The
 15 result indicated a null effect ($F(2, 366) = 0.16$, $p = .856$, $\eta^2 = 0.00$), failing to replicate the
 16 original study. The analysis had 75.55% power to detect an effect size of $f = 0.15$, which is
 17 calculated from the original study.

18 Next, to replicate Hong et al.'s (1997) third experiment in the original study, three
 19 trained coders manually coded participants' open-ended explanations for the fish behavior
 20 into one of three categories: (a) internal explanation, (b) contextual explanation, or (c) invalid
 21 explanation. The invalid explanation was defined as responses explaining the fish's behavior
 22 in neither an internal nor a contextual way. The codebook was derived from that presented
 23 by Miller (1984), which was also used in the original study. See Online Appendixes 2 and 3
 24 for coding instructions and details of the coding process.

25 Following the analyses from the original study, we compared the likelihood of

1 internal attribution across the three groups. We excluded invalid explanations (i.e., neither
2 internal nor external explanations) before calculating the likelihood of internal attribution. In
3 this replication, internal attributions were predominant across the three experimental groups.
4 Somewhat counterintuitively, participants in the Chinese pictures group were most likely to
5 provide internal attributions (91.9%), followed by the American pictures group (85.4%) and
6 the Neutral pictures group (84.2%). These findings are at odds with the reported likelihoods
7 in the original study, particularly for the Chinese pictures group (52.0%) and the Neutral
8 pictures group (72.0%). As for the US pictures group, the difference is less pronounced
9 (84.0% in the original). The chi-square test failed to find a significant association between
10 experimental groups and attribution ($\chi^2(2) = 3.39, p = .18$). Thus, the original study's third
11 experiment was not replicated.

12 In summary, Experiment 1 failed to replicate the original study, which found that
13 priming bicultural Hong Kong students with culture-specific images impacts their evaluation
14 of a causal attribution task. Nonpreregistered ad hoc analyses did not alter this conclusion
15 (see Online Appendix 4 for details).

17 **Experiment 2**

18
19 In Experiment 2, we aimed to replicate the original findings in Hong et al. (1997)
20 using the cultural priming design improvements by Ng et al. (2016). The basic settings were
21 identical to those of Experiment 1, with the following exceptions. First, participants were
22 recruited through an email sent to all university students rather than inviting those attending
23 selected classes. Second, we used the pictures of Chinese and Western cultural icons
24 developed by Ng et al. (2016). Accordingly, the number of pictures presented to each group
25 increased to 10. Third, an instructional manipulation check (IMC) (Oppenheimer et al., 2009)

was added to the beginning of the experiment to identify potential survey satisficers. Fourth, after measuring open-ended explanations for the fish image and the close-ended confidence in internal attributions, we also measured bicultural self, cultural identification, independent and interdependent self, the self-construal scale, relational-interdependent self, and dialectical self. However, these measures were not used herein because they were not for the purpose of replication. Finally, English and Chinese (i.e., traditional) versions of the experiment were prepared, consistent with the experiment designed by Ng (2013), so that participants could choose their preferred language at the beginning of the experiment.⁵ The research design and analytical plans were preregistered.

Method

Undergraduate students at a public Hong Kong university participated in the study for a cash coupon equivalent to 50 Hong Kong dollars (approximately 6 US dollars). Participants individually completed the online experiment at a location of their convenience, such as their home or school, using either a laptop or a desktop computer to access the experiment website hosted on Qualtrics. Participants were randomly assigned to one of three groups: Western pictures group, Chinese pictures group, or Neutral pictures group. The Western pictures group was presented 10 iconic pictures representing Western culture, one by one, for five seconds each. The webpage was then reloaded automatically and when shown each of the pictures again, the participants were asked to write about their thoughts or feelings about each picture in an open-ended format, with no time limit. Pictures representing Chinese culture were likewise presented to the Chinese pictures group, and those of natural phenomena (e.g., clouds, rainbows, thunder, the moon) were presented to the Neutral pictures group. After the manipulation check,⁶ to activate cultural priming, participants described the ways in which the Western/Chinese culture or natural phenomena in the pictures affect their

1 daily lives. All procedures were consistent with those developed by Ng et al. (2016) to
2 improve upon previous studies (Hong et al., 1997; Hong et al., 2000; Ng & Lai, 2009).
3 Following cultural priming, we recorded open-ended explanations for the fish image and
4 close-ended confidence levels in internal attributions as described for Experiment 1.

6 **Analysis**

7 The preregistered exclusion criteria included removing those who are not Hong
8 Kongese. Accordingly, we excluded 14 participants from the analyses. However, we opted
9 to retain the cases that failed the IMC ($n = 13$), all of which belonged to the Neutral pictures
10 group. The results below did not change when these cases were removed from analyses (see
11 Online Appendix 5 for details). Participants who indicated having participated in a similar
12 study ($n = 23$; most likely Experiment 1) were excluded from analyses, leaving a final sample
13 size of $N = 434$, which exceeded the 330 observations needed according to the power analysis
14 we preregistered. The power analysis based on the same one-way analysis of variance as in
15 Experiment 1 showed that the analysis had 80.20% power to detect an effect size of $f = 0.15$,
16 which is calculated from the original study (Hong et al., 1997). We tested preregistered H1
17 and H2 because these were both foundational and specific to the original cultural priming
18 findings:

19 H1: Participants in the Chinese pictures group will be less confident in the internal
20 explanations for the causal attribution task than participants in the Western pictures group.

21 H2: Participants presented with pictures of Chinese culture will be less likely to
22 generate internal explanations for the causal attribution task than participants in the Western
23 pictures group.

24 Following the preregistered analysis plan, we ran ordinary least square linear
25 regression models with confidence in internal attributions (12-point scale) and the manually

1 coded open-ended explanations for the fish behavior (0: external explanation, 1: internal
 2 explanation). Ordinary Least Squares regression is more appropriate than logistic regression
 3 when estimating treatment effects in experimental settings with binary outcomes (Gomila,
 4 2021). Models 1 and 3 estimate the treatment effects without covariates, while Models 2 and
 5 4 estimate them with covariates (Table 2). Covariates were gender, age, and survey
 6 satisficing. The survey satisficing covariate was created by recoding the data into three
 7 groups: participants who passed the first IMC (0), those who failed the first but passed the
 8 second IMC (1), and those who failed both the first and second IMCs (2).

9 Models 1 and 2 indicate that the Chinese pictures group showed significantly higher,
 10 rather than lower, confidence in internal attributions. These results are opposite to what was
 11 predicted by H1. Models 3 and 4 did not indicate any significant treatment effects of the
 12 internal explanation for the fish behavior, thus H2 was rejected. In summary, using recent
 13 improvements to the cultural priming design did not replicate the original finding that Hong
 14 Kong students switch between Chinese and Western frames depending on cultural priming.
 15 Ad hoc analyses that were not preregistered did not change this conclusion (see Online
 16 Appendix 6 for details).⁷

18 Experiment 3

20 The biculturalism of Hong Kongese is purportedly nourished by Hong Kong's unique
 21 cultural environment, in which Chinese and Western cultures are conflated. If this
 22 biculturalism was strongly experienced by those socialized during the colonial period, this
 23 may present a cohort effect. In other words, Hong Kong students who participated in the
 24 early cultural priming studies of the late 1990s may have retained their bicultural identities
 25 into their 30s and 40s. However, present-day Hong Kongese students, the population of

Experiments 1 and 2, may be exposed to either more Western culture, from globalization, or to more Chinese culture, from increasing integration with Mainland China. These effects may weaken biculturalism. Therefore, in Experiment 3, we shifted our target from students to Hong Kongese aged 30 years or older. The research design and analytical plans were preregistered.

Method

The experiment was fielded with participant recruitment by Rakuten Insight, a leading online survey firm in Asia. All experimental procedures and materials were identical to those in Experiment 2, except that survey satisficers were automatically screened out at the beginning of the experiment. Participants could only take part in the experiment with a laptop or a desktop computer. Those using a handheld device such as a mobile phone or tablet were screened out.

Analysis

The preregistered exclusion included removing those who are not Hong Kongese and those under 30 years of age. No participant deviated from these criteria. As in Experiment 2, we opted to retain cases that failed the IMC ($n = 9$; 2.7%). The results did not change when these cases were removed (see Online Appendix 8 for details). The final sample was $N = 330$, exactly that of the power analysis-determined sample that was preregistered. The power analysis based on the same one-way analysis of variance as in Experiment 1 showed that the analysis had 70.00% power to detect an effect size of $f = 0.15$, which is calculated from the original study (Hong et al., 1997). We tested preregistered H1 and H2, which were identical to those in Experiment 2.

Following the preregistered analysis plan, we ran ordinary least square linear

regression models with confidence in internal attributions (12-point scale) and manually coded the open-ended explanations for the fish behavior (0: external explanation, 1: internal explanation). Models 1 and 3 estimate the treatment effects without covariates, while Models 2 and 4 estimate them with covariates (Table 3). Covariates were gender and age.

Models 1–4 did not indicate any significant treatment effects on either of the dependent variables. That is, cultural priming did not switch the cultural frames of Hong Kongese aged 30 and above, at least in terms of causal attribution style. Even when we targeted Hong Kongese who had been socialized when the biculturalism of Hong Kong society was presumably more prominent, the cultural priming effect was not reliably detected, inconsistent with both the original and recent studies. Nonpreregistered ad hoc analyses did not change this conclusion (see Online Appendix 9 for details).⁸

Experiment 4

Following the dynamic constructivist approach, Hong et al. (2003) found that the effects of cultural priming are only observed when the applicability of the individual versus group context is high. In Experiment 1 with Hong Kong undergraduates, Hong et al. (2003) presented a group of fish in a causal attribution task randomized between two conditions: differing colors for the leading and following fish (high salience) or the same color for all fish (low salience). Less external attribution was found in the US condition than in the Chinese and control conditions, but only in the high salience condition; no such cultural priming was found in the low salience condition. Therefore, “the applicability of cultural theories should be greatest when the stimuli involve clearly distinct individual versus group actors” (Hong et al., 2003, p.456).

In the fish images used in Experiments 1–3, the colors and shadow of the leading fish

and the other fish were the same (see Online Appendix 1). Given the findings by Hong et al. (2003), the null priming effects in Experiments 1–3 may be due to low individual versus group salience. Therefore, in Experiment 4, we attempted a replication using the high salience image used by Hong et al. (2003) (see Online Appendix 2). To obtain higher statistical power than in Experiments 1–3, and to maximize comparability with Hong et al. (2003), Experiment 4 was conducted online among Hong Kong residents aged 18 to 39 years. The research design and analytical plans were preregistered.

Method

Participant recruitment was conducted by Dynata, a leading global online survey firm. All experimental procedures and materials were identical to those in Experiment 3, except that the high salience fish image was used, and participants were between the ages of 18 and 39.

Analysis

The preregistered exclusion criteria included those who are not Hong Kongese and those under 18 years or over 40 years of age. Of the 596 valid responses we collected, 31 respondents over age 40 were excluded. Therefore, the final sample was $N = 565$, roughly the same as the preregistered planned sample size ($N = 570$). As in Experiments 2 and 3, we opted to retain cases that failed the IMC ($n = 19$; 3.2%). The results did not change when these cases were removed (see Online Appendix 11 for details). The power analysis, consistent with the one-way analysis of variance in Experiment 1, showed 90% power to detect an effect size of $f = 0.15$, based on values in the original study (Hong et al., 1997). We tested preregistered H1 and H2, which were identical to those in Experiments 2 and 3.

Following the preregistered analysis plan, we ran ordinary least square linear

regression models with confidence in internal attributions (12-point scale) and manually coded the open-ended explanations for the fish behavior (0: external explanation, 1: internal explanation). Models 1 and 3 estimate the treatment effects without covariates, while Models 2 and 4 estimate them with covariates (Table 4). Covariates were gender, age, and the language chosen by participants (for models that did not include language as a covariate, as in Tables 2 & 3, see Online Appendix 12). Models 1–4 did not indicate any significant treatment effects on either of the dependent variables. That is, cultural priming did not switch the cultural frames of Hong Kongese, even with a picture with high individual versus group salience. Nonpreregistered ad hoc analyses did not change this outcome (see Online Appendix 12 for details).

Experiment 5

Based on the findings of Hong et al. (2003), Experiment 4 aimed to increase the relevance of individual versus group context by using a highly salient image. However, it is important to note that Experiment 4 differed from Hong et al. (2003) in terms of its focus on individuals aged 18 to 39 in Hong Kong, rather than specifically targeting students. Additionally, Experiment 4 was conducted online, which further deviated from the original study. Therefore, the objective of Experiment 5 is to replicate Experiment 4 by specifically targeting those of student age (18–25 years old) in Hong Kong. Furthermore, to eliminate the potential for confounding effects due to the different languages, the language of the materials was fixed to English, the official language used within the public universities in Hong Kong. All other aspects of the method remained identical to Experiment 4, and the research design and analytical plans were preregistered.

Method

First, undergraduate students attending selected classes at a public university in Hong Kong participated in the study for course credit. Participants who consented to join the study accessed the experimental materials in the classroom using a laptop, smartphone, tablet, or a similar device. The experimental materials were in English, and the participants were between the ages of 18 and 25. Because the responses collected in classrooms ($n = 267$) did not reach the preregistered sample size, we additionally recruited participants through Lucid ($n = 184$).

Analysis

Following the preregistered exclusion criteria, we removed participants who were not local Hong Kongese students ($n = 160$). In addition, because the data were collected in multiple classes, there was the potential for students to participate more than once. To identify repeaters, when participants finished the experiment, we asked whether they had joined similar studies. While this was not specified in the preregistration, responses from repeaters ($n = 182$) were also excluded, leaving a final sample size of $N = 451$ for analyses, roughly the same as the preregistered planned sample size ($N = 432$). As in the previous experiments, we opted to retain cases that failed the IMC ($n = 16$; 3.5%). The results did not change when these cases were removed (see Online Appendix 14 for details). The power analysis, consistent with the one-way analysis of variance in Experiment 1, showed 82% power to detect an effect size of $f = 0.15$, based on values in the original study (Hong et al., 1997). We tested preregistered H1 and H2, which were identical to those in Experiments 2, 3, and 4.

Following the preregistered analysis plan, we ran ordinary least square linear regression models with confidence in internal attributions (12-point scale) and manually

coded the open-ended explanations for the fish behavior (0: external explanation, 1: internal explanation). Models 1 and 3 estimate the treatment effects without covariates, while Models 2 and 4 estimate them with covariates (Table 5). Covariates were gender and age. Models 1–4 did not indicate any significant treatment effects on either of the dependent variables. That is, cultural priming did not switch the cultural frames of Hong Kong youth, even with a picture with high individual versus group salience. Nonpreregistered ad hoc analyses did not change this outcome (see Online Appendixes 15 and 16 for details). In particular, Online Appendix 16 presents the analyses that divided the sample into two groups: that is, students who participated in classrooms and individuals aged 18–25 years who participated through Lucid. The analysis of the student subsample reveals that the Chinese pictures group showed significantly higher, rather than lower, confidence in internal attributions. These results are opposite to what was predicted by H1, but are consistent with the result of Experiment 2, which also used the student sample.

Experiment 6

In Experiment 4, participants were given the option to choose between Chinese and English as the language for the materials. However, the choice of language could have created interference between the cultural priming and the materials' language. For example, for those assigned to the Chinese pictures group who selected English, the priming effect from the pictures and the language effect (Ji et al., 2004) could have canceled out each other, leading to the null effects. To control for any potential confounding caused by the language of the materials, Experiment 6 standardized the language to Chinese, in line with Hong et al. (2003). The rationale for this decision was that if instruction in Chinese primes the Chinese cultural frame, then the linguistic conditions of Experiment 6 would provide a more

1 advantageous design for the activation of the Chinese cultural frame. The research design
2 and analytical plans were preregistered.

4 **Method**

5 Participant recruitment was conducted by Dynata. The method used in Experiment 6
6 closely resembled that of Experiment 4, but with three key differences. Firstly, the materials
7 used in Experiment 6 were only in Chinese, which eliminated any potential interference
8 between the type of priming and language. Secondly, the age range of participants in
9 Experiment 6 was expanded to include individuals from 18 to 65 years old. Lastly,
10 Experiment 6 used two types of questionnaires, where one questionnaire included additional
11 questions after the measurement of dependent variables, while the other did not. The
12 additional questions were for another study and thus not relevant. Until the measurement of
13 dependent variables, there were no differences between the two questionnaires, ensuring that
14 confounding was impossible.

16 **Analysis**

17 The preregistered exclusion criteria included those who were not from Hong Kong (n
18 = 25) and those under 18 years ($n = 1$). Therefore, the final sample was $N = 522$, exceeding
19 the preregistered planned sample size ($N = 435$). As in Experiments 2 and 3, we opted to
20 retain cases that failed the IMC ($n = 16$; 3.1%). The results did not change when these cases
21 were removed (see Online Appendix 17 for details). The power analysis showed 87% power
22 to detect an effect size of $f = 0.15$, based on values in the original study (Hong et al., 1997).
23 We tested preregistered H1 and H2, which were identical to those in Experiments 2–5.

24 Following the preregistered analysis plan, we ran ordinary least square linear
25 regression models with confidence in internal attributions (12-point scale) and manually

1 coded the open-ended explanations for the fish behavior (0: external explanation, 1: internal
 2 explanation). Models 1 and 3 estimate the treatment effects without covariates, while Models
 3 2 and 4 estimate them with covariates (Table 6). Covariates were gender and age. Models 1–
 4 4 did not indicate any significant treatment effects on either of the dependent variables. That
 5 is, cultural priming did not switch the cultural frames of Hong Kongese, even with a picture
 6 with high individual versus group salience and with the language of materials fixed to
 7 Chinese. Nonpreregistered ad hoc analyses did not change this outcome (see Online
 8 Appendix 18 for details).

10 Mini Meta-analyses

12 To increase the statistical power and the precision of estimates (Goh et al., 2016), we
 13 conducted two mini meta-analyses, one for each dependent variable of interest: confidence
 14 in internal attribution (12-point scale) and the manually coded open-ended explanations for
 15 the fish behavior (0 = external; 1 = internal).

16 We first focused on understanding the impact of cultural priming on confidence in
 17 internal attribution. We performed a meta-analysis of our six studies using fixed effects in
 18 which the mean effect size was weighted by sample size. Following the steps described by
 19 Goh et al. (2016), we first computed Cohen’s d for each study ($d_1 = -0.069$; $d_2 = 0.289$; $d_3 =$
 20 -0.095 ; $d_4 = -0.078$; $d_5 = 0.169$; $d_6 = -0.002$), with the Chinese pictures group as reference
 21 ($= 0$), and then calculated the Z -score based on the mean effect size and its standard error.
 22 Overall, the effect was small and nonsignificant ($M_d = 0.035$ ($SE = 0.047$); $Z = 0.732$; two-
 23 tailed $p = .342$). We used the same method to estimate d for the original experiment in Hong
 24 et al. (1997), resulting in an effect size of $d = -0.380$.

25 Next, we assessed the effect of cultural priming on the likelihood that participants in

the Western and Chinese pictures groups would provide an external or internal explanation for the fish image. After calculating Cohen's d for each study ($d_1 = 0.204$; $d_2 = -0.016$; $d_3 = -0.150$; $d_4 = 0.008$; $d_5 = 0.099$; $d_6 = 0.046$), we followed the same approach outlined above. Our meta-analysis suggests that the effect size is small and nonsignificant ($M_d = 0.036$ ($SE = 0.049$); $Z = 0.750$; two-tailed $p = .319$). In the original study under replication, the effect size was $d = -0.716$.

The results of mini meta-analyses are summarized in Figure 1, where the size of dots indicates the sample size. While the 95% confidence intervals for the effect sizes obtained from the meta-analyses include zero, we can see that the original study with relatively small sample sizes reported larger effect sizes than the replications.

Discussion

Drawing on the importance of Hong Kongese in the cultural priming literature and the recent social, political, and cultural changes that Hong Kong has witnessed, this study aimed to replicate the original Hong Kong cultural priming effect with six preregistered experiments. Experiments 1 and 2 focused on students, the third targeted individuals aged 30 years and older. In Experiments 4–6, the emphasis was on measuring the dependent variables through the salience of individual versus group, increasing the likelihood of detecting the cultural priming effect (see Online Appendix 19 for details). Experiment 4 was conducted online and specifically targeted a younger generation aged 18 to 39, in which the participants were given the option to choose the language of the materials used. Experiment 5 once again involved young people from Hong Kong who are at student age, while Experiment 6 focused on the general public aged 18 to 65 online. Both Experiments 5 and 6 used fixed language materials. All six experiments failed to replicate the cultural priming effect originally

1 discovered in Hong Kong during the late 1990s. Although additional replication efforts are
2 needed to reach definitive conclusions, we discuss potential reasons for our null results.

3 First, the null results may be due to the assimilation and contrast effects of cultural
4 priming, depending on the strength of Chinese and Western selves. Using self-esteem as the
5 dependent variable, Ng et al. (2016) found that in the Chinese priming condition, participants
6 who had a stronger Chinese self assimilated (i.e., showed reduced self-esteem), while those
7 who had a weak Chinese self contrasted (i.e., showed higher self-esteem). Similarly, a
8 Western self moderated the impact of Western priming, but only when Chinese self was
9 strong. If such assimilation and contrast caused the null replications herein, then we would
10 expect to see interaction effects between cultural priming and cultural selves. However, the
11 results of the nonregistered, exploratory analyses (Online Appendixes 7 and 10) and the
12 preregistered analyses (Online Appendixes 13 and 20) did not support this interpretation.

13 Second, the original Hong Kong cultural priming effects may have been false
14 positives. We believe this is unlikely. The replication studies in the early 2000s successfully
15 demonstrated the priming effect in Hong Kong (e.g., Benet-Martínez et al., 2002; Hong et
16 al., 2003). More recent studies have also provided evidence consistent with the original
17 findings (Fong et al., 2014; Ye & Ng, 2019), although these studies did not specifically aim
18 to replicate the effects of priming on attributional style. This cumulative evidence makes it
19 implausible that the original findings were false positives.

20 Third, although we made every effort possible to replicate the original experiments,
21 there were slight differences. While Experiments 1 and 5 in this study were conducted in
22 classroom settings as in the original study, others were administered online, where
23 participants responded individually. Although prior research (e.g., Ng, 2013; Ng et al., 2016)
24 has shown that priming effects can emerge in similar online settings, we acknowledge that
25 the absence of a shared social context may have reduced the salience of cultural cues.

1 Relatedly, the original study employed cluster randomization in which participants were
2 randomly assigned to each condition on a group basis, and the cultural priming stimulus was
3 presented on a large screen at the front of the classroom. In contrast, the present study
4 randomized participants at the individual level and the stimuli were presented on each
5 participant's computer screen. Although these differences may have influenced the results,
6 randomization at the individual level is preferred in terms of the precision of estimation (i.e.,
7 smaller standard errors).

8 Another important difference from the original study is that Experiments 2, 3, 4, 6,
9 and part of 5 were conducted online.⁹ Since the experimenter cannot directly observe the
10 participants in online experiments, there is a possibility of satisficing, in which participants
11 pay insufficient attention to the stimuli. However, in Experiments 3, 4, and 6, participants
12 with low attention levels were eliminated using IMC. In addition, Experiments 4 and 6 used
13 JavaScript to unobtrusively record the number of times participants viewed other tabs in the
14 browser or other applications during the experiment, which can be seen as a measure of
15 distraction. Prior studies have shown that when attention checks are rigorously implemented,
16 online participants often exhibit higher levels of attentiveness and data quality than student
17 samples (Douglas et al., 2023; Hauser & Schwarz, 2016). Although a few participants were
18 distracted many times by other tabs and apps, the cultural priming effect was not replicated
19 when the analysis was limited to respondents with low levels of distraction (see Online
20 Appendixes 12 and 18). Furthermore, if these methodological differences are critical for
21 replicating cultural priming effects, we must conclude that Hong Kong cultural priming
22 effects are not robust. Given that the previous literature shows a cultural priming effect in
23 Hong Kongese, we do not endorse this interpretation either.

24 Finally, and most likely, the priming effect may be difficult to replicate because Hong
25 Kong society has changed significantly. Hong Kong underwent a significant shift in identity

around the time of the handover from British to Chinese sovereignty (Brewer, 1999). This shift further evolved in the 2010s, as China's growing influence coincided with the rise of localism and a weakening of Chinese national identification (Veg, 2017). In light of these changes, the fact that no significant cultural priming effects were observed among Hongkongers in their 30s and 40s in Experiment 3 suggests that socialization in a bicultural environment during adolescence does not necessarily exert a lasting influence over time. In other words, the absence of priming effects may indicate that ongoing socialization within a bicultural context is required for cultural frames to be activated—and that such an environment may have somehow diminished or disappeared. Alternatively, it is possible that while middle-aged Hongkongers retain cultural knowledge from past bicultural environments, the lack of reinforcement in their present sociocultural context renders this knowledge less accessible or applicable during priming tasks. However, in any case, it remains difficult to determine a priori which segments of the current Hong Kong population continue to undergo ongoing bicultural socialization.

On the one hand, Hong Kong's increasing political and economic integration with Mainland China—along with the growing influx of Mainland tourists and migrants—may have created greater exposure to Chinese culture. On the other hand, there has been a notable decline in identification with a Chinese national identity, especially among younger generations. Moreover, the binary between “Chinese” and “Western” cultures has become increasingly politicized since the 2010s. Following the massive anti-government protest in 2019 in particular, deepening affective polarization within society has led many young Hongkongers to distance themselves from traditional Chinese cultural practices such as Lunar New Year gatherings (Kobayashi & Tse, 2022). Taken together, the apparent “disappearance” of cultural priming effects cannot be attributed to a single factor. Rather, it likely results from multiple, intersecting influences. Nevertheless, the weakening of Chinese

1 identity in particular appears to be a crucial factor to consider in interpreting the null effect
2 of cultural priming in the present context.

3 As reported above, confidence in internal attribution across the six replications was
4 significantly and consistently higher than that observed in the original study. This pattern
5 held true even in Experiment 3, which targeted individuals aged 30 and above, as well as in
6 Experiment 6, which included participants aged 18 to 65. These findings arguably reflect a
7 weakening sense of Chinese identity among Hongkongers, despite China's growing political
8 and economic influence over Hong Kong (Fung & Chan, 2017). Particularly in recent years,
9 "localism," which seeks to distance itself from China as a nation and reconstruct its own
10 identity by reconnecting Hong Kong with the Western-centric "global," has gained traction
11 among young people (Chan & Chan, 2014; Fung, 2008; Wang, 2019). These trends may have
12 increased the influence of Western culture on Hong Kong people and weakened their Chinese
13 identity. Looking at changes from 1997, when the original study was published, to 2021, the
14 percentage of those in their 30s or older with a broadly defined Chinese identity has declined
15 from 41.6% to 29.8%, and from 31.6% to 8.1% among those aged 18 to 29 (Hong Kong
16 Public Opinion Research Institute, 2024a). The importance of Chinese identity has also
17 declined from a score of 7.6 out of 10 in 2008, when the data were first collected, to 5.6 in
18 2021 (Hong Kong Public Opinion Research Institute, 2024b). These data suggest that
19 Chinese identity has weakened since 1997, especially among the younger generation of Hong
20 Kong citizens.

21 Furthermore, when we compared perceived cultural influence, which was part of the
22 measure of cultural self in Experiments 4 and 6, we found that, at least at the self-reported
23 level, contemporary Hong Kong people under the age of 40 are more strongly influenced by
24 Western culture than by Chinese culture. Perceived cultural influence was measured with a
25 single item, "I feel the influence of Chinese/Western culture on me is..." with a 7-point Likert

scale ranging from “1: Very weak” to “7: Very strong.” In Experiment 4, the significantly different ($t(564) = -4.26$, two-tailed $p < .001$) mean scores for the influence of Chinese and Western cultures were 4.55 ($SD = 1.63$) and 4.95 ($SD = 1.20$), respectively. This result was consistent with those obtained in Experiments 2 and 3, but it differed from the findings of Experiment 6, which involved elderly participants up to the age of 65, a group known to exhibit a stronger affinity with Mainland China than younger generations (see Online Appendix 21). This cumulative evidence may suggest that globalization over the past 25 years has rendered the Western cultural frame dominant over the Chinese one, despite Hong Kong’s increasing economic and political integration with Mainland China.¹⁰ However, while these findings are congruent with the consistently higher internal attributions in the six experiments herein, compared with the results from Hong et al. (1997), the interpretation that the cultural priming effect is no longer observed because Hong Kong society itself has changed remains speculative. Future research should examine whether the cultural priming effect persists among subpopulations who are arguably still immersed in bicultural environments, such as globally oriented youth raised in families that uphold transnational cultural values.

Several limitations remain to be addressed. First, because our objective was to conduct a direct replication, it was necessary to use the same stimuli as those employed in the original study. However, it is possible that the images used as stimuli may have already lost their relevance and thus failed to produce the expected priming effects. For instance, young people in Hong Kong may no longer be familiar with Mr. Bean, or they may not readily associate the cartoon depiction of Sun Wukong with Chinese culture. Such semantic drift could help explain the absence of priming effects even among this cohort. Future research should incorporate pretesting procedures or real-time manipulation checks to assess whether the priming stimuli effectively activate the intended cultural knowledge structures

1 within the target demographic. Such operational validation is essential for ensuring both
2 internal validity and interpretive clarity in replications of cultural priming studies.

3 Second, as noted above, if cultural priming effects indeed depend on ongoing
4 bicultural socialization, it becomes essential to identify which segments of Hong Kong
5 society are currently undergoing such socialization. This is particularly important for
6 delineating the boundary conditions of cultural priming effects. However, in the present study,
7 we opted to measure only a minimal set of covariates to minimize participant burden and
8 ensure a well-powered sample size. As a result, we were unable to capture potentially
9 important moderators of priming effects, such as participants' occupations, type of
10 educational institution, or political orientation. By incorporating a broader range of pre-
11 treatment covariates, future research should examine whether the cultural priming effect
12 persists among subpopulations who are arguably still immersed in bicultural environments.

13 Third, though we focused herein on attribution style as the study outcome, cultural
14 priming may impact other related outcomes. Our focus on the culturally contingent
15 attribution style is justified because the original Hong Kong findings primarily used these
16 dependent variables. However, recent studies have used other outcomes, such as self-esteem
17 (Ng et al., 2016). More comprehensive sets of outcome variables should be used in future
18 replications. It is unclear herein why recent Hong Kong cultural priming studies have
19 produced results consistent with those of the original studies; one reason may be that recent
20 findings, such as the effect on self-esteem, could be driven by mechanisms other than
21 switching between Chinese and Western cultural frames. Exploring the mediators of recent
22 cultural priming effects may help us understand what is reproducible, or not, in Hong Kong
23 today.

24 Finally, it should be noted that this study exclusively focused on Hong Kongese,
25 leaving the investigation of other bicultural individuals as a subject for future research. There

is a need to expand the scope to include first-generation East Asian immigrants in North America, as well as East Asians who were raised in North America but heavily influenced by East Asian culture within their households, in order to examine the robustness and generalizability of cultural priming effects.

In conclusion, to understand why the effects of cultural priming were not replicated, it is essential to contextualize cultural priming within the broader social and political landscape of Hong Kong. As an illustration, since the 1997 handover, Hong Kong has not only experienced Western-Eastern biculturalism but also a burgeoning dimension of biculturalism between Hong Kong and Mainland China (Brewer, 1999). Positioning cultural priming within these transformations of Hong Kong society post-handover, and identifying the conditions under which cultural priming effects are activated, will likely provide a fruitful avenue for future research.

Data and Replication Materials

All data used in this study are publicly available at the following URL:

<https://dataverse.harvard.edu/dataset.xhtml?persistentId=doi:10.7910/DVN/FUUEJ>

The materials used in this study, as well as the preregistration, are available at the following

URL:

<https://osf.io/qy7jg/>

Author Contributions

TK: Conceptualization, Resources, Funding acquisition, Methodology, Writing –

1 original draft, Writing – review & editing. DM: Data curation, Formal analysis, Investigation,
2 Methodology, Project administration, Writing – original draft, Writing – review & editing.

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2

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4

Footnotes

1. Bicultural individuals refer to people who can switch between two or more cultural frames, depending on the situation prime. See Ng and Han (2013) and Ng and Lai (2009, 2011) for more on the bicultural nature of Hong Kong people.

2. Although Experiments 4–6 were conducted during the COVID-19 pandemic, we consider the pandemic to be one of many potential confounding variables, with a likely limited impact on the results. It is theoretically unclear whether pandemic-related conditions would suppress or enhance cultural priming effects. On the one hand, heightened anxiety, social isolation, and attentional load may have overshadowed subtle priming mechanisms. On the other hand, increased mortality salience may have amplified culturally congruent responses (e.g., Greenberg et al., 1997). Notably, Experiments 1–3, which were conducted prior to the pandemic, also yielded null results, suggesting that the observed pattern is unlikely to be attributable to pandemic-specific factors alone.

3. All pre-registrations for the six experiments can be found at https://osf.io/qy7jg/?view_only=5b706d01fd3c4090b5b39579d91e84b9.

4. The sample sizes for the original study were $N = 303$ and $N = 75$ for the second and third experiments, respectively.

5. Although a previous study indicated that language (i.e., Chinese vs English) does not affect the reasoning style of Hong Kongese (Ji et al. 2004), another study indicated that Chinese–English bilinguals identify more with Chinese culture and less with Western culture when

1 their ethnolinguistic identity was activated by language (Chen and Bond, 2007).

2
3 6. In the manipulation check, we showed all 10 pictures at the same time and asked: “Which
4 culture do these pictures represent?” Three options were provided for the Chinese and
5 Western pictures groups: “Chinese culture,” “Western culture,” and “Islamic culture.” The
6 manipulation check for the Neutral pictures group asked: “Which kind of phenomena do
7 these pictures represent?” with the two options: “Natural phenomena” and “Sociocultural
8 phenomena.”

9
10 7. The lack of a cultural priming effect may be due to the assimilation and contrast effects
11 reported by Ng et al. (2016). That is, if cultural priming has opposite effects depending on
12 the strength of cultural selves, the two may cancel each other out and the main effect of
13 cultural priming may not be observed. To probe this possibility, we conducted non-registered
14 exploratory analyses with cultural selves as the moderating variables. The results did not
15 support the offsetting effect of cultural priming by assimilation and contrast effects. See
16 details in Online Appendix 7.

17
18 8. Again, to probe the possible explanation for the failed replication from the assimilation
19 and contrast effects reported by Ng et al. (2016), we conducted nonregistered exploratory
20 analyses with cultural selves as the moderating variables. The results did not support the
21 offsetting effect of cultural priming by assimilation and contrast effects. These details are in
22 Online Appendix 10.

23
24 9. This study utilized three online survey platforms—Dynata, Rakuten Insight, and Lucid.
25 For a discussion of the differences among these platforms, their potential implications for the

1 detection of cultural priming effects, and directions for future research to address these issues,
2 please refer to Online Appendix 22.

3
4 10. An alternative approach to verify the efficacy of cultural priming in Hong Kong currently
5 involves examining whether cultural priming shows significant effects when limited to
6 individuals with high biculturalism. Using data from Experiments 4 and 6, models were
7 estimated to test the interaction between cultural priming and a dummy variable that takes a
8 value of 1 when both the Chinese cultural self and Western cultural self are above the median
9 and 0 otherwise. No interaction terms showed significant coefficients at the 5% level (Online
10 Appendix 23).

1 Table 1

2 *Overview of Experiments*

	Year	Source	Language	<i>N</i>	Gender (% female)	Mean age (<i>SD</i>)
Experiment 1	2017	Students	EN	369	71%	20.23 (1.54)
Experiment 2	2019	Students	EN or CH	434	71%	21.06 (3.50)
Experiment 3	2019	Rakuten Insight	EN or CH	330	57%	42.69 (9.73)
Experiment 4	2021	Dynata	EN or CH	565	56%	29.63 (5.40)
Experiment 5	2022	Students & Lucid	EN	451	60%	21.07 (1.78)
Experiment 6	2022	Dynata	CH	522	50%	30.20 (6.36)

3

1 Table 2

2 *Ordinary least square regressions for Experiment 2*

	Confidence in internal attribution (Range: 0–12)		Internal explanations for the fish behavior (0: external, 1: internal)	
	Model 1	Model 2	Model 3	Model 4
	Coef. (B)			
Chinese pictures group	0.58 (0.24) *	0.56 (0.24) *	−0.01 (0.04)	0.00 (0.04)
Neutral pictures group	0.10 (0.24)	0.07 (0.24)	−0.03 (0.04)	−0.03 (0.04)
Gender (Male)		0.31 (0.22)		−0.10 (0.04) **
Age		−0.04 (0.03)		−0.01 (0.00) **
Survey satisficing		−0.02 (0.14)		0.01 (0.02)
Constant	9.31 (0.17) **	10.00 (0.64) **	0.87 (0.03) **	1.17 (0.11) **
Observations	<i>N</i> = 434	<i>N</i> = 434	<i>N</i> = 428	<i>N</i> = 428
<i>R</i> -squared	0.02	0.02	0.001	0.04

3 *Note.* Standard errors in parentheses. The reference group is the Western pictures group.

4 ** $p < .01$, * $p < .05$.

5

1 Table 3

2 *Ordinary least square regressions for Experiment 3*

	Confidence in internal attribution (Range: 0–12)		Internal explanations for the fish behavior (0: external, 1: internal)	
	Model 1	Model 2	Model 3	Model 4
	Coef. (B)			
Chinese pictures group	−0.22 (0.32)	−0.23 (0.32)	−0.06 (0.04)	−0.07 (0.06)
Neutral pictures group	−0.40 (0.32)	−0.35 (0.32)	−0.02 (0.06)	−0.02 (0.06)
Gender (Male)		−0.13 (0.27)		−0.09 (0.04)
Age		0.02 (0.01)		−0.00 (0.00)
Constant	9.25 (0.11) **	8.84 (0.44) **	0.84 (0.04) **	0.94 (0.08) **
Observations	<i>N</i> = 330	<i>N</i> = 330	<i>N</i> = 275	<i>N</i> = 275
<i>R</i> -squared	0.004	0.01	0.004	0.02

3 *Note.* Standard errors in parentheses. The reference group is the Western pictures group.

4 ** $p < .01$, * $p < .05$.

5

1 Table 4

2 *Ordinary least square regressions for Experiment 4*

	Confidence in internal attribution (Range: 0–12)		Internal explanations for the fish behavior (0: external, 1: internal)	
	Model 1	Model 2	Model 3	Model 4
	Coef. (B)			
Chinese pictures group	−0.33 (0.33)	−0.44 (0.33)	0.01 (0.05)	0.00 (0.05)
Neutral pictures group	−0.55 (0.33) †	−0.58 (0.33) †	−0.04 (0.05)	−0.04 (0.05)
Gender (Male)		0.42 (0.27)		0.04 (0.04)
Age		0.00 (0.02)		0.00 (0.00)
Language (Chinese)		−1.55 (0.37) **		−0.12 (0.05) *
Constant	8.58 (0.24) **	9.84 (0.81) **	0.72 (0.03) **	0.86 (0.12) **
Observations	<i>N</i> = 565	<i>N</i> = 565	<i>N</i> = 558	<i>N</i> = 558
<i>R</i> -squared	0.005	0.037	0.002	0.013

3 *Note.* Standard errors in parentheses. The reference group is the Western pictures group.

4 ** $p < .01$, * $p < .05$, † $p < .10$.

5

1 Table 5

2 *Ordinary least square regressions for Experiment 5*

	Confidence in internal attribution (Range: 0–12)		Internal explanations for the fish behavior (0: external, 1: internal)	
	Model 1	Model 2	Model 3	Model 4
	Coef. (B)			
Chinese pictures group	0.63 (0.44)	0.57 (0.44)	0.05 (0.06)	0.04 (0.06)
Neutral pictures group	0.00 (0.43)	−0.03 (0.43)	0.05 (0.06)	0.05 (0.06)
Gender (Male)		−0.17 (0.37)		0.04 (0.05)
Age		−0.16 (0.10)		−0.01 (0.01)
Constant	7.31 (0.31) **	10.68 (2.20) **	0.60 (0.04) **	0.75 (0.29) *
Observations	<i>N</i> = 451	<i>N</i> = 451	<i>N</i> = 426	<i>N</i> = 426
<i>R</i> -squared	0.006	0.013	0.002	0.004

3 *Note.* Standard errors in parentheses. The reference group is the Western pictures group.

4 ** $p < .01$, * $p < .05$.

5

1 Table 6

2 *Ordinary least square regressions for Experiment 6*

	Confidence in internal attribution (Range: 0–12)		Internal explanations for the fish behavior (0: external, 1: internal)	
	Model 1	Model 2	Model 3	Model 4
	Coef. (B)			
Chinese pictures group	−0.01 (0.36)	0.01 (0.36)	0.02 (0.05)	0.02 (0.05)
Neutral pictures group	−0.23 (0.36)	−0.21 (0.36)	0.00 (0.05)	0.00 (0.05)
Gender (Male)		−0.51 (0.29) *		−0.08 (0.04)
Age		0.02 (0.02)		0.00 (0.00) **
Constant	8.11 (0.26) **	7.71 (0.74) **	0.71 (0.04) **	0.69 (0.11) **
Observations	<i>N</i> = 522	<i>N</i> = 522	<i>N</i> = 495	<i>N</i> = 495
<i>R</i> -squared	0.001	0.009	0.000	0.009

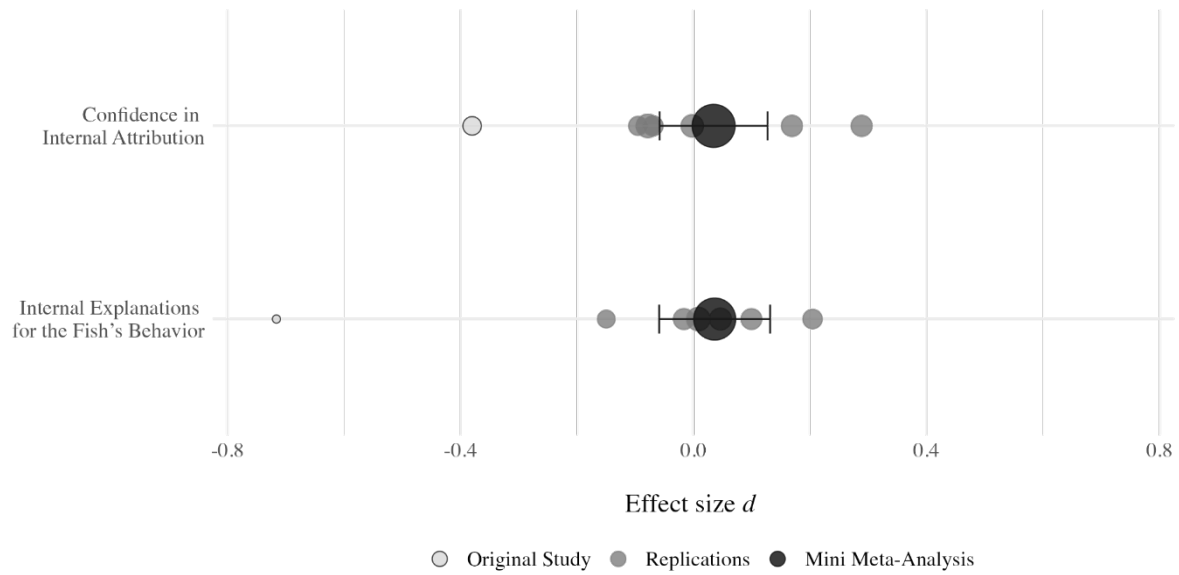
3 *Note.* Standard errors in parentheses. The reference group is the Western pictures group.

4 ** $p < .01$, * $p < .05$.

5

1 Figure 1

2 *Mini meta-analysis of cultural priming effects*



3