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Expressive suppression, confucian *Zhong Yong* thinking, and psychosocial adjustment among Chinese young adults

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The negative effects of the habitual use of suppression on psychosocial adjustment were usually attenuated in Eastern samples compared to Western samples. However, culture is dynamic and constantly changing, and it has rarely been directly assessed in empirical studies. Further, within-culture variations have usually been ignored. In the current study, we involved a Confucian concept of *Zhong Yong* mode of thinking, assessed individual differences in *Zhong Yong* thinking, and examined the main effects of *Zhong Yong* thinking and whether *Zhong Yong* moderated the association between suppression and psychosocial adjustment within two samples of Chinese young adults. Sample 1 included 431 young college students and sample 2 included 477 college students with more diverse backgrounds. Results showed that suppression was negatively associated with psychosocial well-being (i.e., peace of mind, perceived social support, and positive affect), and positively with adjustment problems (negative affect), whereas *Zhong Yong* thinking showed the opposite effects. Further, *Zhong Yong* thinking weakened the associations between suppression and perceived social support and negative affect. Our findings indicate that *Zhong Yong* mode of thinking is salient for psychosocial well-being among Chinese young adults and the habitual use of suppression may become negative for Chinese people in contemporary China.

Keywords: negative affect, peace of mind, positive affect, social support, suppression, Zhong Yong.

Emotion regulation (ER) strategies have strong implications for psychosocial adjustment among young adults across cultures. Various studies among Western samples have found that expressive suppression of negative emotions is maladaptive and has been related to poor individual adjustment and poor social relationships (e.g., Butler et al., 2003; Gross & John, 2003). However, the effects of suppression seem to be contingent on cultural values (e.g., Butler et al., 2007; English et al., 2017). Deleterious effects of suppression on psychosocial adjustment are either non-significant or weaker among East Asians or individuals endorsing Eastern cultural values (see T. Hu et al., 2014, for a review). Such cross-cultural studies have typically examined national differences and ignored cultural diversity within countries (e.g., Matsumoto et al., 2008; Soto et al., 2011; Zhu et al., 2021). In the current study, we involved a cultural concept, the Confucian *Zhong Yong* (*ZY*) mode of thinking. We particularly assessed individual differences in *ZY* thinking and examined the main effects of *ZY* thinking on psychosocial adjustment among Chinese young adults. We also explored the moderation effects of *ZY* thinking in the association between suppression and psychosocial adjustment.

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Expressive suppression and psychosocial adjustment

ER refers to a series of emotional changes in process, which can be either automatic or controlled (Gross & Thompson, 2007). According to the process model of emotion and ER (Gross, 1998), emotional expressive suppression, one of response-focused ER strategies, involves inhibition of the experiential and/or expressive components of an emotion that have already been activated (Gross, 1998; Gross & Levenson, 1993). Both experimental and correlational studies have revealed deleterious effects of emotional suppression. For example, college students who were instructed to suppress their emotions, while watching negative emotion-eliciting film clips in the laboratory setting, showed decreased facial expression but not necessarily less subjective feelings, and they sometimes showed even greater physiological activation (e.g., Gross, 1998; Gross & Levenson, 1993; Roberts et al., 2008).

The effects of suppression have also been found in various correlational studies examining habitual use of this strategy. Using the Emotion Regulation Questionnaire

(ERQ), Gross and John (2003) assessed individual differences in everyday habitual use of ER strategies and found that greater use of suppression was linked to more negative emotions and less positive emotions, more depressive symptoms, lower life satisfaction, self-esteem, and self-acceptance among college students. Since then, ERQ and similar measures have been used across nations with both Eastern and Western cultural backgrounds (e.g., Aldao et al., 2010; T. Hu et al., 2014). Various studies have documented the effects of habitual use of emotional suppression. According to Aldao et al.'s (2010) and T. Hu et al.'s (2014) meta-analyses, effect sizes of habitual use of suppression on psychopathology such as anxiety and depression were moderate, particularly among adults. Overall findings suggest that suppression has strong negative impact on well-being.

Suppression has also been linked to social functioning and social well-being. Various cross-sectional, longitudinal, as well as experimental studies have all documented the links between greater habitual use of suppression and negative first impressions, weaker social connections, lower social support, and lower relationship satisfaction (e.g., English et al., 2012; English & John, 2013; Impett et al., 2012; Srivastava et al., 2009; see Chervonsky & Hunt, 2017, for a review). Expressive suppressors are less responsive and more distracted, and more likely to magnify their own and their interacting partners' sympathetic arousal, disrupt communication, reduce rapport during dynamic social interactions, and eventually impact the formation of close relationships (e.g., Butler et al., 2003; Côté, 2005). It is possible that suppressors are not only trying avoid expressing their emotions but also unwilling to share either positive or negative emotions (Gross, 2002; Gross & John, 2003). Therefore, suppressors are less likely to have close relationships and receive social support. However, the effects of suppression on psychosocial adjustment are not consistent and may be contingent on cultural values (see T. Hu et al., 2014, for a meta-analytical review).

Suppression and adjustment across cultures

From the functionalist perspective, emotion and ER dynamic systems are working in specific social and cultural contexts in which individuals reside and to which they adapt (Butler & Gross, 2009). Although the negative effects of suppression on psychosocial adjustment have been well documented in various studies, particularly among Western samples, growing evidence suggest that the habitual use of suppression and its psychosocial consequences vary across cultures (e.g., Butler et al., 2007; Mesquita, 2003; Mesquita & Leu, 2007). First, Asian American and Chinese college students tend to use suppression more frequently compared to U.S. undergraduates, in order to either deal with their emotions in social contexts when there are non-close partners around or to avoid conflicts with others and maintain positive appearances (e.g., Butler et al., 2007; English et al., 2017; English & John, 2013; Gross & John, 2003). East Asians tend to value emotional control more and tend to diminish the experience and expression of emotions in daily life, especially anger and pride which might damage interpersonal relationships (e.g., Eid & Diener, 2001; Kitayama et al., 2006; Mauss & Butler, 2010; Mauss et al., 2010; Tsai et al., 2002). They may be "culturally trained" to down-regulate emotions when overt expression is inappropriate in the context (Murata et al., 2013).

Further, suppression is usually either not associated with positive or negative emotions, depressive symptoms, life satisfaction, or drug abuse among East Asians, or the associations are weaker compared to those among Westerners (e.g., Haga et al., 2009; Matsumoto et al., 2008; Mauss et al., 2008; Soto et al., 2011). T. Hu et al.'s (2014) meta-analysis also has revealed that suppression (measured with the ERQ) was negatively correlated with positive indicators of mental health including positive affect and life satisfaction among participants with Western cultural backgrounds (from European and North American countries), but the association was not significant for participants with Eastern cultural backgrounds (from Asian countries). The positive association between suppression and negative indicators of mental health (including negative affect, anxiety, and depression) was stronger among Western participants, compared to their Eastern counterparts. Typically, in most of the studies examining the moderation of cultural values in the association between suppression and adjustment outcomes, researchers have used a West–East contrast model or assessed cultural values among ethnic minorities or across nations (e.g., Butler et al., 2007, 2009; Matsumoto et al., 2008; Roberts et al., 2008; Soto et al., 2011). However, cultures are not monolithic or homogeneous, thus it is important to consider within-country variations in cultural values (e.g., Ishii, 2013; Miller, 1999). To better understand expressive suppression within the Chinese cultural context, we aim to involve a Chinese indigenous cultural concept, the *ZY* mode of thinking, and to examine how suppression and *ZY* jointly relate to psychosocial adjustment among Chinese young adults.

Confucian *Zhong Yong* mode of thinking in Chinese culture

Culture is a collection of socially shared meanings and related scripted behavioural patterns (Kitayama &

Uskul, 2011). Chinese traditional cultural values, even if evolved in new forms, continue to deeply influence Chinese people (C. F. Yang, 1999; Yin, 2003). For example, the *ZY* mode of thinking (deriving from the Confucian classic *The Doctrine of the Mean* [中庸, *Zhong Yong*]), existing in China for thousands of years, had been integrated into the state education system before the 20th century as a core value of Confucianism. *ZY* thinking is a traditional thinking style rooted in ancient Chinese Yin-Yang (dark-bright; 阴阳) tradition as depicted in the *I-Ching* (or *Yi-Ching* or *The Book of Changes* [易经]). Yin-Yang reasoning is a powerful and pervasive holistic and dialectical mode of thinking as it has influenced Chinese philosophies including Taoism and Confucianism for thousands of years (Y.-T. Lee, 2000). Yin-Yang philosophy posits that everything (e.g., person, event, or object) has both Yin and Yang aspects and the two (not as single or distinct units) are dynamically balancing, which is the law of the universe (e.g., Yin and Yang can turn into each other when they reach an extreme level). This idea is well represented in Confucian ideology and teaching and reflected in *ZY* thinking, which is considered as a critical life wisdom and practical rationality and has been adopted as a behavioural guideline in everyday life.

To further understand the traces and impact of *ZY* thinking on the contemporary mind, a group of Chinese indigenous psychologists have been studying *ZY* from the perspective of psychology in the last two decades (e.g., C. F. Yang, 2010; C. F. Yang & Chiu, 1997). Consistent with the Yin-Yang philosophy, they broadly conceptualized *ZY* thinking to be a multifaceted, dynamic system which includes *ZY* values, beliefs, behavioural tendencies, and practices considering things from multiple aspects and conducting behaviours appropriately to account for the whole situation. Thus, it goes beyond dialectical thinking as investigated by Peng and Nisbett (1999), who understood dialectical thinking as a cognitive tendency to compromise by accepting or tolerating contradictions and oversimplified the important thinking style of Chinese people. *ZY* thinking is not passively compromising but actively searching for solutions by involving holistic and multi-thinking.

Empirically, researchers also have developed several measures to assess *ZY* thinking in contemporary Chinese societies (e.g., Chiu, 2000; Huang et al., 2012; C. F. Yang, 2010). Particularly, Wu and Lin (2005) developed a Likert-type scale to measure individuals' *ZY* thinking, which captures three main dimensions—multi-thinking, holism, and harmoniousness—and has been widely used. Multi-thinking assesses the tendency to consider the situation from multiple perspectives, and weigh different opinions to reach an optimal decision. Holism measures the tendency to integrate external information and internal needs, whereas harmoniousness taps into behavioural principles for achieving individual equilibrium and interpersonal harmony (Wu & Lin, 2005). Studies using these measures have revealed that *ZY* is still playing critical roles in psychosocial adjustment among contemporary Chinese people as a major principle for personal growth (self-cultivation/discipline), social interaction, and problem solving (C. F. Yang, 2009; X. Yang et al., 2016). However, as China has been undergoing rapid social and cultural changes in the context of industrialization, modernization, and globalization, we argue that not every member in the country endorses *ZY* values and practices *ZY* thinking to the same degree. To what extent *ZY* influences Chinese people may be contingent on the degree to which a person endorses and practices the value in the current era (Hwang, 1999). We particularly adopted Wu and Lin (2005)'s measure of *ZY* thinking and aimed to examine whether the three components of *ZY* are still relevant to young adults in contemporary China.

Implications of *Zhong Yong* thinking on psychosocial adjustment

The goals of *ZY* thinking are consistent with ER goals for Chinese people, that is, to achieve intrapersonal dynamic equilibrium and inner peace, as well as interpersonal harmony (e.g., Frijda & Sundararajan, 2007; W.-T. Ho et al., 2017; Hwang, 2012), or to achieve psychosocial homeostasis according to Hsu (1971). In the emotional domain, *ZY* thinking achieves the desired *zhong he* state (i.e., the state of peace and harmony; 中和), thus it may have strong implications for individual psychological adjustment. *Zhong* (equilibrium; 中) is a neutral state when joy, anger, sorrow, and pleasure all have not yet manifested, and *he* (harmony; 和) means harmony when these emotions are manifested to their appropriate or optimal level (Gao, 2021; C. F. Yang, 2010). From the emotion dynamics point of view (Kuppens & Verduyn, 2017), *zhong he* may represent an equilibrium and harmonious state when all possible emotions are experienced, regulated, and or expressed in an appropriate way. High *ZY*-oriented individuals would adopt a holistic view and historical perspective, viewing the world as constantly changing (e.g., C. F. Yang, 2009), which brings greater emotional flexibility and broader mental space for people when regulating emotions in challenging situations (Gao, Li, et al., 2013b). It should be noted that endorsing and practicing *ZY* does not mean simply withholding or suppressing emotions, but rather actively regulating emotions, and appropriately expressing emotions to meet with the requirements of specific situations (C. F. Yang, 2010). Thus, we argue that *ZY* should be

positively related to effective ER. Indeed, *ZY* thinking has been linked to cognitive strategies in coping with stress such as cognitive reappraisal (e.g., L.-F. Chou et al., 2014; Guo & Zeng, 2012).

ZY-oriented individuals are more likely to use such effective coping strategies to deal with their personal negative emotions in daily life, thus leading to affective well-being and good mental health. Empirical studies have revealed significant associations between *ZY* thinking and mental health. For example, Guo and Zeng (2012) found that *ZY* was negatively associated with negative affect among college students. Similarly, Gao, Cai, et al. (2013a) found that *ZY* was negatively associated with hostility and psychoticism among a group of Chinese participants of broad ages. Huang et al. (2012) has also found that *ZY* was positively linked to life satisfaction, happiness, as well as positive affect, and negatively associated with depressive symptoms. Similarly, among a large representative sample of Chinese undergraduates, X. Yang et al. (2016) found that *ZY* thinking was negatively associated with anxiety and depressive symptoms, and positively associated with self-esteem and life satisfaction. They also found positive intervention effects of *ZY* thinking style training to further reduce depressive symptoms on top of regular supportive group therapy (X. Yang et al., 2016). Taken together, *ZY* thinking has important implications for psychological adjustment. However, more studies are needed to examine whether *ZY* thinking is linked to ER-related adjustment outcomes such as positive and negative affect.

Positive and negative affect such as happiness, sadness, and anger are moderate- and high-arousal affect, which are more often assessed in Western literature as affective well-being. The Western subjective well-being measures usually fail to include the low-arousal positive affect such as inner peace and harmony. Inner peace and harmony are low-arousal positive affects that Chinese people generally value (Tsai et al., 2006). Eastern philosophies such as Confucianism, Taoism, and Buddhism all emphasize that Chinese people's ultimate life goals are to achieve and maintain an internal state of peacefulness and harmony (Y.-C. Lee et al., 2013). Based on Russell (1980)'s circumplex model of affect, Y.-C. Lee et al. (2013) conceptualized the construct *peace of mind* and developed a Peace of Mind (PoM) Scale, which has been used among Chinese and Western adults (e.g., Sikka et al., 2018). Using the PoM, Huang et al. (2012) have found that *ZY* beliefs were positively linked to peace of mind. More studies are needed to shed light on this association. We particularly included low-arousal positive affect (i.e., peace of mind), as well as moderate- and high-arousal positive and negative affect to examine how *ZY* thinking links to affective well-being among Chinese young adults.

Interpersonal relationships are essential to the subjective well-being of Chinese people (S. M. Y. Ho & Cheung, 2007). *ZY* is particularly salient during social interactions when interpersonal conflicts arise, so it may have strong implications for social adjustment. One major goal of *ZY* is to maintain social harmony. High *ZY*-oriented people typically tolerate apparent contradictions, avoid going to extremes, take others' perspectives by considering others' feelings and needs, and are more likely to forgive others and be cooperative, and eventually solve problems in a harmonious way (Ishii, 2013; Nisbett et al., 2001; C. F. Yang, 2009). Thus, they are more likely to be successful in social interactions and obtain positive interpersonal relationships and high relationship satisfaction. Indeed, X. Hu et al. (2012) found *ZY* thinking was positively correlated with organizational harmony and employee performance. Wu (2006) found that *ZY* thinking was positively linked to social competence and quality of social life among Taiwanese college students. These findings suggest that *ZY* thinking promotes social competence and improves interpersonal relationships. Perceived social support is an important indicator for interpersonal relationship and social adjustment, which has been negatively linked to anxiety and depressive symptoms among adolescents and university undergraduates (e.g., K.-L. Chou, 2000; Dahlem et al., 1991; Zimet et al., 1988). We also aim to examine the association between *ZY* thinking and perceived social support in the current study.

Moderation of *Zhong Yong* thinking

Besides examining the main effects of *ZY* thinking on psychosocial adjustment, studies have also investigated the moderating effects of *ZY* thinking. For example, L.-F. Chou et al. (2014) examined how *ZY* moderated the relationship between work stress and emotional exhaustion and job satisfaction. They found that *ZY* buffered the effects of both hindrance-related and challenge-related stress and emotional exhaustion. It also attenuated the negative effects of hindrance-related stress and job satisfaction. Interestingly, challenge-related stress was positively linked to job satisfaction among employees with high *ZY* beliefs, indicating that *ZY* thinking may help people enjoy work-related challenges. Among college students, Guo and Zeng (2012) found that *ZY* moderated the association between suppression and negative affect (but not positive affect), as suppression was significantly related to negative affect only among students with low *ZY*. Taken together, it is possible that *ZY* thinking may moderate the associations between suppression and various indicators of psychosocial adjustment among Chinese young adults.

As discussed previously, *ZY*-oriented people may be more likely to use effective cognitive strategies to

regulate emotions and not necessarily suppress their emotions. As cognitive reappraisal and suppression happen at different stages in the emotion-generative process (Gross, 1998), they are not mutually exclusive. Indeed, the two ER strategies have been found to interact with each other in predicting adjustment outcomes (Rogier et al., 2019). Thus, similarly, *ZY* thinking may also interact with suppression in relation to psychosocial adjustment. In the emotional domain, *ZY*-oriented individuals may choose to suppress or not suppress their emotions. For example, in emotionally provoking situations, *ZY*-oriented individuals will decide if there is a need to suppress emotional expressions, and actively cope with the situation using various effective cognitive ER strategies, which leads to appropriate levels of expressed emotions and positive psychosocial adjustment. Taken together, *ZY* thinking may moderate or attenuate the effects of emotion expressive suppression on psychosocial adjustment. An additional goal of the current study is to examine such moderating effects empirically and systematically.

The current study

The current study aims to understand how a certain ER strategy (i.e., suppression) works among Chinese young people who may adopt a particular cultural thinking style (i.e., *ZY*) to different degrees. We assessed individual differences of *ZY* thinking among two samples of college students and particularly examined the effects of *ZY* thinking and suppression on psychosocial adjustment (i.e., peace of mind and perceived social support in both samples, and positive and negative affect in Sample 2). We also investigated the moderation of *ZY* in the associations between suppression and psychosocial adjustment. We hypothesized that *ZY* would be positively related to psychosocial well-being (i.e., peace of mind, positive affect, and perceived social support) and negatively related to psychosocial adjustment problems (i.e., negative affect). We expected that the negative association between suppression and psychosocial well-being would be non-significant or weaker among Chinese young adults with high levels of *ZY* thinking.

Method

Participants

Participants of Sample 1 were 431 college undergraduate students (57% female, M_{age} = 18.95 years, SD = 1.00, ranging from 17 to 22 years old) recruited from an Introduction to Psychology class, who were attending a comprehensive university in Guangzhou, China (a southern major coastal city, Guangdong Province). We then collected data from participants from three geographical locations across China as a second Sample. Sample 2 included 477 students (48.6% female, M_{age} = 20.40 years, SD = 1.44, ranging from 17 to 25 years old, 43 students were older than 22) recruited from four universities across China (one in Zhuhai, Guangdong, a southern province; two in Hebei, a northern province; and one in Sichuan, a western province). Sample 2 participants were predominantly from freshmen, sophomore, and junior classes, majoring in various disciplines (except 43 from the senior class, 1 master, and 1 doctoral student).

Procedure

The study was approved by the ethic review board of Sun Yat-sen University with protocol # 2020–0322-0119, titled "From *Zhong Yong* to harmony: Examining the mechanisms of emotion regulation." Recruitment flyers were posted on the university electronic bulletin boards (i.e., online communities) for both samples. Consent was obtained from participants before data collection. Sample 1 participants were asked to come to a psychological research laboratory individually. After research assistants explained the study purpose, participants filled in a packet of questionnaires in the laboratory for about 30 min and involved in a laboratory activity. The total laboratory session took about 1 hr. Upon completion, they were given course credits or gift awards for compensation and were debriefed thereafter. Only the questionnaire data were used in the current study. Sample 2 participants completed a packet of questionnaires individually in about 15 min. They were given gift awards (value around RMB 15) for compensation.

Measures

Expressive suppression. The Chinese version of the ERQ (Gross & John, 2003) was used in the current investigation to assess expressive suppression. Participants were asked to rate each statement on a 7-point Likert scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). The 4-item suppression subscale included items such as "I keep my emotions to myself," and "When I am feeling positive emotions, I am careful not to express them." The Cronbach's αs were .69 and .63 for suppression for Samples 1 and 2, respectively. Higher scores indicate higher levels of expressive suppression.

Zhong Yong thinking. The 13-item *ZY* thinking scale (Wu & Lin, 2005; for English translation, see He et al., 2017) assesses *ZY* thinking in daily lives, that is, considering opinions of multiple parties, integrating different opinions, and acting appropriately to maintain group harmony. Sample items included, "I give a comprehensive

consideration while making decisions," "In situations where opinions are disputed, I will find out opinions which people can reach consensus," and "I tend to express conflicting ideas in a tactful way". Participants rated how much they endorsed each of the items on a 7-point scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). This scale has established high validity and reliability (e.g., X. Hu et al., 2012; X. Yang et al., 2016). The Cronbach's αs were .85 in Sample 1 and .84 in Sample 2.

Peace of mind. The 7-item PoM Scale (Y.-C. Lee et al., 2013), which measures the peaceful subjective well-being valued in the East, was administered. It has demonstrated discriminant validity in cross-cultural studies. Sample items included "My mind is free and at ease," "I feel content and comfortable with myself in daily life," and "I feel anxious and uneasy in my mind" (reverse coded). Participants indicated the frequency they experienced the state of mind described on a 5-point scale of *1* (*not at all*) to 5 (*all the time*). The Cronbach's αs were .91 in Sample 1 and .77 in Sample 2.

Perceived social support. We used the Chinese version of the 12-item Multidimensional Scale of Perceived Social Support (MSPSS-C; K.-L. Chou, 2000; Zimet et al., 1988) to assess the individual's perceived availability of social support from significant other, family, and friends. The scale ranged from 1 (*strongly disagree*) to 7 (*strongly agree*). Sample items included "There is a special person who is around when I am in need," "I can count on my friends when things go wrong," and "I get the emotional help and support I need from my family." The Cronbach's αs were .90 in Sample 1 and .87 in Sample 2.

Positive and negative affect. Participants were asked to rate the frequency they felt each particular emotion in daily life using the Differential Emotions Scale (DES-IV; Izard et al., 1993) in Sample 2 only, which included 36 items depicting 12 emotions (3 items each), namely, interest, enjoyment, surprise, sadness, anger, disgust, contempt, fear, guilt, shame, shyness, hostility inward. The 5-point scale ranged from 1 (*rarely or never*), 2 (*hardly ever*), 3 (*sometimes*), 4 (*often*), and 5 (*very often*). Interest and enjoyment were averaged to create composite scores of positive affect, whereas sadness, anger, disgust, contempt, fear, guilt, shame, and hostility inward were averaged to create composite scores of negative affect. Cronbach's αs were .77 for positive affect and .92 for negative affect in the current study.

Ethics/Informed consent

The study was approved by the ethical review board of Sun Yat-sen University.

Results

Descriptive analyses

Means, standard deviations, ranges, and bivariate correlations were presented in Tables 1 and 2. Males reported higher levels of expressive suppression than females in both samples, $t(426) = 3.50$, $p = .001$, and $t(473) = 3.00$, $p = .003$ for Samples 1 and 2 respectively. Females reported marginally higher levels of social support than males, $t(422) = -1.79$, $p = .07$ in Sample 1. Females also reported higher levels of social support, *t*

TABLE 1
Descriptive Statistics and Correlations (Sample 1)

	1	2	3	4	5	6
1. Sex[a]	--	–	–	–	–	–
2. Age	.02	–	–	–	–	–
3. Suppression	.17**	−.002	–	–	–	–
4. *Zhong Yong* Thinking	.05	−.11*	.06	–	–	–
5. Peace of Mind	−.02	−.05	−.09†	.27***	–	–
6. Perceived Social Support	−.09†	−.06	−.23***	.34***	.31***	–
M	0.43	18.95	3.24	5.51	3.42	5.57
SD	0.50	1.00	1.10	0.64	0.69	0.96
Min	0	17	1.00	3.23	1.00	1.42
Max	1	22	6.75	7.00	5.00	7.00

Note. $N = 431$. Descriptive statistics and correlations for Sample 1.
*$p < .05$.
**$p < .01$.
***$p < .001$.
†$p < .10$.
[a]Sex was coded as 1 = Male and 0 = Female.

TABLE 2
Descriptive Statistics and Correlations (Sample 2)

	1	2	3	4	5	6	7	8
1. Sex[a]	–	–	–	–	–	–	–	–
2. Age	.16**	–	–	–	–	–	–	–
3. Suppression	.14*	.07	–	–	–	–	–	–
4. *Zhong Yong* Thinking	.07	−.07	.004	–	–	–	–	–
5. Peace of Mind	−.13*	−.17**	−.16*	.21**	–	–	–	–
6. Perceived Social Support	−.14*	−.15*	−.26**	.41**	.38**	–	–	–
7. Positive Affect	−.01	−.15*	−.16**	.23**	.51**	.29**	–	–
8. Negative Affect	.07	.06	.26**	−.29**	−.42**	−.36**	−.14*	–
M	0.51	20.40	3.23	5.31	3.40	5.39	2.55	2.52
SD	0.50	1.44	1.09	0.71	0.59	0.87	0.47	0.61
Min	0	17	1.00	3.00	1.57	2.00	1.33	1.50
Max	1	25	6.25	7.00	4.86	7.00	4.00	5.33

Note. $N = 477$. Descriptive statistics and correlations for Sample 2.
*$p < .01$.
**$p < .001$.
[a]Sex was coded as 1 = Male and 0 = Female.

(472) = 2.86, $p = .004$, and peace of mind, t (473) = 2.99, $p = .003$, compared to males in Sample 2. They did not differ on other variables.

Bivariate correlation analyses (see Tables 1 and 2) showed that age was negatively associated with *ZY* thinking in both samples, particularly Sample 1. Age also was negatively associated with peace of mind, social support, and positive affect in Sample 2. Generally, suppression was negatively associated with positive adjustment outcomes, and positively linked to negative affect. In contrast, *ZY* thinking was positively related to positive adjustment outcomes and negatively correlated with negative affect.

Effects of suppression and *Zhong Yong* thinking

Analytical strategy. We conducted hierarchical linear regressions to test the main effects of suppression and *ZY* thinking, as well as the moderating effect of *ZY*. Suppression and *ZY* were centred around the corresponding means. Two-way interaction terms of suppression and *ZY* were created using the centred variables. Sex and age (covariates) were entered as control variables in Step 1, suppression and *ZY* were entered in Step 2, and the interaction term was entered in Step 3 (see Tables 3 and 4). Three-way interaction effects of suppression, *ZY*, and sex or age were also explored but not significant. Thus, we report the results of two-way interaction. For test sensitivity, models were run without covariates (i.e., sex and age). Finally, if the interaction effect was significant, we further probed the interaction by examining the effects of suppression on adjustment variable at high (1 *SD* above the mean) and low (1 *SD* below the mean) levels of *ZY* thinking. We trimmed the nonsignificant interaction terms to obtain parsimonious final models focusing on main effects.

Suppression, ZY thinking, and psychosocial adjustment. The final regression models predicting peace of mind were significant, $F(4, 420) = 9.93$, $p < .001$, overall $R^2 = .09$ in Sample 1, and $F(4, 466) = 12.86$, $p < .001$, overall $R^2 = .10$ in Sample 2. Results showed no significant moderating effect of *ZY* for peace of mind (see Tables 3 and 4). Suppression was negatively linked to peace of mind whereas *ZY* was positively related to peace of mind. The final models predicting perceived social support were also significant, $F(5, 412) = 19.43$, $p < .001$, overall $R^2 = .19$ in Sample 1, and $F(5, 466) = 18.37$, $p < .001$, overall $R^2 = .26$ in Sample 2. Further, the moderating effect of *ZY* was significant for perceived social support for both samples (see Tables 3 and 4). Sensitivity test without covariates showed that all significant findings were robust except the moderating effect of *ZY* on perceived social support in Sample 2, which was marginally significant, $\beta = .08$, $p = .06$. Further probing showed that the negative association between suppression and perceived social support was stronger for young adults who reported lower *ZY* thinking compared to those who reported greater *ZY* thinking in Sample 1 (see Figure 1). Although the interaction effect was marginally significant in Sample 2, the probing for simple effects showed the same patterns as found in Sample 1 (see Figure 2).

TABLE 3
Hierarchical Regression Results for Psychosocial Adjustment (Sample 1)

	Peace of Mind				Perceived Social Support			
	β	*p*	R^2	ΔR^2	β	*p*	R^2	ΔR^2
Step 1	–	–	.003	.003	–	–	–	–
Sex[a]	−.02	.69	–	–	−.09	.06	.01	.01
Age	−.05	.34	–	–	−.07	.18	–	–
Step 2	–	–	.09	.08***	–	–	–	–
Sex[a]	−.02	.75			−.06	.16	.17	.16***
Age	−.02	.76	–	–	−.02	.59	–	–
Suppression	−.10*	.04	–	–	−.24***	<.001	–	–
Zhong Yong	.28***	<.001	–	–	.34***	<.001	–	–
Step 3	–	–	–	–	–	–	–	–
Sex[a]	–	–	–	–	−.06	.21	.19	.02**
Age	–	–	–	–	−.02	.73	–	–
Suppression	–	–	–	–	−.26***	<.001	–	–
Zhong Yong	–	–	–	–	.34***	<.001	–	–
Suppression × ZY	–	–	–	–	.13**	.003	–	–

Note. $N = 431$. Regression coefficients are standardized. ZY = *Zhong Yong*.
*$p < .05$.
**$p < .01$.
***$p < .001$.
[a]Sex was coded as 1 = Male and 0 = Female.

For Sample 2, the final model was significant for positive affect, $F(4, 465) = 11.36$, $p < .001$, overall $R^2 = .09$. The interaction effect was not significant. Similarly, suppression was negatively associated with positive affect while *ZY* was positively associated with positive affect (see Table 4). The model was also significant for negative affect, $F(5, 462) = 21.51$, $p < .001$, overall $R^2 = .19$, with a significant interaction effect of suppression and *ZY*. Specifically, the positive link between suppression and negative affect was weaker among young adults who reported greater *ZY* thinking (see Figure 3). All findings were consistent with or without controlling for sex and age.

Discussion

Cultural differences regarding the efficacy of ER strategies have intrigued emotion researchers for decades. Cross-cultural studies have typically overlooked the within-country variations in cultural values. To fill this research gap, the current study involved an indigenous cultural concept, *ZY* mode of thinking, assessed individual differences in *ZY* thinking using two Chinese young adult samples, and investigated the main effects of *ZY* thinking as well as the moderation of *ZY* thinking in the associations between suppression and psychosocial adjustment. We found that the deleterious effects of suppression were pervasive on multiple interpersonal and intrapersonal well-being indicators among Chinese young adults. Further, *ZY* thinking seemed to be positively linked to various psychosocial adjustment indicators and alleviated the negative effects of suppression. These findings suggest that the effects of suppression may not only differ across cultures or countries but also differ among people within a country.

Main effects of *Zhong Yong* thinking

Most previous cultural comparison studies have not been able to directly assess culture with a few exceptions examining interdependent self-construal or emotion control values (e.g., Cheung & Park, 2010; English & John, 2013; Mauss & Butler, 2010). In the current study, we particularly involved a salient Confucian value, *ZY* mode of thinking, from an indigenous cultural perspective. We found that generally *ZY* thinking was positively linked to psychosocial adaptation for Chinese young adults. These findings suggest strong main effects of *ZY* across the two adult samples and across multiple psychosocial adjustment indicators, including intrapersonal affective well-being (both low-arousal and high-arousal affect) and interpersonal adjustment. For a very long time, China has been an agricultural society with a tight social structure which requires individuals' conformity to

TABLE 4
Hierarchical Regression Results for Psychosocial Adjustment (Sample 2)

	Peace of Mind				Perceived Social Support			
	β	*p*	R^2	ΔR^2	β	*p*	R^2	ΔR^2
Step 1	–	–	.04	.04***	–	–	–	–
Sex[a]	−.11*	.02	–	–	−.11*	.02	.03	.03***
Age	−.16***	<.001	–	–	−.13**	.005	–	–
Step 2	–	–	.10	.06***	–	–	–	–
Sex[a]	−.11*	.02	–	–	−.12**	.004	.25	.22***
Age	−.13**	.003	–	–	−.08*	.07	–	–
Suppression	−.14**	.002	–	–	−.24***	<.001	–	–
Zhong Yong	.20***	<.001	–	–	.41***	<.001	–	–
Step 3	–	–	–	–	–	–	–	–
Sex[a]	–	–	–	–	−.12**	.004	.26	.01*
Age	–	–	–	–	−.09*	.04	–	–
Suppression	–	–	–	–	−.25***	<.001	–	–
Zhong Yong	–	–	–	–	.40***	<.001	–	–
Suppression × ZY	–	–	–	–	.08*	.05	–	–

	Positive Affect				Negative Affect			
	β	*p*	R^2	ΔR^2	β	*p*	R^2	ΔR^2
Step 1	–	–	.02	.02**	–	–	–	–
Sex[a]	.01	.86	–	–	.06	.18	.01	.01
Age	−.15**	.002	–	–	.05	.34	–	–
Step 2	–	–	.09	.07***	–	–	–	–
Sex[a]	.01	.83	–	–	.06	.19	.16	.16***
Age	−.12**	.007	–	–	.01	.83	–	–
Suppression	−.16***	<.001	–	–	.27***	<.001	–	–
Zhong Yong	.21***	<.001	–	–	−.30***	<.001	–	–
Step 3	–	–	–	–	–	–	–	–
Sex[a]	–	–	–	–	.06	.17	.19	.03***
Age	–	–	–	–	.02	.68	–	–
Suppression	–	–	–	–	.28***	<.001	–	–
Zhong Yong	–	–	–	–	−.29***	<.001	–	–
Suppression × ZY	–	–	–	–	−.17***	<.001	–	–

Note. $N = 477$. Regression coefficients are standardized. ZY = *Zhong Yong*.
*$p < .05$.
**$p < .01$.
***$p < .001$.
[a]Sex was coded as 1 = Male and 0 = Female.

social norms and accommodation of personal needs to overall family and societal goals (Ji et al., 2000). China has recently been undergoing increasing industrialization, modernization, and globalization, resulting in rapidly evolving technologies and fiercely competitive markets (L.-F. Chou et al., 2014). Although we observe the rise of individualistic values such as self-awareness, independence, and autonomy, and concern for personal needs and rights, traditional values such as family relations and friendship co-exist with individualistic values and even mutually reinforce each other rather than simply disappear (e.g., Bai, 1998; Sun & Ryder, 2016; Sun & Wang, 2010; Xu & Hamamura, 2014). Researchers argue that typically when foreign cultures come into China, Chinese people digest the corresponding cultural thinking and integrate the thinking into their own dynamic system and act out a modified version (e.g., Yan, 2010). Chinese individuals may enact a new form

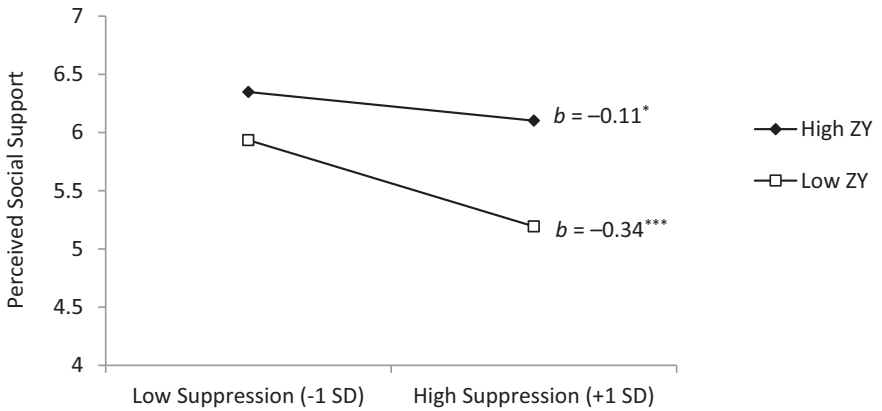

Figure 1 Interaction of suppression and *Zhong Yong* thinking on perceived social support (Sample 1). Statistics are unstandardized regression coefficients. High ZY = 1 *SD* above the mean of *Zhong Yong*; Low ZY = 1 *SD* below the mean of *Zhong Yong*; ZY = *Zhong Yong*. * $p < .05$. *** $p < .001$.

of *ZY* mode of thinking in daily lives (C. F. Yang, 1999, 2010). Such *ZY* thinking may still dictate how Chinese people behave in modern China. Chinese young adults in the current study seemed to be *ZY*-oriented in general (high *mean* scores on *ZY* thinking in both samples) and the levels varied from person to person (comparable *standard deviations*).

Our findings are consistent with both theoretical considerations and previous empirical findings (e.g., Huang et al., 2012; C. F. Yang, 2009; X. Yang et al., 2016; Wu, 2006). It is possible that high *ZY*-oriented people are more likely to see emotionally charged situations as opportunities to cultivate oneself, adopt cognitive ER strategies such as putting into perspective and cognitive reappraisal and refocusing to deal with their personal negative emotions in daily life, thus leading to affective well-being and good mental health (e.g., L.-F. Chou et al., 2014). Indeed, cross-cultural study has suggested that East Asians are more likely to find the positive in negative situations compared to Westerners (Miyamoto et al., 2014), which may reflect a *ZY* thinking style. Further, the *ZY* intra- and interpersonal thinking and action tendencies may reflect high flexibility in both cognitive and emotional processes. High *ZY*-oriented people may also be more flexible in choosing ER strategies. Indeed, Gao, Li, et al. (2013b) found that emotional flexibility (the ability to regulate emotions in accord with situational demands; Bonanno et al., 2004; Pruessner et al., 2020) mediated the associations between *ZY* beliefs and depressive symptoms. Importantly, the *ZY* mode of thinking does not imply inhibiting emotional experience and expression but may suggest the tendency

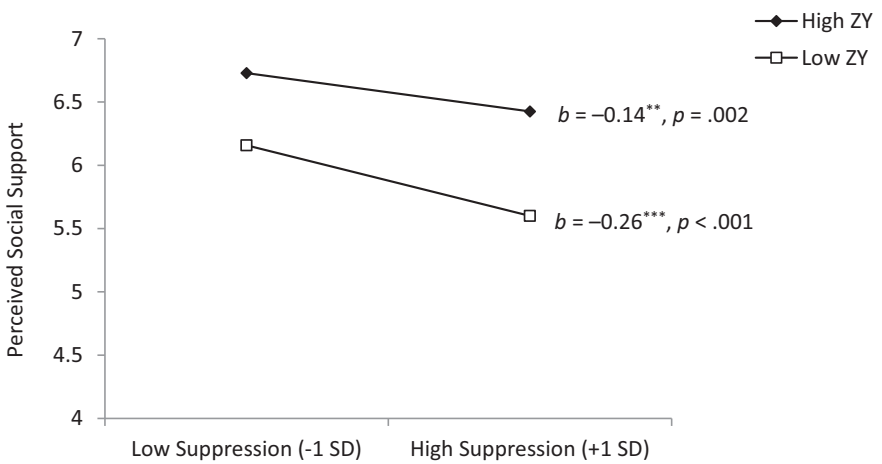

Figure 2 Interaction of suppression and *Zhong Yong* thinking on perceived social support (Sample 2). Statistics are unstandardized regression coefficients. High ZY = 1 *SD* above the mean of *Zhong Yong*; Low ZY = 1 *SD* below the mean of *Zhong Yong*; ZY = *Zhong Yong*. ** $p < .01$. *** $p < .001$.

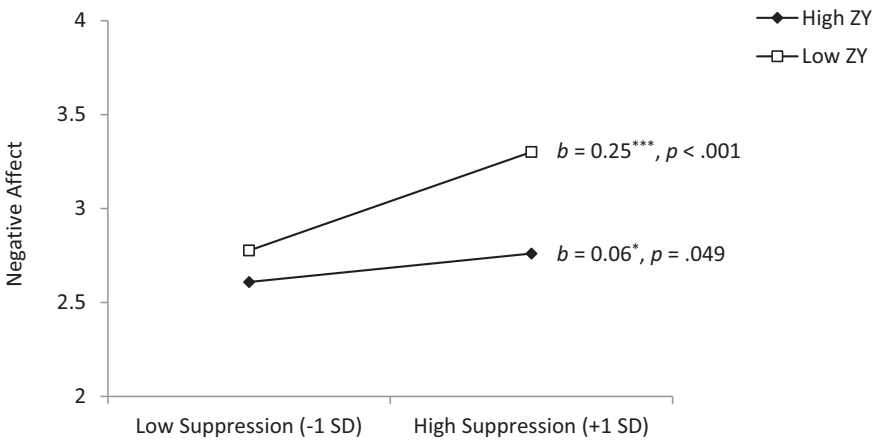

Figure 3 Interaction of suppression and *Zhong Yong* thinking on negative affect (Sample 2). Statistics are unstandardized regression coefficients. High ZY = 1 *SD* above the mean of *Zhong Yong*; Low ZY = 1 *SD* below the mean of *Zhong Yong*; ZY = *Zhong Yong*. * $p < .05$. *** $p < .001$.

to express emotions flexibly and in an appropriate manner (C. F. Yang, 2010). Not surprisingly, *ZY* thinking was not associated with suppression but positively linked to effective cognitive ER strategies such as cognitive reappraisal, acceptance, positive refocusing, refocusing on planning, and putting into perspective in the current study (ongoing analyses not reported here). Effective ER strategies and ER flexibility may be the underlying mechanisms for the effects of *ZY* thinking on psychosocial adjustment. However, more studies are warranted to examine ER as the underlying mechanisms.

Effects of suppression among Chinese young adults

Although the effects of suppression are generally negative among Western samples, empirical findings regarding the associations between suppression and psychosocial adjustment are somewhat mixed for Eastern populations (for a review, see T. Hu et al., 2014). While some earlier studies of participants with Eastern cultural backgrounds found no relationship between suppression and mental health problems (e.g., Soto et al., 2011), more recent studies started to show negative effects of suppression among Chinese populations. For instance, among a large group of Chinese adolescents, suppression has been linked to emotional eating (Lu et al., 2016). In an experimental study, compared to college students who were instructed to use cognitive reappraisal and acceptance strategies, students who used suppression reported greater increases in anxiety during all three phases of a social interview task (i.e., the anticipation, the interview, and the recovery of the Trier Social Stress Task; Gong et al., 2016). Similarly, college students with two particular subtypes of alexithymia scored higher on suppression, depression, and anxiety compared to students without alexithymia (J. Chen et al., 2011). These more recent findings suggest negative effects of suppression on psychological and behavioural adjustment for Chinese adolescents and young adults. Our findings are consistent with these recent findings and add to the literature that suppression may be negatively associated with both intrapersonal affective and social well-being in general. These recent findings suggest that the effects of suppression among Chinese adolescents and young adults are becoming more similar to those found among populations with Western cultural backgrounds.

Globalization and high exposure to Western cultures have led to cultural value changes among Chinese people. China is becoming a more and more competitive society. Chinese people have started to value skills such as expression of personal opinions and emotions, independence, and autonomy (X. Chen et al., 2005; Sun & Ryder, 2016). For example, Sun and Ryder (2016) proposed that individualistic values were on the rise in modern China, and Chinese people were becoming more emotionally expressive. Indeed, there is evidence that younger generations in China are becoming more open and more likely to talk about their intimate thoughts and feelings (e.g., Yan, 2003). Our samples were college students in urban cities—a population that is more likely to be influenced by Western culture. As the experience and expression of emotions are shaped by cultural contexts (e.g., Kitayama et al., 2006), suppression may gradually become detrimental to Chinese people. Thus, suppression may have been an adaptive ER strategy for maintaining social harmony decades ago, but maladaptive in the current Chinese society when suppression of emotions is no

longer valued. This may explain why suppression was generally negative for psychosocial adjustment in our young adult samples.

The moderating role of *Zhong Yong* thinking

In modern China, as people are becoming affected by the deleterious influences of suppression, there is a need to identify cultural protective factors. Indeed, *ZY* thinking may serve as this protective factor. We found that Chinese Confucian *ZY* attenuated the negative effects of suppression on social and affective well-being (i.e., perceived social support and negative affect). However, with further globalization, the protective effects of *ZY* for suppression may become weaker and even disappear as *ZY* did not fully protect young adults against adverse effects of suppression in the current study. Specifically, we found that at the low levels of *ZY* thinking, suppression was more strongly linked to negative affect whereas high levels of *ZY* attenuated the negative effect of suppression. This finding is consistent with previous studies (e.g., Guo & Zeng, 2012). Emotion suppressors with high *ZY* thinking may be involved in emotion refinement, a term coined by Frijda and Sundararajan (2007) based on Confucian philosophy and Chinese poetics. According to the emotion refinement arguments, high *ZY*-orientated Chinese people, particularly an elite minority group, may restrain (similar to suppress) their feelings and actions, savour their emotions in an elaborative and prolonged process of appraisal and reappraisal of the eliciting situations, and search for wider meanings, which eventually leads to harmony and brings peace and happiness. Therefore, suppressing emotion expression may be part of this unique and effective ER process for people who endorse and practice *ZY* thinking, which does not necessarily link to adjustment difficulties (e.g., W.-T. Ho et al., 2017).

Besides alleviating the adverse effects on negative affect, high levels of *ZY* also attenuated the effect of suppression on perceived social support. The behaviour of *ZY*-oriented individuals in choosing to suppress negative emotions is also similar to deep acting, one of the emotional labour strategies, when people hide negative emotions and try to actually experience the required emotion and change their feelings (Morris & Feldman, 1996). Surface acting, on the other hand, is similar to suppressing emotions without *ZY* thinking (e.g., without changing their inner states). Zhu et al. (2021) found that Confucian familism was positively linked to deep acting (which was negatively related to emotional exhaustion) and negatively to surface acting (which was positively linked to emotional exhaustion) among teachers. Our findings suggest that *ZY*-oriented individuals choosing to suppress negative emotions may engage in active regulation/deep acting, which results in less negative affect compared to those who do not actively regulate their emotions. They may also use their social skills such as perspective taking and resolving contradictions in social interactions even if they choose to withhold their emotions, which protects them from having relationship problems.

However, the moderating effects of *ZY* were not strong, particularly for perceived social support. We should be cautious in interpreting these findings. As Chinese young people may increasingly adopt Western values and discard *ZY* thinking, the protective effects of *ZY* thinking may decline over time as *ZY* did not fully protect young adults from negative effects of suppression in our study. However, longitudinal studies are needed to examine this possibility. Further, more heterogeneous samples are also necessary as they may adopt different thinking styles and cultural orientations (Miyamoto et al., 2018; Zhang et al., 2021). For example, it is likely that people with a lower education level or from rural areas may endorse a different level of *ZY* thinking comparing to young college students.

Limitations and future directions

Besides the fact that the current study was cross-sectional, our study had several other limitations. First, all our measures were self-reported. Common method bias may inflate the associations between variables to some extent. Future studies should use various methodologies to assess *ZY* thinking and particularly psychosocial adjustment. Multiple intra- and interpersonal well-being indicators should also be included to further understand the effects of *ZY* thinking. Second, as the expression and regulation of specific emotions in specific social contexts vary across cultures (Mauss et al., 2008; Tsai et al., 2002, 2006), future research should further examine the roles of *ZY* thinking and regulation of specific emotions in specific contexts. Third, future research may adopt the dynamic view of emotion regulation (see Diaz & Eisenberg, 2015) and examine how *ZY* thinking contributes to the ER process (for example, how *ZY* thinking helps individuals process information before or after suppressing emotions). Fourth, researchers should also tap into the complexity of *ZY* thinking (see C. F. Yang, 2010) and develop more measures of *ZY* thinking, and even consider other Asian cultural values and beliefs in understanding psychosocial adjustment among Asian populations. Fifth, researchers may also consider assessing *ZY* thinking among Western populations as this particular Confucian value is not unique to Chinese people but also relevant in the Western world.

Conclusion and Implications

The cultural understandings for suppression are still unclear. By introducing and examining the Confucian *ZY* mode of thinking, findings of the current study offer a new interpretation for why suppression may not be as negative for Eastern populations as for Western populations. Our findings also imply that the effects of suppressing emotions may become negative with the process of globalization and modernization. Further, the current study particularly emphasizes the salience of *ZY* mode of thinking, which has a considerable impact on Chinese people's psychological and social well-being. Our findings also indicate a possibility of incorporating the *ZY* mode of thinking into clinical practices while addressing mental health issues (Hwang & Chang, 2009).

Conflict of Interest

We have no known conflicts of interest to disclose.

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Open Research Badges

This article has been awarded Open Data Badge for making publicly available the digitally-shareable data necessary to reproduce the reported results. Data is available at Open Science Framework

Data Availability Statement

All data, syntax for analyses, and outputs are available at https://osf.io/yu5hn/.

Research Materials Statement

Research materials are available from the corresponding author upon reasonable request.

Pre-Registration Statement

This study was not pre-registered.

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