Cuteness in Mobile Messaging: An Exploration of Virtual "Cute" Sticker Use in China and the United States

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This study employs the interactive communication technology adoption model to explain differences in cute sticker use on mobile messengers by Chinese and U.S. college students. An online survey of 205 Chinese and 304 U.S. participants reveals that Chinese participants hold stronger gender role beliefs and perceive cute stickers to be more helpful, as well as easier to use. These factors, to varying degrees, explain higher sticker use among Chinese students in comparison to their U.S. counterparts. Compared to U.S. men students, Chinese men students with a low-to-medium allocentrism level perceive cute stickers to be easier to use and use more cute stickers, and those who have medium-to-high levels of allocentrism hold stronger gender role beliefs and also use more cute stickers. After controlling for different messaging platforms, the cross-cultural difference in cute sticker use was found to be larger for men compared to women, with use levels being similar among U.S. and Chinese women.

Keywords: sticker use, mobile messaging, cute, cross-cultural comparison

The technological emergence of virtual stickers in mobile messaging empowers users to enhance their text communications with expressive graphics. Before the pandemic, around 389 million stickers were exchanged every day (Kim, Choi, & Hwang, 2019). During the COVID-19 pandemic, when social distancing became a new norm, these advanced types of graphicons (graphical icons) continued to allow users to enrich their interpersonal connections. However, academic research has fallen behind, as only around 30% of the studies on graphicons are theoretically driven, with less focus on stickers compared to emoticons and emojis (Tang & Hew, 2019).

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While some research has studied virtual stickers, most prior research has not differentiated the styles of virtual stickers and thus overlooked an important category, namely "cute" stickers. Cuteness is an aesthetic pursuing rounded, immature, harmless, vulnerable, and delicate attributes, and it triggers a desire for intimate and sensuous relationships (Ngai, 2012). Thus, cute stickers have the potential for facilitating mobile communication.

As observed by Herring (1996), the interplay of contextual, social, and technological factors determines online language practices. China and the United States differ in contextuality and gender role beliefs, which shape individuals' nonverbal communication patterns (e.g., Yang, Wu, Atkin, Rios, & Liu, 2021). Moreover, since China has blocked major international messengers (e.g., WhatsApp, Snapchat, and Signal) that are widely used in the United States (Shen, 2021), localized platforms such as WeChat have led to diverse media pluralities that constitute another cross-cultural difference. As a result, Tang and Hew (2019) maintained that nationality is a key variable to facilitate understanding of technology-mediated intercultural communication in the age of globalization.

The goal of this study is to examine how and why college students in China and the United States use cute stickers differently. First, the definition of cuteness and the uses of cute stickers in mobile messaging will be introduced. Second, the interactive communication technology adoption model will be applied as the theoretical framework. Next, the results of an empirical test of the potential predictors and moderators of cute sticker use will be reported. The current study will further academic understanding of the interaction effects between cultural, technological, and individual factors on cute sticker use among Chinese and U.S. students in mobile messaging.

Literature Review

Cuteness

Cuteness is a concept that has been examined by scholars from different disciplines, and one central question resides in locating the "boundary between cuteness as a cultural aesthetic and the biological underpinnings of our affective response to a cute object" (Dale, 2016, p. 6). Scientific research on cuteness originated from Lorenz (1943), who proposed the baby schema: a large, bulbous forehead, large eyes, small mouth, and chubby cheeks. The evolutionary basis for the global applicability of Lorenz's baby schema stems from the human need to care for infants for the species to survive (Morreall, 1991). It is believed that cuteness—as displayed in human babies—induces parental caregiving, compassion, and empathy (e.g., Kringelbach, Stark, Alexander, Bornstein, & Stein, 2016). This theoretical assumption has been empirically validated. For instance, offline viewers linger for longer time periods when shown images depicting cuter baby faces, compared to the times when they are shown less cute images (Sprengelmeyer, Lewis, Hahn, & Perrett, 2013).

When the physical and affective responses to cute stimuli are used for artistic or commercial purposes, cuteness becomes an aesthetic category (Dale, 2016). Therefore, cuteness is considered both as a "culturally non-specific, biological trait" (Nittono, 2016, p. 79) and a dominant aesthetic of the global consumer culture (Ngai, 2012), suggesting that individuals from different nations embrace similar

understandings of cuteness. The present study aims to investigate why, in mobile messaging, cuteness—as shown in virtual stickers—is favored more by Chinese college students than their U.S. counterparts.

Emergence of Cute Stickers

Virtual stickers supplement mobile messaging (i.e., SMS/MMS messaging and instant messaging) with paralinguistic cues (Prada et al., 2018). First introduced in the mobile messenger LINE (Dale, Goggin, Leyda, Negra, & McIntyre, 2017), stickers are oversized static or animated images that have been widely adopted by the most popular U.S. and Chinese messaging applications, such as Snapchat and WeChat.
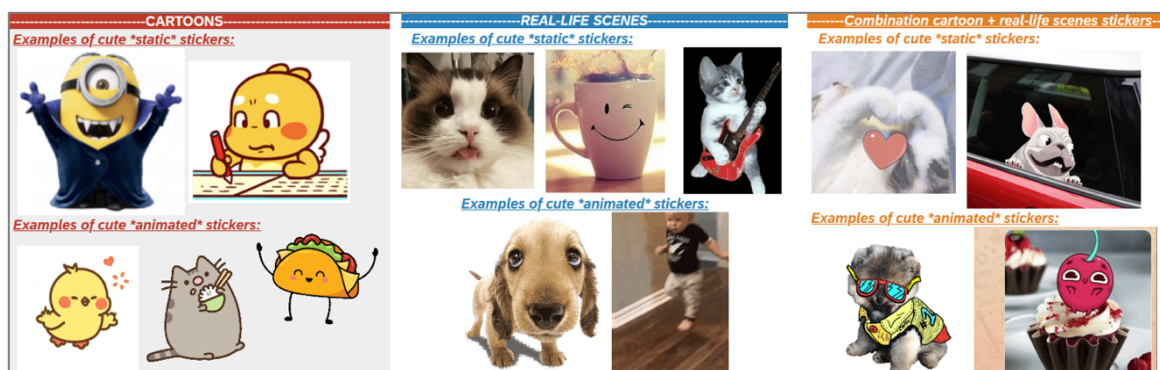

Figure 1. Examples of cute stickers.

A single sticker is more expressive than an emoticon or emoji. Not only is it larger, more colorful, and oftentimes animated, but it can also be customized and shared by individual users, providing more creative options to express a sender's identity, aesthetic preferences, and personality traits (Derks, Bos, & Von Grumbkow, 2008). As a cultural and global phenomenon, cuteness can be presented visually in virtual stickers used in mobile messaging. Being a major category of stickers, cute stickers feature cartoon or real-life characters that fit Lorenz's (1943) cute schema (see Figure 1 for examples of cute stickers). Since research on cute stickers is still in its early stage, the current study only examines the frequency of cute sticker use in mobile messaging, without differentiating the specific purposes associated with such use.

Interactive Communication Technology Adoption Model (ICTAM)

Because the use of "cute" stickers in mobile messaging depends on many proximal and distal elements, the overarching interactive communication technology adoption model (ICTAM) (Lin, 2003; see Figure 2) is applied to analyze both the micro and macro aspects (Atkin, Hunt, & Lin, 2015). According to Lin (2003), the frequency of using a communication technology (e.g., cute stickers on a mobile messenger) is an adoption factor in ICTAM that is of interest to the present study; it is influenced by system, technology, and audience factors. System factors include regulatory forces and culture (Atkin et al., 2015), which in this study refer to the impact of nationality (i.e., China vs. the United States) on cute sticker use. Technology factors include the inherent technical characteristics and the audience's comprehension of them, so perceived ease of use and perceived usefulness (Davis, 1989) are analyzed as technology factors. Audience

factors describe the social locators, beliefs, and personality traits relevant to an adoption behavior (Atkin et al., 2015). Thus, gender, gender role beliefs, and allocentrism are examined in this study. Therefore, the current study investigates the impacts of contextual, social, technological, and individual factors on cute sticker use. In addition, the relationships among these factors are also examined.

System Factors, Technology Factors, and Adoption Factors

Contextuality, Perceived Usefulness, and Sticker Use

Hall (1976) first established that China is located at the higher end of the contextuality continuum, while U.S. culture is situated at the lower end of the continuum. Cultures with higher contextuality (e.g., China) tend to favor nonverbal, indirect, and emotional communication, while lower-context cultures (e.g., the United States) prefer to explicate necessary information directly (Hall, 1976). However, Hall's theory has been criticized because some assumptions have not been empirically validated (Cardon, 2008). Gudykunst et al. (1996) even argue that contextuality might be better explained on an individual level rather than a cultural level. Despite the criticisms, the theory has been most widely used in explaining Anglo (i.e., United States, United Kingdom, Australia, New Zealand, and Canada) and Chinese cultures, and the amount of text required in communication testifies to a constant difference between higher- and lower-context cultures (Cardon, 2008). Accordingly, Hall's (1976) contextuality theory is adopted as one of the theoretical frameworks.
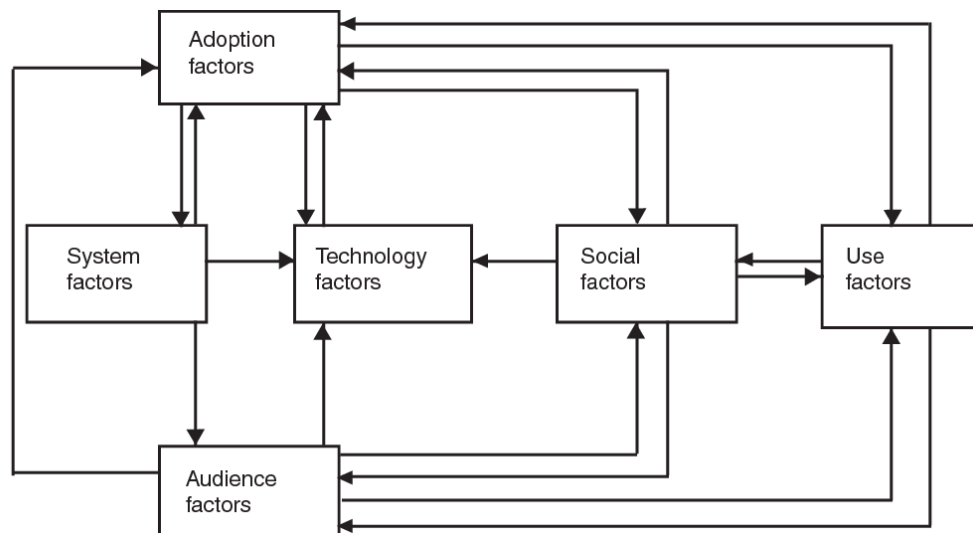

Figure 2. Interactive communication technology adoption model (ICTAM).

In terms of graphicon use in cyberspace, a cross-cultural content analysis reveals that online forum users in a higher-context culture (i.e., Indian) adopted more emoticons than their lower-context culture counterparts (i.e., German), highlighting the importance of nonverbal cues in online communication in higher-context cultures (Pflug, 2011). Since cuteness provokes empathy (Kringelbach et al., 2016), messenger users from higher-context cultures such as China are more likely to find cute stickers useful for

lightening the atmosphere, softening the tone, and expressing themselves nonverbally. Therefore, it is hypothesized that:

H1:   *Chinese students use more cute stickers on mobile messengers compared to U.S. students.*

H2a: *Chinese students perceive cute stickers to be more useful compared to U.S. students.*

H2b: *Perceived usefulness positively predicts cute sticker use.*

Platform Differences, Perceived Ease of Use, and Sticker Use

Accessibility has been identified as one of the key components in the increased popularity of symbolic language (e.g., stickers; Bischoff & Palea, 2019). Because almost all the major international mobile messengers have been banned in mainland China, China's mobile messaging landscape differs from that in the United States. Without many alternatives, WeChat has become "the go-to tool" used by seemingly everyone in China (Shen, 2021, para. 12) that collapses the context and facilitates communication with multiple audiences. In contrast, U.S. populations enjoy more social media options (e.g., Mehner, 2022). Therefore, Chinese mobile messengers must provide more accessible and multifunctional stickers to meet users' broader range of needs compared to their U.S. counterparts.

Cute stickers seem to be easier to use on Chinese messengers compared to U.S. messengers. For instance, WeChat provides more choices of cute stickers and allows users to easily design and share their own stickers for the entire community. WeChat has also enabled users to use keywords to search for and select cute stickers across its cloud database. In contrast, U.S. mobile messengers such as WhatsApp provide more limited sticker options, and users are trying to export cute stickers from WeChat to use on other messengers (Nash, 2020). Therefore, it is hypothesized:

H3a: *Chinese students perceive cute stickers to be easier to use compared to U.S. students.*

H3b: *Perceived ease of use positively predicts cute sticker use.*

As observed by scholars, stickers seem to be more popular in Asia than the United States (Russell, 2013). To understand to what extent sticker popularity results from platform affordances—the supply of cute stickers on different mobile messengers—on top of users' demands for nonverbal cues in each culture, the following research questions are asked:

RQ1(a–b):   *After controlling for platforms, do Chinese students perceive cute stickers to be (a) more useful and (b) easier to use, compared to U.S. students?*

The cross-cultural differences in cute sticker use can be further informed by the consideration of the audience factor and its interaction with the system factor, as described next.

System Factors, Audience Factors, and Adoption Factors

Nationality, Gender, and Sticker Use

According to social role theory, women are widely believed and expected to possess more communal attributes, including being affectionate, gentle, and interpersonally sensitive, while men possess more agentic attributes, such as being assertive and forceful (Eagly & Karau, 2002). Similar gender stereotypes persist in Chinese and U.S. societies. For example, in China, men are expected to be assertive and tough, while women are expected to be more modest and tender (Lu et al., 2016); this echoes the findings in the United States, where men are seen as more ambitious, competitive, and assertive (Eagly, Nater, Miller, Kaufmann, & Sczesny, 2020).

The impacts of gender on graphicon use have also been documented, as both global big data studies and self-reported surveys corroborate that women use emojis more often than men (e.g., Prada et al., 2018). While women expressed more positive attitudes toward graphicon use, men used emoticons almost exclusively in conversations with women rather than with other men (Lee, 2003). Women participants also reported that stickers are useful because they are cute (Kato, Kato, & Ozawa, 2018).

As posited by Ngai (2012), the relationship between the subject and a cute object involves a fundamental power differential, with the attributes of cuteness being deeply associated with the infantile and the feminine. Objects that feature cuteness represent an invitation to engage in prosocial behaviors through emotional reactivity (Dale, 2016). Since emotional expression is often ideologically linked with women (Eckert & McConnell-Ginet, 2013), while men are seen as less expressive in both offline (Eagly et al., 2020) and online (Wolf, 2000) settings, it is hypothesized that:

H4(a–b):   Women students, in comparison to men students, perceive cute stickers to be (a) more useful and (b) easier to use.

H5a: Women students, in comparison to men students, use more cute stickers on mobile messengers.

H5b: Gender moderates the relationship between nationality and cute sticker use, with Chinese women students using the most cute stickers on mobile messengers.

Nationality, Gender Role Beliefs, and Sticker Use

Despite the aforementioned similarities between the gender norms in the United States and China, China ranked 107 in terms of gender equality out of 156 participating regions, compared to the United States ranking of 30 (World Economic Forum, 2021). Moreover, the Confucian hierarchical social order that discriminates against women still dominates Chinese public and private spaces. As a result, Chinese advertising reinforced more gender stereotypes than its U.S. counterpart (Cheng, 1997).

Regarding communication patterns, more than half of Chinese college women often adopt affective sentence-final particles—including but not limited to "*a*" ("啊"), "*ma*" ("嘛"), "*ye*" ("耶"), and "*ha*" ("哈")—as a way to enact a cute speech style (Diao, 2016). As maintained by Ngai (2005), cutification largely overlaps with objectification and infantilization. Behaving in a cute manner involves innocence (Loveday, 1981), which is not taken as an indispensable feminine trait for U.S. women, as the U.S. population has reported increasing levels of gender equality over the past seven decades (Eagly et al., 2020). Based on the above reasoning, it is posited that:

H6a: Chinese students hold stronger gender role beliefs than U.S. students.

Moreover, rigid adherence to stereotypical gender roles also leads to men's incompetence in emotional expression (Wolf, 2000). Thus, in the study context, men students are expected to use cute stickers less frequently for emotional expression. Because cuteness is often associated with gender norms (Zebrowitz & Montepare, 2008), cute stickers are more likely to be used by women with strong gender role beliefs. Therefore, it is postulated that:

H6b: Gender moderates the relationship between gender role beliefs and cute sticker use, with women students using more cute stickers in comparison to men students.

According to social dominance theory (Sidanius & Pratto, 2001), individuals of the dominant groups tend to accept the existing social hierarchy more than subordinate groups, to make the most of the social system. In the patriarchal world, women who are in a subordinate position have stronger motivations to advocate for gender equality compared to men (Pratto, Stallworth, Sidanius, & Siers, 1997). Therefore, it is posited that:

H6c: Men students hold stronger gender role beliefs than women students.

Allocentrism and Sticker Use

The differences in cute sticker use patterns between U.S. and Chinese college students can be better understood in light of the culture-related, individual-level trait of allocentrism. It is important to differentiate individual-level traits (e.g., allocentrism) from cultural dimensions (e.g., collectivism), as not everyone in a society possesses all the characteristics of that culture (Triandis, 2001). According to Triandis, Leung, Villareal, and Clack (1985), individuals who score higher on allocentrism emphasize conformity, interdependence, and sociability. They tend to be more responsive to in-group members' concerns in order to fit into the environment (Triandis & Suh, 2002). Stickers in general are used to lighten the mood, clarify a message, and avoid awkwardness (Liu & Sun, 2020). Hence, it is anticipated that individuals with higher levels of allocentrism and a propensity for interdependent self-construal (Gudykunst et al., 1996) will use more cute stickers in mobile messaging. More formally, it is hypothesized that:

H7:   Allocentrism positively predicts cute sticker use.

Even though idiocentrism and allocentrism are not two ends of a single continuum but rather exist as two distinct variables (Oyserman, Coon, & Kemmelmeier, 2002), this study does not include idiocentrism (Triandis et al., 1985). First, prior research shows no cross-cultural difference in idiocentrism between Chinese and U.S. college students (Chen, 2013). Second, given the varying popularity of cute stickers in China and the United States, individuals who score higher on idiocentrism may either use stickers to present their unique identity or not use cute stickers because they do not want to adjust their ways of communicating. Therefore, only allocentrism is tested as a moderator in this study. Because cute stickers could help users present a more socially desirable image, it is reasonable to expect that gender and allocentrism will interact with the aforementioned technology and audience factors and affect cute sticker use. Yet, given the lack of work in this area, past research and theory provides little guidance for further conceptualization. The following research questions are thus proposed:

RQ2(a–b):   Does gender moderate the relationships between cute sticker use frequency and (a) perceived usefulness and (b) perceived ease of use?

RQ3(a–d):   Does allocentrism moderate the relationships between cute sticker use frequency and (a) perceived usefulness, (b) perceived ease of use, (c) gender role belief, and (d) nationality?

Finally, given that ICTAM only postulates correlations between different factors, alongside the infancy of cute sticker research, the following interrogative research question will be tested:

RQ4:   What is the mediator between nationality and cute sticker use?

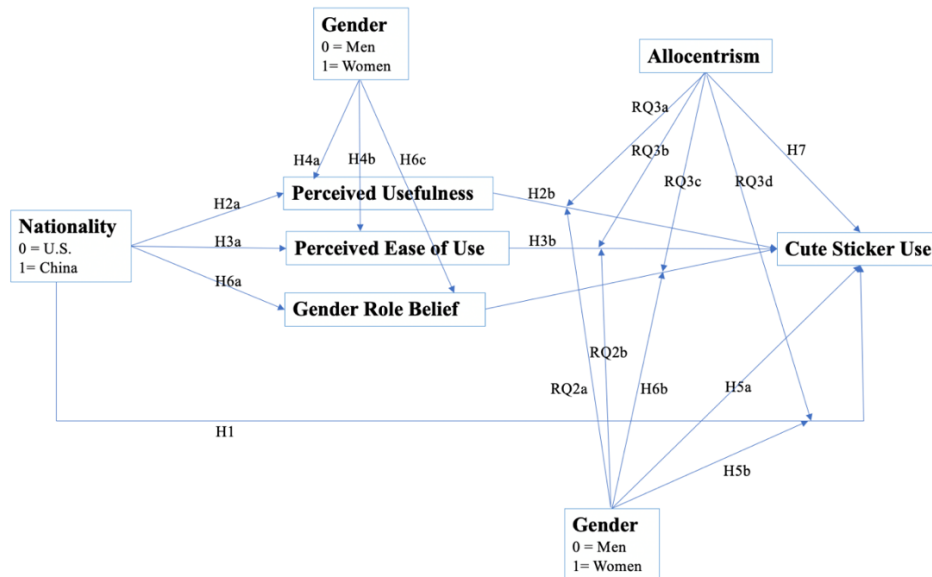The proposed conceptual model for this study is presented in Figure 3.

Figure 3. Proposed conceptual model.

Method

Procedure

Online surveys were administered through Qualtrics to collect data after IRB approval. This study's convenience sample comprised college students enrolled at a large northeastern university in the United States and a comparable eastern university in China. Both universities recruit students from diverse socioeconomic backgrounds. Because mobile messengers boast a high adoption rate in both countries (Mehner, 2022), and a vast majority of cute stickers are free of charge, participants' socioeconomic status may not be a key factor influencing cute sticker use. Sampling of this sort has been widely used in past work on cross-cultural communication (e.g., Yang et al., 2021). Moreover, college students are also a purposive sample, given that younger individuals self-report that they use more graphicons and identify more graphicon motives than older generations (Prada et al., 2018).

The first two screening questions asked participants if they use mobile messengers and stickers. Those who answered "no" were directed to the end of the questionnaire. A definition of cuteness—"attractive or pretty especially in a childish, youthful, or delicate way"—along with cute sticker examples that feature the baby schema (as shown in Figure 1) were then presented. Participants were also informed that "there are cute stickers that feature cartoons, pets, babies, etc." to describe the diverse characters of cute stickers. Only examples of stickers showcasing "cuteness" were provided as examples. All of the U.S. and Chinese participants saw the same examples of cute stickers before continuing with the survey. Half of the examples were from U.S. messengers, and half were from Chinese messengers, so each nationality of participants would see examples that may be more familiar to them. Participants then answered questions about specifically "cute" sticker use. An attention check was included midway through the questionnaire, and participants who failed the attention check were not included in the analysis. Moreover, only the students who reported to be born and living in the same country were included.

Additionally, measures were translated into Chinese and back into English by two bilingual authors to ensure semantic consistency. Specifically, "cute" was translated into "ke'ai" ("可爱") rather than "meng" ("萌"), because "meng" is a borrowed word ("moe," "萌え") from a specific genealogy of Japanese animation (Seta, 2014) not widely used by the general public. Also, the most proximate Japanese equivalent of "cute" is "kawaii" instead of "moe" (e.g., Nittono, 2016). Since cute stickers do not necessarily feature Japanese animation characters, "cute" was translated as "ke'ai" in the Chinese version of survey.

After data cleaning, 509 usable responses were retained: 304 (59.7%) from the United States, and 205 (40.3%) from China; 263 (51.7%) were women, and 238 (46.8%) were men. The average age of participants was 20.51 (SE = 2.48) years old. Out of the 304 U.S. participants, 56 indicated that they had never used stickers, while only one of the 205 Chinese participants reported no experience of using stickers on a mobile messenger. A Chi-square test showed a significant difference between the U.S. and Chinese students in terms of sticker use experience ($X^2(1)$ = 39.60, p < .001, *Cramer's V* = .28). So, the U.S. sample contained significantly more students who had never used stickers compared to the Chinese sample.

Among the 452 participants who reported their most frequently used messengers, 166 (36.7%) named their phone texting application; 69 (15.3%) selected Snapchat; 32 (7.1%) reported QQ; and 171 (37.8%) chose WeChat. Notably, the most frequently used mobile messengers barely overlapped between U.S. and Chinese college students. Specifically, only two Chinese students' favorite messenger is not WeChat or QQ, while only one U.S. student reported to use QQ or WeChat most frequently. A Chi-square test showed a significant difference between U.S. and Chinese students in terms of their most frequently used mobile messenger ($X^2(7) = 441.04$, $p < .001$, *Cramer's V* = .99).

Measures

Frequency of Cute Sticker Use

Participants reported their frequency of using static, animated, cartoon, real-life scene, and cartoon-and-real-life-scenes combination cute stickers on a Likert-type scale ranging from (1) "never" to (7) "always." The means of an additive index was used ($a = .93$, $M = 3.55$, SD = 1.85).

Belief in Traditional Gender Roles

The items from Brown and Gladstone (2012) were adapted. Participants were asked to assess on a Likert-type scale (1 = strongly disagree, 7 = strongly agree) based on their extent of agreement with statements, such as "Women with children should not work outside the home unless financially necessary" ($a = .86$, $M = 2.52$, SD = 1.10).

Allocentrism

Singelis, Triandis, Bhawuk, and Gelfand's (1995) Individualism and Collectivism Scale was adapted: The two collectivism subscales were combined to measure allocentrism (e.g., "It is important to maintain harmony within my group"; $a = .81$, $M = 5.11$, SD = .68).

Perceived Usefulness and Perceived Ease of Use

Five items about perceived usefulness from Davis (1989) were adapted. Items included "Cute stickers help me develop my communication style" ($a = .96$, $M = 4.87$, SD = 1.55). Participants also rated their perceived ease of use of cute stickers ($a = .89$, $M = 5.70$, SD = 1.08) on a seven-point Likert-type scale comprising four statements, such as "It's easy to use cute stickers on my most frequently used mobile messenger."

Demographics and Control Variables

Participants reported their gender (Men = 0, Women = 1) and nationality (United States = 0, China = 1). Most frequently used mobile messenger and daily messenger use time were also collected.

Results

        Descriptive statistics and zero-order correlations for all variables are reported in Table 1. Cute sticker use frequency was found significantly related to nationality ($r = .54$, $p < .001$), women gender ($r = .12$, $p = .01$), belief in traditional gender roles ($r = .22$, $p < .001$), perceived usefulness ($r = .70$, $p < .001$), and perceived ease of use ($r = .41$, $p < .001$), but not allocentrism ($r = .004$, $p = .930$). With all VIF indicators less than 2.00, there was no multicollinearity concern.

        The proposed research model was tested using Hayes's (2017) PROCESS procedure (Model 67) for analysis. Specifically, cute sticker use frequency and nationality served as the dependent and independent variables, respectively. Perceived usefulness, perceived ease of use, and gender role beliefs acted as three mediators, with gender and allocentrism being the moderators between the mediators and the dependent variable. Daily messenger use time was entered as the control variable. Results are presented in Table 2. The entire regression model was statistically significant ($F(15, 428) = 38.80$, $R^2 = .58$, $p < .001$).

Table 1. Zero-Order Correlations and Descriptive Statistics.

	1	2	3	4	5	6	7
1 Nationality (0 = United States, 1 = China)	-						
2 Cute sticker use	.54**	-					
3 Belief in gender roles	.27**	.22**	-				
4 Allocentrism	−.12**	.004	.17**	-			
5 Perceived usefulness	.56**	.70**	.13**	.07	-		
6 Perceived ease of use	.12**	.41**	−.09	.18**	.47**	-	
7 Gender (0 = M, 1 = F)	−.06	.12*	−.38**	.08	.03	.07	-
M		3.55	2.52	5.11	4.87	5.70	
SD		1.85	1.10	.68	1.55	1.08	

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

Path One: Nationality→Perceived Usefulness→Cute Sticker Use

        Path 1 investigates the mediating role of perceived usefulness between nationality and cute sticker use, with gender and allocentrism as moderators. H2a proposed that Chinese students would perceive cute stickers to be more useful compared to U.S. students, which was supported ($b = 1.90$, $SE = .18$, $p < .001$). A significant positive relationship between perceived usefulness and cute sticker use was also found ($b = .56$, $SE = .06$, $p < .001$), validating H2b. Turning to H4a—the relationship between gender and perceived usefulness—the results ($b = .37$, $SE = .17$, $p = .028$) indicated that women students indeed perceived cute stickers to be more useful compared to men students. Regarding the interaction effects, results showed that both gender ($b = −.19$, $SE = .08$, $p = .025$) and allocentrism ($b = .16$, $SE = .06$, $p = .008$) served as significant moderators for the relationship between perceived usefulness and cute sticker use. Specifically,

the impacts of perceived usefulness on cute sticker use were significant when allocentrism levels were low (men: *b* = .45, *SE* = .07, *p* < .001; women: *b* = .26, *SE* = .08, *p* < .001), medium (men: *b* = .56, *SE* = .06, *p* < .001; women: *b* = .37, *SE* = .06, *p* < .001), and high (men: *b* = .67, *SE* = .08, *p* < .001; women: *b* = .48, *SE* = .06, *p* < .001).

Additionally, the indirect effect of nationality on cute sticker use through perceived usefulness—using bootstrapping estimation with 5000 bootstrap samples and 95% confidence intervals (CIs)—showed that the effect was significant for both men and women across low allocentrism (men: *b* = .86, *SE* = .17, 95% CI [0.55, 1.22]; women: *b* = .43, *SE* = .12, 95% CI [0.21, 0.69]), medium allocentrism (men: *b* = 1.07, *SE* = .16, 95% CI [0.77, 1.40]; women: *b* = .62, *SE* = .10, 95% CI [0.44, 0.81]), and high allocentrism levels (men: *b* = 1.27, *SE* = .19, 95% CI [0.92, 1.66]; women: *b* = .80, *SE* = .12, 95% CI [0.58, 1.05]). Therefore, H2a, H2b, and H4a gained support, with RQ2a and RQ3a being answered with significant results.

Path Two: Nationality→Perceived Ease of Use→Cute Sticker Use

Path 2 examines the mediating role of perceived ease of use between nationality and cute sticker use, with gender and allocentrism as moderators. H3a predicted that Chinese students perceived cute stickers to be easier to use compared to U.S. students. The results confirmed this relationship (*b* = .33, *SE* = .15, *p* = .030). A significant positive relationship between perceived ease of use and cute sticker use was also found (*b* = .23, *SE* = .07, *p* = .002), validating H3b. In regard to H4b, the relationship between gender and perceived ease of use was not significant (*b* = .23, *SE* = .14, *p* = .106). Regarding the interaction effect, results showed that gender (*b* = −.04, *SE* = .10, *p* = .723) was not a significant moderator (RQ2b). However, in response to RQ3b, allocentrism (*b* = −.20, *SE* = .06, *p* = .002) significantly interacted with perceived ease of use to impact cute sticker use. Specifically, when allocentrism was at low and medium levels, the effects of perceived ease of use on cute sticker use for men (low: *b* = .36, *SE* = .08, *p* < .001; medium: *b* = .23, *SE* = .07, *p* = .002) and women (low: *b* = .33, *SE* = .08, *p* < .001; medium: *b* = .19, *SE* = .07, *p* = .006) were all significant. However, when allocentrism was high, the corresponding effects for men (*b* = .09, *SE* = .09, *p* = .324) and women (*b* = .05, *SE* = .08, *p* = .514) were not significant.

Furthermore, the indirect effect of nationality on cute sticker use through perceived ease of use, using the same bootstrapping estimation and CIs, showed that the effect was only significant for men when allocentrism levels were low (*b* = .12, *SE* = .06, 95% CI [0.005, 0.26]) and medium (*b* = .07, *SE* = .04, 95% CI [0.001, 0.17]). This indirect effect did not hold when allocentrism was high for men or in general for women. Thus, H3a, H3b, and RQ3b were supported, yet H4b and RQ2b were not validated.

Path Three: Nationality→Gender Role Beliefs→Cute Sticker Use

Path 3 tests the mediator of gender role beliefs between nationality and cute sticker use, with gender and allocentrism as moderators. H6a, which postulated that Chinese students held stronger gender role beliefs compared to U.S. students, was confirmed (*b* = .57, *SE* = .14, *p* < .001). Similarly, H6c was also supported, demonstrating that men students held stronger gender role beliefs than women students (*b* = −.73, *SE* = .13, *p* < .001). Results also showed that gender moderated the relationship between gender role beliefs and sticker use (*b* = −.21, *SE* = .09, *p* = .024). However, inconsistent with H6b, gender role

beliefs were positively related to sticker use only among men students at low (*b* = .21, *SE* = .08, *p* = .006), medium (*b* = .24, *SE* = .06, *p* < .001), and high (*b* = .28, *SE* = .07, *p* < .001) allocentrism levels. No significant effects were found among women students. Allocentrism did not emerge as a moderator for the relationship between gender role beliefs and cute sticker use (*b* = .05, *SE* = .05, *p* = .366).

Moreover, the indirect effect of nationality on cute sticker use via gender role beliefs, using the same bootstrapping estimation and CIs, showed that the effect was only significant for men when allocentrism levels were medium (*b* = .14, *SE* = .05, 95% CI [0.04, 0.25]) and high (*b* = .16, *SE* = .06, 95% CI [0.05, 0.28]). This indirect effect did not hold for women. So, H6a and H6c gained support, whereas the results failed to verify H6b and RQ3c. In response to RQ4, perceived usefulness emerged as a mediator between nationality and cute sticker use, while perceived ease of use and gender role beliefs mediated the relationship between nationality and cute sticker use contingent on gender and allocentrism levels.

Path Four: Nationality→Cute Sticker Use

Path 4 investigates the direct effect between nationality and cute sticker use in addition to the aforementioned indirect effects, with gender and allocentrism as moderators. H1, which predicted that Chinese students would use more cute stickers compared to U.S. students, was not supported (*b* = .14, *SE* = .18, *p* = .415). The results did not yield support for H5a, as the relationship between gender and cute sticker use (*b* = .06, *SE* = .15, *p* = .666) was not significant. However, an interaction effect between nationality and gender on cute sticker use was identified (*b* = .69, *SE* = .24, *p* = .004), such that Chinese women students used more cute stickers than their U.S. counterparts at low (*b* = .83, *SE* = .21, *p* < .001), medium (*b* = .81, *SE* = .16, *p* < .001), and high (*b* = .83, *SE* = .18, *p* < .001) allocentrism levels. Nationality did not affect cute sticker use frequency among men students. Regarding H7 and RQ3d, results showed that allocentrism was neither significantly related with cute sticker use (*b* = −.10, *SE* = .11, *p* = .339) nor was a moderator for the relationship between nationality and cute sticker use (*b* = .001, *SE* = .16, *p* = .997). Thus, H5b was significant, leaving H1, H5a, H7, and RQ3d unsupported.

Platform Differences

To address RQ1a and RQ1b, the most frequently used mobile messenger variable was transformed into four dummy coded variables (i.e., phone texting, WeChat, QQ, Snapchat) and entered into the same model as covariates to examine how platform differences influence cute sticker use. As demonstrated above, participants' most frequently used messenger was significantly influenced by their nationality. Thus, with the messenger variable being controlled, non-technology-related cultural differences are the focus. Results showed that, after controlling for platforms, women and Chinese students still perceived cute stickers to be more useful, compared to men (*b* = .36, *SE* = .17, *p* = .036) and U.S. students (*b* = 2.02, *SE* = .76, *p* = .009). However, there was no nationality (*b* = .29, *SE* = .64, *p* = .654) or gender (*b* = .20, *SE* = .14, *p* = .154) difference in perceived ease of use. There was a significant indirect relationship between nationality and cute sticker use via perceived usefulness for both men and women at different allocentrism levels, but the indirect relationship was not significant when the mediator was perceived ease of use. Interestingly, neither nationality (*b* = −1.11, *SE* = .57, *p* = .053) nor gender (*b* = .09, *SE* = .15, *p* = .532) had a main effect on cute sticker use, but gender moderated the relationship between nationality and cute sticker use

(F(1, 424) = 7.65, p = .006, b = .65, SE = .24). Specifically, when controlled for platforms, the negative effect of nationality on cute sticker use significantly differed between men and women at low allocentrism (men: b = −1.10, SE = .58, p = .059; women: b = −.44, SE = .60, p = .457), medium allocentrism (men: b = −1.11, SE = .57, p = .053; women: b = −.45, SE = .58, p = .435), and high allocentrism (men: b = − 1.12, SE = .58, p = .057; women: b = −.46, SE = .59, p = .430) levels.

Discussion

This study is a pioneer in exploring the cross-cultural differences involved in the use of "cute" stickers in mobile messaging. The objective was to test the predictability of the system, audience, and technology factors, and their interactions from the interactive communication technology adoption model in terms of cute sticker use.

Three moderated mediation relationships have been identified through this study. First, Chinese students scored higher than U.S. students on perceived usefulness of cute stickers, resulting in their higher frequency of cute sticker use. The relationship stayed even after controlling for messenger platforms. This is consistent with Pflug's (2011) study, which suggests that individuals from a higher-context culture used more graphicons in online forums than those from a lower-context culture. As human beings tend to use minor signs and symbols to convey "mutual evaluations" (Goffman, 1967, p. 33), this finding highlights the stronger need for individuals in China to use cute stickers to supplement mobile communication, regardless of platform affordances.

Table 2. Results of Analyses.

	Perceived Usefulness		Perceived Ease of Use		Gender Role Belief		Cute Sticker Use	
	b (SE)	p	b (SE)	p	b (SE)	p	b (SE)	p
Nationality	1.90 (.18)	<.001	.33 (.15)	.030	.57 (.14)	<.001	.14 (.18)	.415
Gender	.37 (.17)	.028	.23 (.14)	.106	−.73 (.13)	<.001	.06 (.15)	.666
Perceived usefulness	-	-	-	-	-	-	.56 (.06)	<.001
Perceived usefulness x gender	-	-	-	-	-	-	−.19 (.08)	.025
Perceived usefulness x allocentrism	-	-	-	-	-	-	.16 (.06)	.008
Perceived ease of use	-	-	-	-	-	-	.23 (.07)	.002
Perceived ease of use x gender	-	-	-	-	-	-	−.04 (.10)	.723
Perceived ease of use x allocentrism	-	-	-	-	-	-	−.20 (.06)	.002
Gender role belief	-	-	-	-	-	-	.24 (.06)	<.001
Gender role belief x gender	-	-	-	-	-	-	−.21 (.09)	.024
Gender role belief x allocentrism	-	-	-	-	-	-	.05 (.05)	.366
Nationality x gender	−.23 (.25)	.348	−.10 (.21)	.614	−.15 (.19)	.441	.69 (.24)	.004
Nationality x allocentrism	-	-	-	-	-	-	.001 (.16)	.997

Indirect effects	b (SE)	95% CI
Path 1 Nationality→Perceived Usefulness→Cute Sticker Use		
Men (low, medium, high allocentrism)	.86 (.17), 1.07 (.16), 1.27 (.19)	[.55, 1.22], [.77, 1.40], [.92, 1.66]

Women (low, medium, high allocentrism)	.43 (.12), .62 (.10), .80 (.12)	[.21, .69], [.44, .81], [.58, 1.05]
Path 2 Nationality→Perceived Ease of Use→Cute Sticker Use		
Men (low, medium, high allocentrism)	.12 (.06), .07 (.04), .03 (.04)	[.005, .26], [.001, .17], [−.04, .11]
Women (low, medium, high allocentrism)	.07 (.05), .04 (.03), .01 (.03)	[−.01, .18], [−.01, .11], [−.04, .07]
Path 3 Nationality→Gender Role Belief→Cute Sticker Use		
Men (low, medium, high allocentrism)	.12 (.06), .14 (.05), .16 (.06)	[−.001, .23], [.04, .25], [.05, .28]
Women (low, medium, high allocentrism)	−.001 (.04), .01 (.03), .03 (.04)	[−.08, .07], [−.05, .08], [−.05, .11]
Direct effect	*b (SE)*	*95% CI*
Path 4 Nationality→Cute Sticker Use		
Men (low, medium, high allocentrism)	.14 (.20), .14 (.18), .14 (.22)	[−.25, .53], [−.20, .49], [−.28, .57]
Women (low, medium, high allocentrism)	.83 (.21), .83 (.16), .83 (.18)	[.42, 1.24], [.52, 1.14], [.47, 1.19]

Even though women perceived cute stickers to be more useful compared to men, perceived usefulness has a stronger, positive effect on cute sticker use among men than women, which suggests that men's use of cute stickers is more purposive, whereas women use cute stickers habitually or just for fun. Additionally, individuals who scored higher on allocentrism also preferred to use more cute stickers. Because cuteness often "cute-ifies" the interlocutor and fosters empathic responsiveness and prosocial behaviors (Dale et al., 2017), such findings suggest that women and allocentrics have made more efforts to enrich mobile communication messages that otherwise would lack nonverbal cues.

Second, because of technology affordances of different messengers, Chinese students perceived cute stickers to be easier to use compared to U.S. students. The difference disappeared after messengers were controlled for, indicating that Chinese mobile messengers have tried to make cute stickers more easily accessible to meet the needs for higher-context communication within the culture. Additionally, perceived ease of use led individuals with low and medium allocentrism to adopt more cute stickers. Notably, perceived ease of use only explained why Chinese men use more cute stickers than U.S. men with low and medium allocentrism. The finding suggests that if U.S. mobile messengers provide more options and make cute stickers easier to use, individuals with lower levels of allocentrism would be more likely to use stickers. Given that cuteness induces the approach motivation (Kringelbach et al., 2016), our findings recommend that global messengers provide easier-to-use cute stickers to help express emotions and build closeness to facilitate mobile communication. For intercultural mobile communication that occurs more frequently during the pandemic, cute stickers also have the potential to help clarify message meanings and add emotions without language barriers. However, this opposes technological determinism to the extent that young men and women who are highly allocentric and are internally motivated to accommodate their communication and present a socially desirable image would be more likely to use cute stickers regardless of platforms. Only when internal motivations are low would the external factor (i.e., perceived ease of use) be influential.

Third, regardless of allocentrism levels, men participants who held stronger gender role beliefs used more cute stickers, while frequency of cute sticker use among women participants did not vary with their gender role beliefs, which is contrary to expectation. Women's frequent use of cute stickers can be interpreted as the internalization of social norms and prevailing aesthetic views in society. This is not

surprising because femininity is often associated with submissiveness and infantilization (e.g., Nam, Lee, & Hwang, 2011), and those who do not meet stereotypical gender expectations may experience backlash (Sirin, McCreary, & Mahalik, 2004).

Furthermore, previous studies have indicated that men predominantly use emoticons in conversations with women (Lee, 2003) rather than during communications with other men. Therefore, when being asked to report their cute sticker use patterns, men participants might have been primed to think about their interaction with women separately. Moreover, the gender role beliefs scale used in the current study focuses more on whether men should show courtesy to women, and men participants who scored higher on this scale might use cute stickers as a gesture to accommodate women's preferred communication style (e.g., Wolf, 2000) and present a friendlier message to them. This idea is supported by the finding that only when allocentrism levels were medium and high (meaning individuals were more willing to adjust their communication for the conversation) did stronger gender role beliefs lead Chinese men to use more cute stickers compared to their U.S. counterparts.

Lastly, direct relationships between nationality or gender and cute sticker use, other than the aforementioned significant indirect relationships, were not found to be significant. However, nationality influences cute sticker use only among women students, with Chinese women using more cute stickers across all allocentrism levels compared to U.S. women. This finding mirrors women's relative social status in both countries (World Economic Forum, 2021), as the pursuit of being cute has been criticized for driving women to act childish, innocent, and vulnerable to attract men's attention and prompt men's needs to protect them (Chuang, 2005). This idea also echoes the cross-cultural findings from Nam et al. (2011), where women from societies featuring lower gender equality status more frequently pose in childlike ways.

Interestingly, when controlled for platforms, the difference in cute sticker use between U.S. men students and Chinese men students relative to their women counterparts emerged significant. While conventional wisdom believes that being cute has wider appeals in East Asian countries (Dale et al., 2017), this finding reveals that cuteness appeals to U.S. men students more than Chinese men students. This phenomenon may be related to their stronger motivation to break gender stereotypes and higher acceptance of gender diversity. Although cuteness and active emotional expression are traditionally considered characteristic of women, U.S. men students presented the potential to embrace them given appropriate platforms. This result thus raises questions about why students in the U.S. still prefer to use messengers that seem to have lower levels of media richness, and whether their needs for cute stickers can be better met if U.S. mobile messengers (e.g., phone texting messengers) provide more cute stickers comparable to Chinese platforms (e.g., WeChat). More nuanced work exploring to what extent technology affordances reflect, reduce, or reinforce cross-cultural communication differences is warranted.

Limitations and Future Research

Several limitations should be noted for the current study. First, using a convenience sample of college students from China and the United States reduces the study's generalizability to other socioeconomic and age groups. Second, U.S. participants may be more likely to use memes and GIFs than their Chinese counterparts in mobile messaging, but it is not clear to what extent such graphicons were

considered as stickers in their self-report surveys. Third, although the cuteness culture flourishes in global media markets (Dale et al., 2017), it is still difficult to define "cute" objectively, and some participants may conflate cute stickers with funny ones. Even when participants did interpret a sticker as cute, there could have been social desirability concerns for men participants that led them to underestimate or underreport their cute sticker use frequency. Using cute stickers may be taken as a threat to their masculinity, and "people still expect men to be masculine and women to be feminine and reward and punish them accordingly" (Sirin et al., 2004, p. 120). Future such research should consider how to better explain cuteness to participants while encouraging men to report their cuteness-related behavior accurately. Lastly, future researchers will also benefit from controlling for the interpersonal relationships, such as constraining the study context to relational communication when studying sticker use, as individuals may adopt different communication styles and self-presentation strategies when they are communicating with different online audiences (Vasalou & Joinson, 2009).

Conclusion

This study extends past work on graphicon use by establishing that differences in how Chinese and U.S. college students use cute stickers are predicted by the interaction among cultural norms, gender role beliefs, technology affordances, gender, and allocentrism. The finding that Chinese women use more cute stickers than U.S. women provides support for the notion that gender moderates the relationship between nationality and cute sticker use. After controlling for platforms, however, U.S. men use more cute stickers than Chinese men, and the difference between the two groups is larger than that between U.S. women and Chinese women, which highlights the appeal of cuteness to men in the United States. Additionally, perceived usefulness mediates the relationship between nationality and cute sticker use for both men and women across different allocentrism levels. By contrast, perceived ease of use only explains why Chinese men adopt more cute stickers than U.S. men when their allocentrism levels are low and medium. The relationship is not significant after controlling for platforms, suggesting that technology affordances moderately affect cute sticker use. Gender role beliefs prove to be important in motivating Chinese men with medium and high levels of allocentrism to employ more cute stickers, compared to U.S. men. This trailblazing study's findings lead to further research to discover more about mobile messaging sticker use, both on macro/social and micro/psychological levels.

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