Difficult name, cold man: Chinese names, gender stereotypicality and trustworthiness

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*N*ames can play an important role in forming first impressions. While much of the literature has demonstrated how alphabet-based names influence impression formation, little is known about how character-based names (e.g., Chinese names) affect interpersonal trust. Across six studies, we demonstrated that a difficult-to-recognise Chinese name with less frequently used characters activated masculine perception, which in turn decreased trust in the name holder. The masculine inferences from difficult names were replicated across within-subjects (Study 1a and 1b) and between-subjects judgements and maintained irrespective of normative knowledge about difficult names as male names (Study 1c). The mediation of gender stereotypicality was manifested in both measured spontaneous gender inference (Study 2a and Study 2b) and manipulated gender information (Study 2c). The effects of recognisability on masculine and trust perceptions were independent of pronunciationability (Study 2b). This research extends previous research by revealing the implications of character-based names and pictographic language on the feeling-as-information theory, also in terms of interpersonal contexts.

Keywords: Name recognisability; Processing fluency; Gender stereotypicality; Trustworthiness; Social categorisation.

In social perception, especially first impression formation, name is a reliable source to infer demographic characteristics such as age, gender and ethnicity (Guevremont & Grohmann, 2015) and conveys impressions of the name holder's personalities such as kindness, intelligence and physical attractiveness (Mehrabian, 2001). While much of the literature has demonstrated how alphabet-based names (e.g., English names) influence impression formation of the name holders, little is known about how character-based names (e.g., Chinese names) influence interpersonal perception. Further, although researchers recently found that Chinese names difficult to recognise would reduce others' trust in the name holders (Xin et al., 2015), the underlying psychological mechanism remains unclear.

Xin et al. (2015) built the relation between Chinese names and trust based on the fluency hedonic principle stating that easier-to-process stimuli can always elicit positive evaluations. Similarly, people expressed greater trust on both individuals (Laham et al., 2012) and drugs (Song & Schwarz, 2009) with easy-to-pronounce names. However, the effects of easier-to-process stimuli depend on

people's interpretation of stimuli rather than on easy itself (Oppenheimer, 2008). For example, based on the fluency hedonic principle, people perceived easy-to-pronounce drugs as safe (Song & Schwarz, 2009), but if "technological disadvantage" is associated with easy-to-pronounce, people perceive easy-to-pronounce drugs as unsafe (Cho, 2015). Therefore, it is critical to investigate the meanings associated with easy-to-recognise Chinese names and how it would affect trust.

To address these gaps, the current research examines (a) how Chinese names affect gender perception as a basic social category and (b) whether the name-gender association mediates Chinese names' effects on the perception of trustworthiness—one of the most desirable characteristic across various social situations (Cottrell et al., 2007).

THE RECOGNISABILITY-GENDERED NAME HYPOTHESIS

Social categorisation, the subjective process of categorising other people based on shared characteristics (Dovidio & Gaertner, 2010), plays a vital role in interpersonal trust. When encountering strangers, people usually use social categorisation-based stereotypes to guide their attitudes (Macrae et al., 1994). Within different types of stereotypes, gender is one of the most basic social categories (McDermott, 1998) affecting trustworthiness. Slepian and Galinsky (2016) showed that people search for gender information as one of the most predominant social categories after knowing a stranger's name.

Studies on alphabet-based names have suggested that gender is symbolically associated with the pronunciation of names (Slepian & Galinsky, 2016). However, the Chinese language uses a logographic language writing system different from the alphabet system of English. In this logographic system, one Chinese character's pronunciation is often independent of its pictographic form. Taking the name "Trump" as an example, despite the same pronunciation, the alphabet-based name "Trump" can be written in different Chinese character-based forms, such as 特朗普, 特劭潜, and 特烺璞. Among the three Chinese forms of "Trump," one of the most significant differences is recognisability.

In the Chinese logographic system, one vital feature of names is recognisability, which is often characterised by the frequency of using its characters in ordinary life (Xin et al., 2015). Some pictographic symbols included in the above names are more frequently used in daily life, while others are not. For example, 普 is more frequently used than 潜 and 璞, and 朗 is more frequently used than 劭 and 烺. The recognisability of name characters affects people's metacognitive experience of fluency when processing a Chinese character-based name. Unique names with more peculiar characters make it difficult for others to process (Xin et al., 2015). For example,

despite identical pronunciation and spelling in English, 特烺璞, including three peculiar Chinese characters, is a difficult-to-recognise name, while 特朗普, including three frequently used characters, is an easy-to-recognise name.

Here, we first propose that the recognisability of Chinese names influences people's gender inference of the name holders such that difficult names are more likely to be perceived as male names. We refer to the above reasoning as a recognisability-gendered name hypothesis.

The extant literature provides indirect support for our proposition. First, previous studies have shown that names including more difficult-to-process elements would be perceived as more masculine. For example, female names often have an easier-to-pronounce vowel or sonorant sound (Slater & Feinman, 1985). Brand masculinity would be enhanced by stops (e.g., f, k), which obstruct process fluency (Guevremont & Grohmann, 2015). Also, voiced phonemes that require efforts to pronounce are strongly associated with male names (Slepian & Galinsky, 2016). It is then reasonable to speculate that a difficult-to-recognise character-based name may indicate its name holder to be a male. Moreover, in Chinese naming schema, name recognisability is closely associated with gender. Chinese male names usually consist of more infrequent graphemic characters than female names (Su et al., 2016). In a longitudinal nationwide study investigating 97,543,369 Chinese names (Su et al., 2016), the top 10 names' repetition percentages for males are always much lower than those for females from 1950 to 1990. This norm of naming may comprise laypeople's implicit knowledge (Unkelbach, 2006) that difficult-to-recognise names are more likely to be male names. Based on the above discussion, we suppose that people will infer masculinity from names using difficult characters.

Gender and trustworthiness

People rely on gender inferences to make trusting decisions. Females are stereotyped as higher on warmth (e.g., helpful, honest), while males are stereotyped as higher on competence (e.g., intelligent, efficient; Abele & Wojciszke, 2007). Warmth plays a more critical role than competence in interpersonal trust (Leach et al., 2007) since the former shows one's intent and determines our benign or vicious relationship with the stranger (Fiske, 2018). Therefore, targets with warmer faces are more likely to gain trust, such as receiving more money in trust games (Kong, 2018). Females are perceived as warmer than males, which helps females gain more interpersonal trust (Gueguen & Fischer-Lokou, 2004). Therefore, we further propose that name recognisability could affect trustworthiness via its activation of gender stereotypicality.

To sum up, the present research aims to examine the recognisability-gendered name hypothesis of Chinese names and its implication on the interpersonal judgement
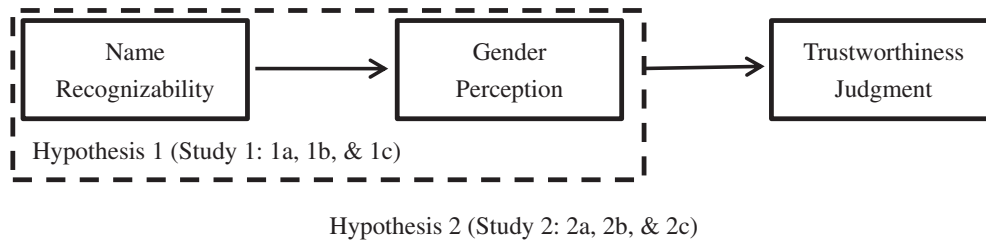
Figure 1. Hypotheses of the present research.

of trustworthiness. Based on our line of reasoning, we hypothesize that names with lower recognisability are more likely to be judged as male names (Hypothesis 1) and thus gain less trust (Hypothesis 2) (Figure 1).

Two studies (including six sub-studies) were conducted to test the hypotheses. Study 1 explored whether name recognisability can activate gender stereotypicality (H1). Adopting within-subjects designs, Studies 1a and Study 1b examined Hypothesis 1 by adopting artificial names and real-life names respectively. Study 1c ruled out some alternative explanations and adopted a between-subjects design. Study 2 further examined the mediating role of gender stereotypicality activation between name recognisability and trustworthiness judgement (H2). Studies 2a first affirmed H2 in a within-subject design study. Study 2b reconfirmed the mediating effect employing an alternative measurement of trust in a between-subject design and ruled out the possible influence of pronunciation. Study 2c further investigated the causal mediating effect of gender perception by manipulating gender information.

STUDY 1A GENDER STEREOTYPICALITY OF ARTIFICIAL CHINESE NAMES

Employing artificial names, Study 1a preliminarily examined whether participants would identify names with lower recognisability as more masculine.

Method

Participants

Thirty-one volunteers with no rewards were recruited through a link posted on WeChat[1] Moments (16 males; $M_{age} = 27.18$ years, $SD = 5.11$).

Materials and procedure

Ten artificial Chinese names were adopted from Xin et al. (2015)'s study as targets. The characters included in the names were all randomly selected from the character pool in Chinese national standard GB2312-80. According to the standard, Chinese characters could be divided into two classes. Characters in the first class are used more frequently, and those in the second class are used less frequently. To manipulate the recognisability of names, five difficult-to-recognise names were each composed of two characters in the second class, while the other five easy-to-recognise names were composed of two first class characters. These two types of names only differed in graphemic recognisability but not general attractiveness or allegorical attractiveness (Xin et al., 2015).

The 10 names were presented in a random order, and participants were asked to estimate each name holder's gender on a 5-point scale (from 1 = *definitely female* to 5 = *definitely male*). All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards. Informed consent was obtained from all individual participants included in the study.

Results and discussion

We averaged the participants' gender ratings for the difficult and easy name categories. A paired sample *t*-test showed that participants perceived difficult names ($M = 3.66$, $SD = 0.60$) as significantly more masculine than easy names ($M = 3.37$, $SD = 0.62$), $t (30) = 2.17$, 95% CI [0.02, 0.55], $p = 0.038$, $d = 0.38$.

Study 1a supported H1 that difficult-to-recognise names are considered more masculine. However, the difficult-to-recognise names in this study seemed not like real names, which may impede the ecological validity of the study. Moreover, the sample size in Study 1a was insufficiently powered. The yielded $d = 0.38$ was lower than the projected effect size $d = 0.52$ from sensitivity power analysis to achieve a power of 0.80 ($\alpha = .05$). Therefore, Study 1b further adopted real names and larger sample sizes to replicate the findings.

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[1] WeChat is a Chinese App with the functions of messaging, social media and mobile payment.

STUDY 1B GENDER STEREOTYPICALITY OF REAL CHINESE NAMES

Method

Participants

Two hundred and fifty-seven adults (108 males; M_{age} = 30.89 years, SD = 8.49) were recruited via WeChat. Participants completed an online questionnaire and were rewarded (a randomised amount ranging from 0.01 to 5 *yuan* RMB) with a WeChat Red Packet.[2]

Procedure and materials

The design and procedure were the same as Study 1a. Regarding the targets, 10 real names, including five difficult-to-recognise and five easy-to-recognise names, were adopted from a student name list as in Xin et al. (2015).

Results and discussion

The results of a paired sample *t*-test showed that participants felt more difficult to process difficult-to-recognise names (M = 3.69, SD = 0.87) than easy-to-recognise names (M = 1.87, SD = 0.92), t (256) = 23.06, 95% CI [1.67, 1.98], $p < .001$, d = 1.04. Participates were more likely to perceive difficult-to-recognise names as males' names (M = 3.82, SD = 0.60) compared to easy-to-recognise names (M = 2.94, SD = 0.46), t (256) = 20.09, 95% CI [0.79, 0.97], $p < .001$, d = 1.26. The achieved effect sizes (i.e., d = 1.04, 1.26) were higher than the minimum effect size that can be reliably detected (i.e., d = 0.25), with a power of 0.80 ($α$ = .05, two-tailed).

Using real names, Study 1b reconfirmed H1 that names with lower recognisability are more likely to be identified as masculine. The consistent findings of Study 1a and Study 1b suggested that the metacognitive feeling of fluency can activate social-categorisation stereotypicality.

However, the above studies may arise other concerns. First, within-subject designs in studies 1a and 1b may induce a demand effect. By comparing the difference between easy and difficult names, participants may guessed our purpose and showed the demanded behaviours. Second, besides recognisability, there may be an alternative mechanism that individuals explicitly know the norm that male names have more rare Chinese-characters. Hence, we addressed the demand effect by using a between-subjects design, and tested whether the norm mentioned above is explicitly known in Study 1c.

STUDY 1C BETWEEN-SUBJECTS PERCEPTION AND ALTERNATIVE MECHANISMS

Method

Participants

A priori power analysis (calculated in G*power 3.1) was conducted based on the overall effects sizes of previous studies (d = 0.90), which yielded a required sample of N = 42 to detect the between-subject recognisability effect on gender perception to achieve a power of 0.80 ($α$ = .05). Eighty-seven individuals (42 males; M_{age} = 26.15 years, SD = 5.69) participated in the experiment in exchange for payment of five *yuan* RMB.

Procedure and materials

Participants were first randomly assigned to either the difficult-to-recognise name group (n = 37) or the easy-to-recognise name group (n = 50). In both groups, each participant received a list of five two-character names (difficult-to-recognise in the difficult group, easy-to-recognise in the easy group). Names employed in Study 1c were the same as in Study 1b. Participants rated each name's recognisability (1 = *very easy to recognise* to 5 = *very difficult to recognise*), and estimated each name holder's gender (1 = *definitely female* to 5 = *definitely male*).

To test whether there is a commonly known rule that male names are more difficult to recognise, participants in both groups finally evaluated their agreements on the statement that "men have more rare characters in their names than women" on a 7-point scale (1 = *definitely false* to 7 = *definitely true*). To obscure experimental purpose, they also evaluated the other five arguments (see in Appendix).

Results and discussion

Manipulation check

Independent-samples *t*-tests showed that names in the difficult group (M = 3.58, SD = 0.69) were perceived as significantly more difficult to recognise than those in the easy group (M = 2.34, SD = 0.70), t (85) = −8.24, 95% CI [−1.54, −0.94], $p < .001$, d = 1.34.

Participants' masculinity perception of name holders were significantly higher in the difficult group (M = 3.60, SD = 0.39) than in the easy group (M = 3.10, SD = 0.44), t(85) = −5.51, 95% CI [−0.69, −0.32], $p < .001$, d = 1.19. The achieved effect size was higher than the minimum effect size that can be reliably detected (i.e., d = 0.39),

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[2] With the function, money can be randomly distributed to each recipient in a chat group.

with a power of 0.80 (α = .05, two-tailed). Moreover, one sample *t*-test showed that participants' agreement on the statement "men have more rare characters in their names than women" was not significantly different from the scale midpoint 4.0 of the 7-point scale[3] (M = 3.80, SD = 1.35), $t(86)$ = −1.36, 95% CI [−0.48, 0.09], p = 0.19. It suggested that participants were generally not aware of, or sure about, the norm that male names are more difficult to recognise. Taken together, the effect of name recognisability on gender perception could be attributed to neither the experimenter demand effect nor natives' explicit knowledge about difficult names as male names.

Overall, Study 1 supported H1 that name recognisability can activate people's gender perception of name holders. Study 2 will further examine H2, the mediating role of gender stereotypicality activation in the focal link.

STUDY 2A NAMES, GENDER PERCEPTION AND TRUSTWORTHINESS

Method

Participants

Thirty-six undergraduates (14 males; M_{age} = 18.61 years, SD = 0.83) participated in the experiment anonymously and voluntarily during a psychology class in exchange for course credits.

Procedure and materials

Participants were first asked to indicate the extent to which they trust each name holder in a random sequence in an imaginary trust game, and then indicate the recognisability of each name and gender estimation of each name holder. Names employed in Study 2a were the same as in Study 1b.

Specifically, in the imaginary trust game, each participant received a list of 10 two-character names (five difficult-to-recognise, five easy-to-recognise) and was asked to imagine that they would interact with each name holder in a trust game. The rule of the trust game was as follows: Each participant had 100 thousand *yuan* as the initial endowment. First, they could give *x yuan* to the name holder, and then the name holder would get *3x yuan*. To requite the participant, the name holder would then give *y yuan* from *3x yuan* they received to the participant. The requited *y yuan* was determined by the name holder and not related to *x*. In each trust game, participants were asked to indicate the amount of *x* they chose to give on a 5-point scale (1 = 20 *thousand yuan*, 2 = 40

Table 1

Means, standard deviations and inter-correlational correlations of name recognisability (difficulty), masculine and trustworthiness perception

	M	SD	1	2
1 Name Recognisability (Difficulty)	2.64	1.57	–	
2 Masculine	3.33	1.27	0.23**	–
3 Trustworthiness perception (Ten thousand *yuan*)	4.46	2.23	−0.16**	−0.15**

Note: Difficult names (M = 3.82, SD = 0.93) were felt significantly more difficult to recognise than easy names (M = 1.46, SD = 0.77), $t(35)$ = 11.81, 95% CI [1.96, 2.77], $p < .001$, d = 1.80. **$p < .01$.

thousand yuan, 3 = 60 *thousand yuan*, 4 = 80 *thousand yuan* and 5 = 100 *thousand yuan*). The scores were finally transformed to the amounts (ten thousand *yuan*) participants intended to invest to each name holder, with higher amounts indicating higher levels of trust to the name holder.

After the imaginary trust games, participants rated each name's recognisability (1 = *very easy to recognise* to 5 = *very difficult to recognise*), and estimated each name holder's gender (1 = *definitely male* to 5 = *definitely female*). We reversed participants' initial scores of gender perception such that higher scores represent higher levels of masculinity. Therefore, the positive correlation between name recognisability and gender perception should indicate that people interpret more difficult names as male names.

Results and discussion

The descriptive statistics and inter-correlations of variables are presented in Table 1: difficult names are positively related to perceived masculinity and negatively related to trustworthiness perception. Masculinity perception is negatively related to trustworthiness. Sensitivity analysis showed that all correlation coefficients were higher than the minimum effect size that can be reliably detected (i.e., r = .14), with a power of 0.80 (α = .05, two-tailed).

We then examined whether name recognisability influenced trustworthiness through gender perception employing the PROCESS macro (Model 4, with 5000 bootstrapping samples) for SPSS (Hayes, 2013) including participants' gender in the model as a covariate.[4] As shown in Figure 2, gender stereotypicality mediated the negative effect of name difficulty on trustworthiness, B = −0.04, SE = 0.02, 95% CI [−0.09, −0.01]. Specifically, participants were more likely to consider difficult names as male names, which in turn decreased their trust in the name holders.

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[3] Scores for all statements were shown in Table A2 in the Appendix.

[4] Controlling participants' gender as covariate did not change the patterns of results in both Study 2a and 2b.

Findings of Study 2a confirmed H2 that people associated difficult names holders with males and thus trust them less. But some limitations should be noted. First, factors related to pronounceability might have driven the effect. To empirically examine this possibility, Study 2b adopted two names with the same pronunciation but different characters as the stimulus. Second, to further generalise the findings, Study 2b employed an alternative measurement of trust. Third, the within-subjects design may induce a demand effect. To address this issue, Study 2b used a between-subject design.

STUDY 2B BETWEEN-SUBJECTS DESIGN AND ALTERNATIVE MECHANISMS

Method

Participants

A priori power analysis (calculated in G*power 3.1) was conducted based on the overall effects sizes in the previous studies ($d = 0.61$), which yielded a required sample of $N = 88$ to detect the between-subject recognisability effect on trust perception at the alpha level of 0.05 to achieve a power of 0.80. Ninety-two individuals (43 males; $M_{age} = 23.97$ years, $SD = 6.38$) were finally recruited in exchange for payment of five *yuan* RMB.

Procedure and materials

Participants were first randomly assigned to either the easy-to-recognise group ($n = 48$) or the difficult-to-recognise group ($n = 44$). Participants imaged that they were going hiking in unfamiliar territory and received a name labelled with pinyin signalling its pronunciation. As the measure of trust, participants answered how likely (*1 = very unlikely, 7 = very likely*) they will trust the name holder as his or her guide (Johnsongeorge & Swap, 1982). Then they rated the name's recognisability (*1 = very easy to recognise* to *5 = very difficult to recognise*) and estimated the name holder's gender (*1 = definitely female* to *5 = definitely male*). The name is "逸诗" in the easy-to-recognise group while "翌爽" in the difficult-to recognise group. Both names have the same pronunciation as "Yi Shi" while characters in the former name are more frequently used than those in the latter one (Institute of Linguistics Application of Chinese Academy of Social Sciences, 1991).

Results and discussion

Manipulation check

As intended, independent-samples *t*-tests showed the name "翌爽" in the difficult group ($M = 4.11, SD = 1.01$)

Table 2
Descriptive statistics and inter-correlational correlations of name recognisability (difficulty), masculine and trustworthiness perception

	M	SD	1	2
1 Name Recognisability (Difficulty)	3.26	1.27	–	
2 Masculine	2.63	0.99	0.46**	–
3 Trustworthiness perception	4.51	1.44	−0.40**	−0.36**

**$p < .01$.

was significantly more difficult to recognise than the name "逸诗" in the easy group ($M = 2.48, SD = 0.92$), $t(90) = -8.09, 95\%$ CI $[-2.04, -1.23], p < .001, d = 1.29$.

Participants' masculinity perception of name holder was significantly higher in the difficult group ($M = 3.25, SD = 0.86$) than in the easy group ($M = 2.06, SD = 0.73$), $t(90) = -7.15, 95\%$ CI $[-1.52, -0.86], p < 0.001, d = 1.19$. Participants also expressed less trust to the difficult-to-recognise name holder ($M = 3.89, SD = 1.42$) than to the easy-to-recognise name holder ($M = 5.08, SD = 1.22$), $t(85) = 4.32, 95\%$ CI $[0.65, 1.74], p < .001, d = 0.83$. These achieved effect sizes (i.e., $d = 1.19$ and $d = 0.83$) were higher than the minimum effect size that can be reliably detected (i.e., $d = 0.59$), with a power of 0.80 ($\alpha = .05$, two-tailed).

The descriptive statistics and inter-correlations of variables are presented in Table 2. Difficult names are positively related to masculinity and negatively related to trustworthiness perception. Masculinity is negatively related to trustworthiness. Sensitivity analysis showed that all correlation coefficients were higher than the minimum effect size that can be reliably detected (i.e., $r = .29$), with a power of 0.80 ($\alpha = .05$).

We then examined whether name recognisability influenced trustworthiness through gender perception employing the PROCESS macro (Model 4, with 5000 bootstrapping samples) for SPSS (Hayes, 2013), including participants' gender in the model as covariates. As shown in Figure 3, gender stereotypicality mediated the negative effect of name difficulty on trustworthiness, $B = -0.12, SE = 0.06, 95\%$ CI $[-0.25, -0.01]$.

Using a between-subjects design and a different measure of trust, the findings confirmed that the difficult name was perceived as more masculine, thus gaining less trust for the name holder. Moreover, by adopting two names with the same pronunciation, these results suggested that the effect of recognisability on both masculine and trustworthiness perception could not be attributed to pronunciationability.

However, by measuring rather than manipulating gender stereotypicality, Studies 2a and 2b failed to affirm the causal mediating effect of gender perception. To further
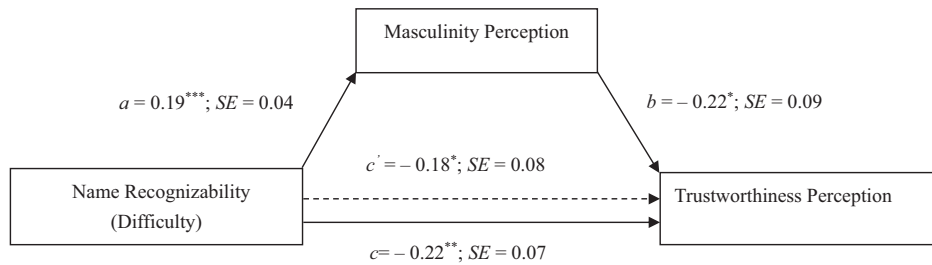
Figure 2. The mediation model (N = 359) for the effect of name recognisability on trustworthiness perception through masculinity perception after controlling for participants' gender (female = 0 and male = 1). $^{***}p < .001$, $^{**}p < .01$, $^*p < .05$.
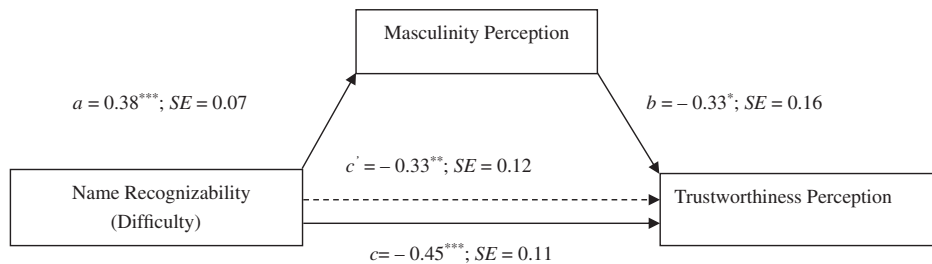

Figure 3. The mediation model (N = 92) for the effect of name recognisability on trustworthiness perception through masculinity perception after controlling for participants' gender (female = 0 and male = 1). $^{***}p < .001$, $^{**}p < .01$, $^*p < .05$.

corroborate the causal mediating effect, Study 2c manipulated both name recognisability and gender information. We proposed that the positive effect of name recognisability on trustworthiness judgement would decrease when participants received gender information as opposed to the estimated gender.

STUDY 2C NAMES, GENDER INFORMATION MANIPULATION AND TRUSTWORTHINESS

Method

Participants

Fifty-seven (23 males; M_{age} = 23.00 years, SD = 1.67) students were recruited to participate in the experiment anonymously and voluntarily in exchange for course credits by a teacher blinded to our research purpose.

Experimental design

Study 2c used a 2 (name recognisability: difficult vs. easy) ×2 (gender information: compatible vs. incompatible with the estimated gender) mixed design. Specifically, name recognisability was a within-subjects variable, while gender information was a between-subjects variable.

Procedures

Participants were randomly assigned to two gender information conditions. They first received information about their partners' names and gender and then were asked to indicate their trust in a trust game scenario as in Study 2a. Specifically, all participants first received a list of 10 names (five difficult-to-recognise and five easy-to-recognise) as in Study 1b. At the same time, each name holder's gender information was provided as either compatible (n = 23) or incompatible (n = 34) the name's projected gender. In the compatible condition, male partners had difficult names, while female partners had easy names; vice versa in the incompatible condition. Then, participants were asked to indicate the amount of money they chose to give as in Study 2a.

Results and discussion

To examine the causal mediating effect, a two-factor mixed analysis of variance (ANOVA) was conducted. The main effect of name recognisability was significant, $F(1, 55)$ = 6.10, $p < .05$, η_p^2 = .10, such that participants trusted people with easy-to-recognise names more than those with difficult-to-recognise names. There was no significant main effect of gender information manipulation, $F(1, 55)$ = 0.50, p = .48, η_p^2 = .01.

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[5] An alternative three-factor mixed ANOVA analyses were conducted with the participant's sex as the third factor. The interaction between name recognisability and gender information on trustworthiness remained significant. Detail results were provided in the Appendix. Age has no effects on our main findings in all six studies.
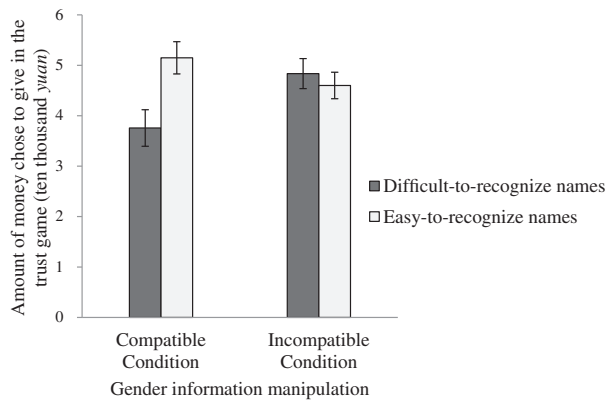
Figure 4. The effect of name recognisability on trustworthiness perception with manipulated gender information. Error bars represent the standard error of the mean.

Furthermore, as expected, the interaction between name recognisability and gender information on trustworthiness was significant[5] (Figure 4), $F(1, 55) = 12.07$, $p < .01$, $\eta_p^2 = .18$. Specifically, in the compatible condition, participants expressed more trust to people with easy-to-recognise ($M = 5.15$, $SD = 0.32$) than difficult-to-recognise names ($M = 3.76$, $SD = 0.36$), $t(22) = 3.30$, 95% CI [0.52, 2.27], $p < .001$, $d = 0.64$, which replicated the results of Study 2a. However, in the incompatible condition, there was no difference between easy-to-recognise ($M = 4.60$; $SD = 0.26$) and difficult-to-recognise names ($M = 4.83$; $SD = 0.30$), $t(33) = -0.91$, 95% CI [−0.76, 0.29], $p = .371$, $d = 0.18$.

In line with findings in Study 2a and 2b, Study 2c affirmed the causal mediation effect of gender perception by manipulating name recognisability and gender information simultaneously. A difficult-to-recognise name evoked male gender inference of its holder, thus inducing less trust. These findings reconfirmed H2 and illuminated the effect of name processing fluency on social judgements through gender stereotypicality priming.

One limitation of Study 2c is that the actual effect size of the interaction effect was 0.18, which was lower than the minimum detectable effect size of 0.19 to achieve a power of 0.80 ($\alpha = .05$). However, meta-analyses of the effects of names on trustworthiness and gender perception suggested that the presumed effects were sufficiently powered (see Appendix).

GENERAL DISCUSSION

We examined how Chinese names' recognisability influenced people's inferences of gender and interpersonal trust across two studies (six sub-studies). Employing both artificial and real Chinese names, we provided consistent evidence for our recognisability-gendered name hypothesis. That is, difficult-to-recognise names were more likely to be perceived as masculine. The effect persisted irrespective of common known rules and pronunciatioability. Moreover, we found the perception of difficult names as males reduced the perceived trustworthiness of name holders. The mediation effect of gender perception was affirmed using different measurements of trust through both measuring and manipulating gender.

As the very first investigation into the relationship among Chinese name recognisability, gender stereotypicality and trustworthiness judgement, the current research is subject to limitations. First, we adopted an imaginary trust game to measure trustworthiness, capturing attitudinal trust instead of actual behavioural trust. Therefore, it is worth to strengthen the findings' ecological validity by employing behavioural measures of trust. Second, in Study 2c, although the difficult-masculinity link was consistently demonstrated in the current work, the effect was somewhat underpowered.

Practical and theoretical implications

Broadening understandings about glyphic language cultures

Character-based glyphic languages (e.g., Chinese) are quite different from alphabet-based phonetic languages (e.g., English). English name's sounds can symbolise traits and categories such that voiced phonemes signal male identity (Slepian & Galinsky, 2016), while little is known about the underlying mechanisms of character-based names in glyphic languages. For the first time, to the best of our knowledge, the current work demonstrated the recognisability-gendered hypothesis of Chinese names.

Deepening our interpretations about underlying mechanisms of fluency

The majority of previous studies on fluency have focused on the fluency-is-good hypothesis, suggesting that fluency itself activates people's positive attitudes toward stimulus (Song & Schwarz, 2009). The direct effect of name recognisability on trust supported this hypothesis. It was revealed that fluency influenced judgements through indirect routes by activating related naïve theories (Oppenheimer, 2008). Our findings revealed a new indirect route (gender stereotypicality) between Chinese name recognisability and trustworthiness judgement. This indirect route theoretically indicates that fluency-is-good effects are malleable and practically provides feasible suggestions to eliminate the negative impact of difficult names. That is, although we found a negative effect of difficult names in the current research, the difficult-masculinity link of difficult names may exert positive effects in certain conditions. For example, people

with difficult names may have advantages in getting jobs in stereotypically male occupations like the mechanic, lorry driver and so on.

Bridging disciplines between metacognitive feeling and gender perception

By illuminating the implications of the recognisability-gendered name effect on trust judgement, our work broadly echoes and extends the importance of metacognitive feeling in social interaction (Greifeneder et al., 2011). Most previous indirect routes of fluency were confined to naïve theories about attribution knowledge (e.g., easy as understandable or easy as memorable; Labroo et al., 2009). We expanded fluency's role to prototypical cues of social categorisation, in particular, the link between name recognisability and gender perception.

This expansion is firstly theoretically important for researches on fluency. Previous studies based on both direct effects of easy-is-good hypothesis and indirect effects of susceptible naïve theories suggested that fluency is a maladaptive cue yielding biased perceptions (Stefan & Ralph, 2013). However, our results suggest that fluency can be adaptive to, for example, guide our choices of trustees in first social encounters. Despite unawareness of the norm that male names have more infrequent graphemic characters in Chinese culture, individuals perceived difficult Chinese name holders more masculine. The results suggest that fluency can, at least in some domains, heuristically reflect the properties of our world and navigate self-beneficial choices in the social world. Future studies could explore name recognisability's validity in reflecting other social properties.

Secondly, our findings revealed a new implicit cue of gender. Gender categorisation is an interactive ongoing process, for example, people tended to categorise a slightly sex-ambiguous male face paring with a sex-atypical voice (i.e., feminised male voice) as female and a sex-ambiguous face pairing with a male name as male (Huart et al., 2005). Future studies can explore how name recognisability influences gender perception interactively with other cues (e.g., voices, faces).

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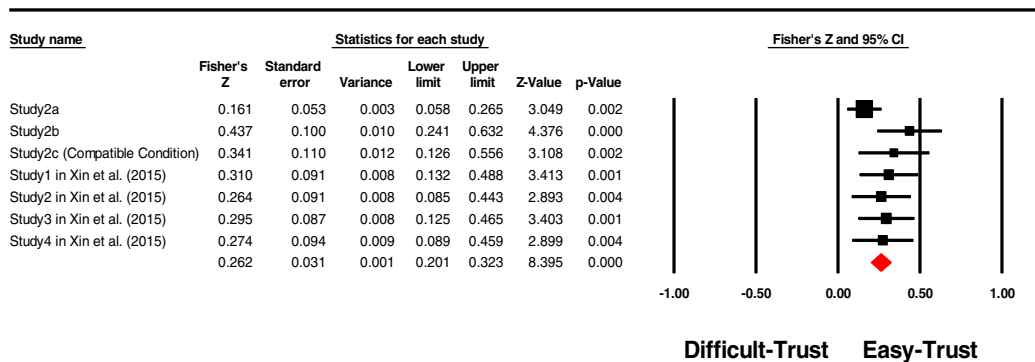
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APPENDIX FOR "DIFFICULT NAME, COLD MAN: CHINESE NAMES, GENDER STEREOTYPICALITY AND TRUSTWORTHINESS"

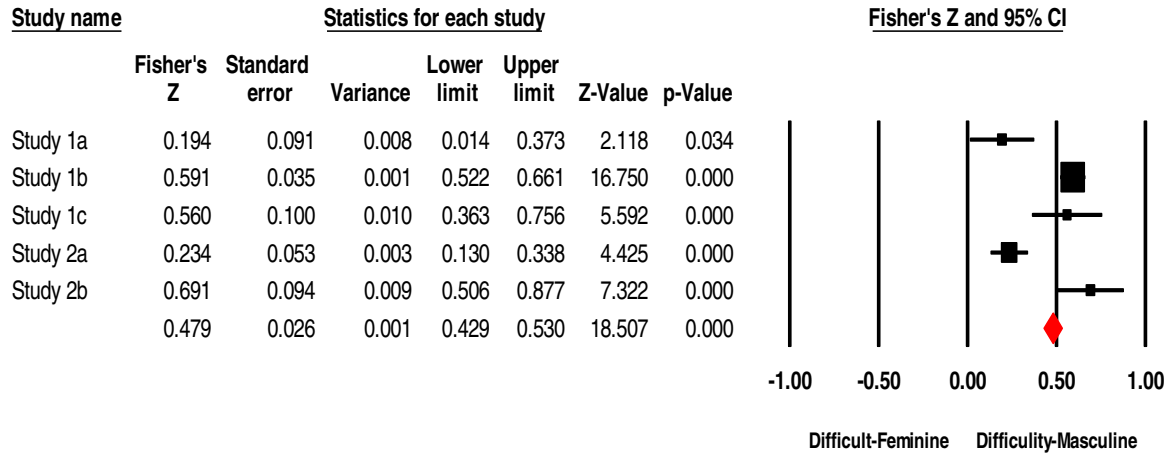## Results of Study 2c including Participants' Gender

Considering that the gender of the "trustor" may interact with the gender of the "trustee," we included the gender of the participants as the third factor and conducted a three-factor mixed ANOVA. As expected, the interaction between name recognisability and gender information on trustworthiness was still significant (Figure A4), $F(1, 53) = 8.68$, $p = .005$, $\eta_p^2 = .14$. Specifically, in the compatible condition, participants expressed more trust to people with easy-to-recognize names ($M = 5.15$; $SD = 0.32$) than difficult-to-recognize names ($M = 3.76$; $SD = 0.36$), $F(1, 55) = 14.80$, $p < .001$, which replicated the results of Study 2a. While in the incompatible condition, there was no difference between easy-to-recognize names ($M = 4.60$; $SD = 0.26$) and difficult-to-recognize names ($M = 4.83$; $SD = 0.30$), $F(1, 55) = 0.63$, $p = .432$.

The main effect of name recognisability was marginal significant, $F(1, 53) = 6.10$, $p = .052$, $\eta_p^2 = .07$, such that participants trusted people with easy-to-recognize names more than those with difficult-to-recognize names. The interaction between participant's gender and gender information was marginal significant, $F(1, 53) = 3.87$, $p = .055$, $\eta_p^2 = .07$. The main effect of gender information manipulation was not significant, $F(1, 53) = 1.76$, $p = .19$, $\eta_p^2 = .03$. The main effect of participant's gender was not significant, $F(1, 53) = 1.44$, $p = .24$, $\eta_p^2 = .03$. The three-factor interaction was not significant either, $F(1, 53) = 0.54$, $p = .47$, $\eta_p^2 = .01$.

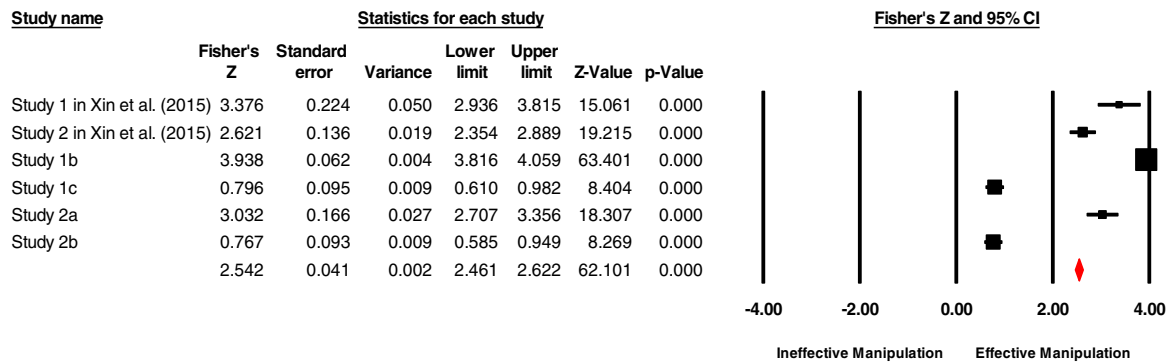| Study name	Fisher's Z	Standard error	Variance	Lower limit	Upper limit	Z-Value	p-Value
Study2a	0.161	0.053	0.003	0.058	0.265	3.049	0.002
Study2b	0.437	0.100	0.010	0.241	0.632	4.376	0.000
Study2c (Compatible Condition)	0.341	0.110	0.012	0.126	0.556	3.108	0.002
Study1 in Xin et al. (2015)	0.310	0.091	0.008	0.132	0.488	3.413	0.001
Study2 in Xin et al. (2015)	0.264	0.091	0.008	0.085	0.443	2.893	0.004
Study3 in Xin et al. (2015)	0.295	0.087	0.008	0.125	0.465	3.403	0.001
Study4 in Xin et al. (2015)	0.274	0.094	0.009	0.089	0.459	2.899	0.004
	0.262	0.031	0.001	0.201	0.323	8.395	0.000

Difficult-Trust   Easy-Trust

Meta Analysis

Figure A1. Meta-analysis of the effect of name-recognisability on trustworthiness. The meta-analysis also incorporated three studies from a previous research article (Xin et al., 2015) examining the same variables.

Study name	Statistics for each study							Fisher's Z and 95% CI
	Fisher's Z	Standard error	Variance	Lower limit	Upper limit	Z-Value	p-Value	
Study 1a	0.194	0.091	0.008	0.014	0.373	2.118	0.034	
Study 1b	0.591	0.035	0.001	0.522	0.661	16.750	0.000	
Study 1c	0.560	0.100	0.010	0.363	0.756	5.592	0.000	
Study 2a	0.234	0.053	0.003	0.130	0.338	4.425	0.000	
Study 2b	0.691	0.094	0.009	0.506	0.877	7.322	0.000	
	0.479	0.026	0.001	0.429	0.530	18.507	0.000	

-1.00   -0.50   0.00   0.50   1.00

Difficult-Feminine   Difficulity-Masculine

Meta Analysis

Figure A2. Meta-analysis of the effect of name-recognisability on gender perception.

Study name	Statistics for each study							Fisher's Z and 95% CI
	Fisher's Z	Standard error	Variance	Lower limit	Upper limit	Z-Value	p-Value	
Study 1 in Xin et al. (2015)	3.376	0.224	0.050	2.936	3.815	15.061	0.000	
Study 2 in Xin et al. (2015)	2.621	0.136	0.019	2.354	2.889	19.215	0.000	
Study 1b	3.938	0.062	0.004	3.816	4.059	63.401	0.000	
Study 1c	0.796	0.095	0.009	0.610	0.982	8.404	0.000	
Study 2a	3.032	0.166	0.027	2.707	3.356	18.307	0.000	
Study 2b	0.767	0.093	0.009	0.585	0.949	8.269	0.000	
	2.542	0.041	0.002	2.461	2.622	62.101	0.000	

-4.00   -2.00   0.00   2.00   4.00

Ineffective Manipulation   Effective Manipulation

Meta Analysis

Figure A3. A meta-analysis of the effect of name-recognisability manipulation. Two studies from a previous research article (Xin et al., 2015) were incorporated.
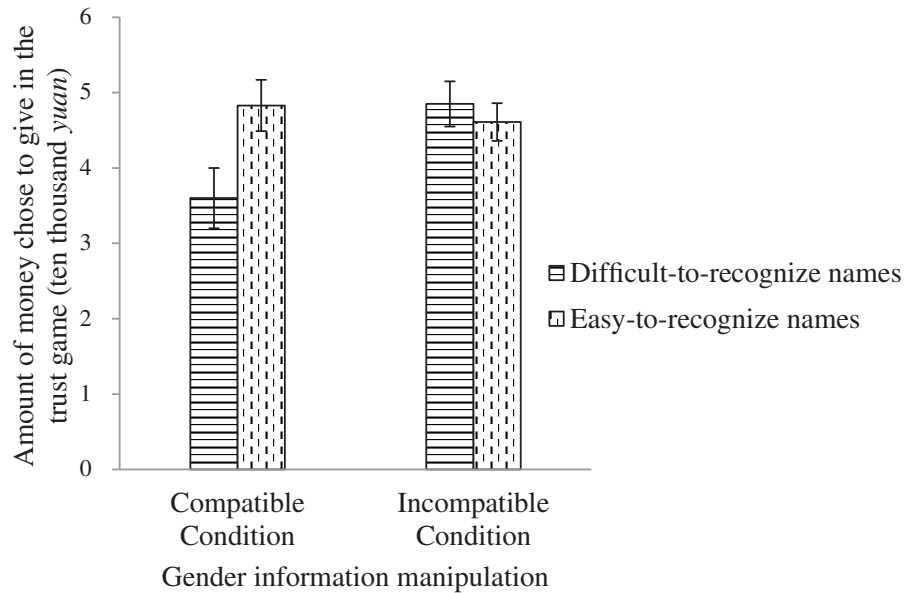
Figure A4. The effect of name-recognisability on trustworthiness perception with manipulated gender information. Error bars represent the standard error of the mean.

Table A1
List of all names used across six studies

Artificial names (Study 1a)		Real-life names (Study 1b, 1c, 2a and 2c)		Homophonic-names (Study 2b)	
Difficult	*Easy*	*Difficult*	*Easy*	*Difficult*	*Easy*
洟牖	脆袄	凌綦	硕晨	翌奭 (Yi Shi)	逸诗 (Yi Shi)
啭郄	只娃	盖�郑	逸诗		
嵯迥	共国	伯瑐	文彬		
樫戡	控孩	侃闿	若诗		
濠觫	朋晓	赟昊	清洋		

Table A2
One sample *t*-tests for argument judgement scores with the value of 4

Argument		*M*	*SD*	*Difference with 4*	*t*	*95% CI*	*p*
1	Men have more rare characters in their names than women.	3.80	1.35	−0.20	−1.35	[− 0.48, 0.09]	.18
2	Men are taller than women.	5.43	1.39	1.43	9.59	[1.13, 1.72]	<.001
3	Men live longer than women.	2.71	1.28	−1.29	−9.42	[− 1.56, − 1.02]	<.001
4	Men have rounder faces than women.	3.39	1.31	−0.61	−4.35	[− 0.89, − 0.33]	<.001
5	Women have longer index fingers than men.	3.87	1.35	−0.13	−0.88	[− 0.41, 0.16]	.38
6	Women have longer hair than men.	5.79	1.06	1.79	15.81	[1.57, 2.02]	<.001