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THE INFLUENCE OF SEX DIFFERENCE ON SELF-REFERENCE EFFECTS IN A MALE-DOMINATED CULTURE^{1,2}

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Summary.—52 secondary school students from the Chaoshan, China, area, where males are highly valued, were examined for self-reference, mother-reference, and father-reference effects. Because the father is the primary role model in Chaoshan culture, it was predicted that male participants would demonstrate a father-reference effect while females would show a mother-reference effect. The results confirmed that females showed significant self-, mother-, and father-reference effects in terms of memory performance, while males showed only a significant father-reference effect and a marginally significant self-reference effect. This study highlights the importance of researching subcultures such as the Chaoshan subculture to gain a comprehensive understanding of self-construct.

The self-reference effect, or the tendency toward enhanced memory performance when dealing with materials connected with one's self (Rogers, Kuiper, & Kirker, 1977), has been studied intensively for decades. The effect has been found in both individualistic and collectivistic cultures (e.g., Keenan & Baillet, 1980; Qi & Zhu, 2002). In addition, although it is widely accepted that there are differences in self-construal between males and females of the same culture (e.g., Kashima, Yamaguchi, Kim, Choi, Gelfand, & Yuki, 1995), it is still unclear whether self-construal held by different individuals or cultural groups could influence the self-reference effect. The present study aimed at testing the influence of sex differences on the self-reference effect in individuals belonging to the Chaoshan culture, a Chinese subculture that places a high value on male offspring.

The concept of self is a rich and highly sophisticated construct sustained by long-term memory. This construct can enhance the memory performance of an individual with respect to self-related information, making

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it more memorable than information only relevant to strangers. Since the 1970s, the self-reference effect of memory has been the object of sustained attention from researchers. Rogers and colleagues (1977) found that, when information to be remembered was relevant to the self, memory performance was significantly better than for non-self-related materials. Researchers across the globe have consistently found that the self plays a critical role in memory formation, organization, and retrieval (Wagar & Cohen, 2003).

Psychological mechanism explanation of the self-reference effect proposed that self-reference not only enhances memory through the elaboration of the encoding process but also by contributing to the organization of encoded information. Ferguson, Rule, and Carlson (1983; see also Andersen & Reder, 1979; Keenan & Baillet, 1980) suggested that the self-reference effect arises from the self-judgment required for evaluative judgment. They further suggested that self-reference encoding is an elaborated type of encoding that can leave especially impressive marks on the memory. Organizational processing (Klein & Kihlstrom, 1986) describes the encoding of connections among words, including the direct connections between words and the indirect connections between the domains a word belongs to. The organizational processing of a series of words can enhance memory in two ways. Firstly, this process establishes connections between items throughout the encoding process, creating pathways by which words can be accessed during the retrieval process. Secondly, this process also encodes the names of the domains, which increases the number of retrieval cues. Klein and Kihlstrom (1986) argued that self-reference allows all task items to be categorized into different domains (such as "relevant to myself" and "not relevant to myself"), which in turn enhances the organizational processing of the connections between words, thus aiding memory retrieval. Some researchers found that memory performance under the condition of self-reference creates a stronger clustering effect than memory performance under semantic encoding conditions, which supports Klein and Kihlstrom's theory. At present, researchers suggested self-reference not only enhances memory through the elaboration of the encoding process but also by contributing to the organization of encoded information (Klein & Loftus, 1988). Based on this theory, Symons and Johnson (1997) proposed that the self-reference effect occurs because self is a structure that is easily developed and frequently used and can therefore promote both the elaboration and organization of information during the encoding process.

Self, Culture, and the Self-reference Effect

Self is a holistic concept encompassing an individual's personality, attitudes, ideals, beliefs, relationships, thinking style, and behavior patterns

as they have been shaped through socialization. The concepts of culture and self are closely connected, and different cultures foster different mental representations of the self. Culture affects how self is perceived, which further affects an individual's perceptions, motives, emotions, and behaviors. Markus and Kitayama (1991) made a distinction between the independent self and the interdependent self. They argued that people from Western cultures generally have an independent self-construal, meaning that they believe it is human nature to be independent of each other, to discover and express one's unique characteristics, and to organize one's behavior based on one's own thoughts and feelings. This type of self-construal is often expressed in desires for self-fulfillment and autonomy and in attitudes that are individualistic, egocentric, idiocentric, isolated, and self-contained. Eastern cultures, however, are more likely to foster an interdependent self-construal. Individuals with this type of self-concept believe that people are interconnected; they view themselves as part of a social context and recognize that their behavior is determined and affected, to a great extent, by the thoughts, feelings, and behaviors of close others, for example parents, family members and close friends. As a result, this self-construct is typically described as socio-centric, holistic, collective, composite, contextual, connected, and relational. Social psychologists, using different methodologies, also found that culture affects self-concept, concluding that culture could influence the self-reference effect (e.g., Wagar & Cohen, 2003). Integrating self-reference and cultural difference research is a growing trend in psychology. Self-reference research offers a unique viewpoint from which to discuss differences in self-concept between the West and the East. For example, in an experiment conducted by Zhu and Zhang (2001), Chinese participants were divided randomly into four experimental groups: the self-referential group, the mother-referential group, the other (Lu Hsun, a famous Chinese writer) referential group and the semantic group. The participants were asked to make judgments about personal adjectives and rate them on a 4-point scale. The results showed no significant difference between the performance of the mother-referential group and the self-referential group on the memory test that followed the presentation of the adjectives. Qi and Zhu (2002) used the same paradigm to test Chinese college students and found that the memory performances of the self-, mother- and father-referential groups were not significantly different. However, the difference between these three groups and the Lu Hsun-referential group was significant. Both results indicated that, for Chinese participants, the parent-concept had the same influence on the self-reference effect as self-concept. Guan and Chi (2006) adopted the self-reference paradigm to examine the effect of self and friend constructs on personality memory in the context of Eastern culture. They discovered that, in

Eastern cultures, the friend-reference effect can enhance an individual's memory in a way similar to the self-reference effect. In contrast, Keenan and Baillet (1980) found that, in American participants, the memory performance of the self-referential group was significantly different from both the parent-referential group and the semantic group. However, the difference between the parent-referential group and the semantic group was not significant, suggesting that for Western participants, parent-referential processing is similar to semantic processing. In their study, Yang and Huang (2007) introduced participants to processing tasks that referenced the collective self (collective-reference processing). They compared the recognition rates and performance of Chinese subjects as they made "remembered" and "known" judgments during memory processing tasks that were either Chinese-referential or American-referential. The results indicated that recognition performance on Chinese-referential tasks was significantly higher than on processing tasks referenced to Americans, which confirms the existence of a collective-reference effect in memory processing. Compared to individuals from Western cultures, collective-reference and in-group identification exert a greater influence on Chinese individuals, and the collective self has a more important position in the Chinese self-concept. The above-mentioned results support the interdependent self and independent self-models proposed by Markus and Kitayama (1991). Compared to Westerners, relational self- and collective self-constructs played a larger role in the self-concept of Chinese individuals.

The Present Study

A meta-analysis by Symons and Johnson (1997) revealed that in 129 relevant experiments, an individual's self-reference effect was relatively smaller when the memory materials were nouns than when they were adjectives because people engaged more frequently in self-oriented processing when learning adjectives. Moreover, when the referenced subject included important others (such as mothers), the memory effect was closer to that of the self-reference effect because memory constructs for important others were more elaborated and abundant. Self-reference effect research indicates that cultural differences in self-concept change based on differences in social relations. For example, Zhou and Su (2008) found that intimacy could affect the appearance of reference effect, such that those who felt close to a partner would show a significant partner-reference effect. With this in mind, the present study examines the self-reference effect in Chaoshan culture, in which males are highly valued. Two hypotheses were developed. H1: Both male and female participants would show significant self-reference and father-reference effects because of the social status of males. H2: Only female participants will show mother-reference effects because mothers are role models only for females.

METHOD

Participants

Fifty-two secondary school students (26 females, M age = 15.4 years, $SD = 0.75$, range = 14–17 years) from a secondary school in Jieyang City, Guangdong Province, were recruited. All participants were native to Chaoshan and had normal vision or corrected visual acuity. All of the participants were right-handed and were familiar with computers. Participants were tested individually and finished the experiment within 2 hours. The language used in the experiment was Mandarin.

Stimuli and Equipment

The experiment stimuli consisted of 384 two-character adjectives adopted from the research of Zhu and colleagues (Zhu, Zhang, Fan, & Han, 2007). Half of the adjectives were positive and half were negative, but all described personal characteristics (see the Appendix). These adjectives were further divided into two sets. One set was used in both the practice and test phase. The adjectives in the second set were used exclusively in the test phase as distracters in the recognition task. All experimental stimuli were presented on a 17-in. CRT monitor with a resolution of 1024×768 and a refresh rate of 85 Hz. The software Presentation (Science Plus Group BV) was used to conduct the experiment.

Design and Procedure

The experiment was a 4 (reference type: self, mother, father, vs other) $\times 2$ (sex: male vs female) design. Reference type was considered a within-subjects variable. During the experiment, the other-reference target was Li Ka-Shing, a Chaoshan celebrity. Sex was considered a between-subjects variable.

The experiment consisted of two phases, namely, a practice phase and a test phase. During the practice phase, the experimenter introduced the experiment to participants, saying, "You are going to make judgments about four different types of people. At the beginning of each trial, the title or name of your target (e.g., father) will be presented on the screen." The name of the target appeared for 5,000 msec. to ensure that participants were focusing on the current target instead of thinking about the previous target. Then, different adjectives were presented at the center of the screen, and participants were asked to judge whether the adjectives described the target (his/her mother, his/her father, or a famous other) and rate the resemblance on a 5-point Likert-type scale with anchors 1: Not at all and 5: Yes, very much. A block design was used in the practice phase: each reference task comprised four blocks, and each block comprised 12 trials. The order of the blocks and trials was randomized. The purpose of the practice phase was to accustom participants to the four types of en-

coding so they could recognize them implicitly without intentional memory. The referenced target was presented at the top center of the screen throughout the practice phase.

Each trial proceeded as follows: first, a red cross was presented in the center of the screen for 500 msec. Then, the adjective was presented in the center of the screen for 1,000 msec., followed by a black rectangle mask for 2,000 msec. During the presentation of the adjective, a 5-point Likert-type scale was presented below the adjective and remained on the screen until the mask disappeared. Participants indicated their judgments using a mouse. The interval between trials was 1,000 msec. (see Fig. 1).

After participants finished all 192 trials of the practice phase, they had a short break followed by a surprise memory test (the test phase). During this test, a total of 384 adjectives were presented, in a random order, on the computer screen. The participants were asked to judge whether they had seen the adjectives during the practice phase. In this phase, the next recognition question was not presented until the subject answered the previous one, and no time limit was enforced. In order to test whether participants truly accepted the male-dominate cultural norm, a self-developed 8-item scale about male-dominance (sample item includes the males in the family are highly valued) was administrated on a 3-point, Likert-type scale (1: Yes, 2: Neutral, and 3: No). A smaller value indicates higher level of male-dominance with 2 as the mid-point, suggesting participants considered males and females as equally important in the family. All materials were prepared in Chinese.

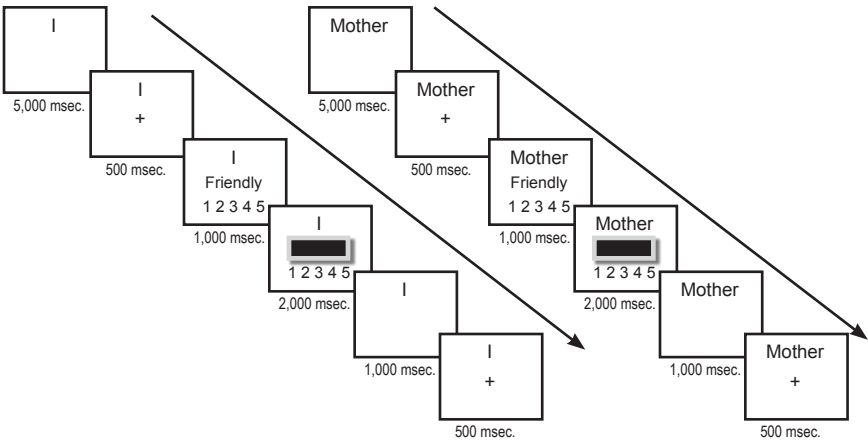


FIG. 1. Experimental Procedure (Single Trial) for the Practice Phase

RESULTS

In order to test the assumption that in Chaoshan culture males are valued more highly than females, one sample *t* test was conducted to compare the average scale score against the mid-point, and a significant difference was found ($t_{51} = -2.59, p = .01$), participants all held the idea of male-dominance ($M = 1.90, SD = .28$). Moreover, a follow-up one sample *t* test to compare the average scale score against the mid-point in both males and females found that males ($M = 1.84, SD = .20$) held a stronger idea of male-dominance ($t_{25} = -4.08, p < .01$), whereas females ($M = 1.95, SD = .34$) tended to consider male and female as equally important ($t_{25} = -.75, ns$).

The descriptive statistics are presented in Table 1. Recognition accuracy was calculated by subtracting the false alarm rate from the hit rate of each reference type. A mixed model ANOVA, for which reference type (self, mother, father, vs other) was the within-subjects variable and sex (male vs female) was the between-subjects variable, was conducted on the recognition accuracy data. A significant reference type main effect was found ($F_{1,50} = 19.56, p < .01, \eta^2 = 0.28$), qualified by a significant reference type \times sex interaction ($F_{1,50} = 5.67, p = .02, \eta^2 = 0.10$). The main effect of sex was not significant.

To further explore the observed reference type \times sex interaction, a repeated-measure ANOVA was conducted for male and female participants with reference type as the within-subjects variable. A significant reference type main effect was found for females ($F_{3,75} = 7.38, p < .01, \eta^2 = 0.23$), but not for males ($F_{3,75} = 2.44, ns$). A *post hoc* analysis revealed that for female participants, the recognition accuracy for self-reference, mother-reference, and father-reference targets was significantly larger than the other-reference targets, $ps < .01$. For male participants, however, only the father-reference effect was significantly larger than the other-reference effect, $p = .04$. Self-reference was marginally larger than other-reference, $p = .05$, but mother-reference was not significantly different from other-reference for males. These results suggest that the memory performance of females

TABLE 1
DEMOGRAPHICS AND MEMORY PERFORMANCE

	Males ($n = 26$)		Females ($n = 26$)	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Age	15.58	.86	15.31	.62
Hit Rate (self-reference)	.64	.20	.70	.13
Hit Rate (mother-reference)	.62	.22	.67	.15
Hit Rate (father-reference)	.65	.21	.67	.14
Hit Rate (other-reference)	.61	.20	.61	.15
False Alarm	.42	.24	.41	.19

is significantly enhanced by self-, mother- and father-reference effects, but the memory performance of males is primarily influenced by father-reference effects.

DISCUSSION

This study found that male Chaoshan adolescents showed a significant father-reference effect that was larger than both mother- and self-reference effects. Female Chaoshan adolescents, however, showed significant father-, mother- and self-reference effects in the present study. These results corroborate findings of other studies, which have observed self-reference and mother-reference effects in Chinese individuals (Sui, Zhu, & Chiu, 2007). Unlike previous studies, however, in the present study, participants exhibited a father-reference effect without significant self-reference and mother-reference effects, which reflects the influence of Chaoshan culture on self-construct. Here, the difference lies not in the self-constructs promoted by Eastern and Western cultures, but in the difference in self-constructs between males and females in a culture with strong male dominance. Chaoshan culture is known for its male chauvinism and traditional preference for sons, and males and females in this culture are assigned distinct roles. For example, males are given an important position in their families, clans, and society and are thus called upon to bear corresponding responsibilities. Females, however, are given a subordinate position bearing children and performing household work. This makes the father an important role model in a Chaoshan family, as the results in the present study show, i.e., both males and females showed a significant father-reference effect that was as strong as the self-reference effect. However, only Chaoshan females showed a significant mother-reference effect, suggesting that Chaoshan females consider mothers as role models and important others, while Chaoshan males may only consider fathers to be important role models.

The present study has practical implications inasmuch as male chauvinism and son preference are not unique to the Chaoshan culture. There are many countries and districts similar to Chaoshan where male chauvinism is prevalent to different extents. Thus, the results and methodology presented here have real-world significance. For example, son preference is still found in some remote mountain areas in China, and this research may provide new opportunities for quality education that provides individualized instruction to boys and girls based on their self-construct. Though male chauvinism was the mainstream ideology and the orthodox social order of Chinese feudal society, in ancient Chinese literature there are many women famous for their love, loyalty, and heroic deeds, while male characters are typically lacking in personality. Perhaps females had strong self-construct, and active self-consciousness, while males were

more self-aware and self-suppressed. In such a social environment, both males and females could be seen as being repressed to some extent by the cultural expectations.

The present study does have limitations. Firstly, the conclusion that Chaoshan males look only to their fathers as role models and not their mothers, whereas females may look to both parents as role models, is only preliminary, and further studies should be conducted to confirm these results. Secondly, all of the participants were teenagers, which might limit the generalizability of the findings. A wide age range should be studied to thoroughly examine how the social values of cultures shape the individuals that belong to them. Another limitation to the study's findings is the possibility of differences between male and female participants in terms of the level intimacy they share with their mother. Zhou and Su (2008) found that intimacy affects the occurrence of the lover-reference effect. In their study, the group with high-level actual intimacy showed a lover-reference effect while the low-level group did not. Future studies should take intimacy into consideration to rule out the possibility of interference from this factor. Despite these limitations, the present study clearly demonstrates that Chaoshan culture, a culture in which males are highly valued, influences male and female individuals' self-constructs and, as a result, their consequential memory performance.

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