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RESEARCH PAPER

Self-bias in collectivist Vietnamese in their native and foreign language

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Abstract Information related to oneself is given higher processing priority compared to other social information. In Western cultures, a robust self-bias effect is typically found using the perceptual associative matching task. The current study investigated the self-bias effect in collectivist Vietnamese in both the native language, Vietnamese, and the foreign language, English, using the perceptual associative matching task with person labels (self, mother, other/stranger) paired with geometric shapes (circle, square, triangle). As Vietnam is a collectivist culture, it was predicted that there would be no significant difference in response times when responding to self- and mother-shape pairs. We found support for this prediction. There was some evidence that participants even prioritised mother in comparison to self-related stimuli, as the difference in response times between 'mother minus self' was less when the native language, Vietnamese, was used in comparison to the foreign language, English. Self-representation can be conceptualised as a dynamic system, rather than a fixed hierarchy, that is shaped by cultural context and to some extent by language.

Keywords Native and foreign language · Perceptual matching task · Self-bias effect · Self-construal · Vietnamese

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Introduction

There is increasing evidence suggesting that information related to oneself, such as one's name, face, or possessions, is given higher processing priority compared to other social information across different cognitive domains (Amodeo et al., 2021; Cunningham & Turk, 2017; Sui & Humphreys, 2015). For instance, individuals tend to respond faster to their own faces than to those of others, regardless of whether the task explicitly requires recognizing faces to judge stimulus familiarity (self vs. familiar other, familiar vs. unfamiliar other) or requires participants to make judgments about face orientation without the need for explicit face recognition (Keyes & Brady, 2010; Sui et al., 2009, 2012). This tendency to process self-related stimuli preferentially is termed 'self-bias' or 'self-prioritisation' and enhances the efficiency with which individuals memorize, learn, and detect stimuli relevant to themselves. It is thought to confer a cognitive and adaptive advantage in relation to information processing and decision-making (Cunningham & Turk, 2017; Sui & Humphreys, 2015). The self-bias effect facilitates filtering of information based on its immediate relevance, thereby determining which information to engage or disengage with (Scheller & Sui, 2022). In a study conducted by Svensson et al. (2022), participants were found to process self-related stimuli with greater efficiency and attention (especially when presented more frequently), which in turn

impacted their decision-making process. Thus, the self-bias effect contributes to optimising our abilities to navigate in today's multisensory world where we are constantly bombarded by innumerable information (Conway & Pleydell-Pearce, 2000).

The self-bias effect has been assessed in the context of a wide range of empirical paradigms across different cognitive domains, including attention, memory, and perception (Amodeo et al., 2021; Cunningham & Turk, 2017; Sui & Humphreys, 2015). In the attentional domain, individuals' preference for self over other-related information has been examined using the attentional blink paradigm (Arnell & Shapiro, 2010; Nijhof et al., 2020; Shapiro et al., 1997). This task tests participants' ability to detect a second target following a first target in a rapid serial visual presentation stream. When participants are presented, for example with their own name as the second target compared with a close other's name, the attentional blink is significantly reduced, indicating a priority in cognitive processing of self-related stimuli. In relation to the memory domain, there has been consistent experimental evidence of a cognitive advantage in recalling self-related over other-related material. Classic studies using the trait-adjectives task (Rogers et al., 1977) have shown that participants have significantly better recall for self-related trait adjectives as compared to other-related trait adjectives. A more recent method used to investigate self-processing in the memory domain is the ownership task, where participants are required to sort objects into self- or other-owned sets during a study phase (Cunningham et al., 2008; Cunningham et al., 2013; Cunningham & Turk, 2017). Subsequently, a recognition memory test is given. In general, self-owned items have been found to be more readily remembered than those owned by another person. Sparks et al. (2016) used the ownership task to compare accuracy in memory recognition in Asian and Western university students studying in Australia. They found that Western participants showed greater memory recognition accuracy for self-owned compared with other-owned objects. In contrast, the Asian participants showed no overall advantage for self-owned items and even showed higher recognition accuracy for mother-owned than self-owned objects.

Self-bias has been examined in the perception domain using the perceptual associative matching task (or shape-label matching task) devised by Sui et al. (2012). In this task, participants initially learn the associations between three person labels, either related to the self or others (e.g., self, familiar (mother/friend), other/stranger), with three geometric shapes (e.g., circle, rectangle, triangle). Subsequently, in the experimental phase, participants quickly judge whether shape-label pairs (e.g., mother-rectangle) correctly or incorrectly match previously learned associations while response times are recorded. In Western participants, research has typically found faster reaction times and higher accuracy in response to self-related stimuli compared to stimuli associated with others (Nijhof et al., 2020; Sui et al., 2012, 2013; Sui & Humphreys, 2015; Woźniak & Knoblich, 2019). In addition, close or familiar others (friend, mother) have been found to be faster than for irrelevant others (other, stranger) but slower than for the self-associated labels. The effect has been shown to be robust as it holds even when the frequency or probability of self-stimuli is manipulated to be low (Sui et al., 2014). Moreover, self-related associations in the shape-label matching task were found to be less affected by visual degradation (i.e., responses for self-related stimuli were less influenced by contrast reduction compared to responses for other stimuli). This was interpreted as indicating that self-reference exerts an influence on the early low-level stage of perceptual processing.

The self is a dynamic concept shaped by interactions within socio-cultural and environmental contexts (Markus & Kitayama, 1991). According to the tripartite model of self-construal (Brewer & Gardner, 1996), conceptualisation of the self is multifaceted. It involves a complex interplay of three core representations: the individual self that reflects one's unique qualities and attributes, the relational or familiar self that emphasises connections and attachments (e.g., kinship and friendships), and the collective self that underscores one's affiliation with and membership to important social groups (e.g., ethnic and cultural groups) (Brewer & Gardner, 1996; Nehrlich et al., 2019; Sedikides et al., 2011). Cross-cultural research has long recognised significant differences in the extent to which individuals perceive themselves in relation to others (i.e., self-construal). This difference that is typically used to distinguish between Eastern and Western cultural perspectives is often framed as the contrast between individualism and collectivism (Triandis, 1989) or independence and interdependence (Markus & Kitayama, 1991). While Western cultures typically place greater emphasis on autonomy and

independence, Asian cultures conventionally give greater prominence to interdependence, in which the individual is closely interconnected with familiar and socially significant others (Markus & Kitayama, 1991). In other words, a person's self-construal varies across cultures depending on the emphasis placed on independence or interdependence, in turn effectuating behavioural and experiential differences. The differing conceptions of the 'self' influences how the self is represented and how information related to the self and others is processed (Heine, 2001; Triandis, 1989). Zheng et al. (2022) used the perceptual associative task to examine the self-hierarchy in Chinese participants using behavioral and event-related potential (ERP) measures. In this study, results revealed that participants recognized information associated with their individual-self faster than their relational/familiar and collective self. The findings were interpreted as supporting a self-hierarchy of processing from individual self to relational self and to collective self. These varying degrees of self-bias related to a person's individual-self and relational-self have been found to be present in children and can remain consistent into adulthood (Maire et al., 2020; Singh & Karnick, 2022a, 2022b).

Studies using the shape-label association paradigm have examined how self-bias is influenced by cultural contexts. Jiang et al. (2019) compared the self-bias effect in participants from Hong Kong, an Eastern interdependent or collectivist culture, and the United Kingdom, a Western independent individualistic culture. They found a larger self-bias toward stranger-associated stimuli in the United Kingdom than Hong Kong participants. Finally, while mother bias has been observed to be weaker compared to self-bias in Western cultures (Sui et al., 2012, 2014), for highly collectivist cultures such as the Indian culture, responses to mother- and self-related stimuli have been found to be not significantly different (Verma et al., 2021).

Emotional resonance in the native and foreign language

In general, it is assumed that the first or native language acquired is more emotional than the foreign language (Altarriba, 2008; Dewaele, 2004; Pavlenko, 2008). The first language is learned in an immersive socio-cultural context of growing up within the family and evolves concurrently with development of the emotional regulation system (Caldwell, 2015; Ivaz et al., 2019). Consequently, the first language is more closely associated with early basic emotions. In contrast, the foreign language is typically acquired later in an emotionally neutral environment such as a classroom or academic setting. Due to the learning context, learners do not typically use the foreign language in everyday interactional situations. Hence, the foreign language is considered to have greater emotional and cognitive distance associated with it than the native language. Thus, the foreign language comes to be associated with greater control and distance from emotions (Altarriba, 2008; Dewaele & Pavlenko, 2002). Based on this perspective, the foreign language, in general is considered to be less arousing or emotional than the native language.

Several recent studies have found that self-bias is modulated when information is processed in a foreign language in comparison to the native language (Ivaz et al., 2016, 2019; Shin & Kim, 2017). Ivaz et al. (2016) investigated the self-bias effect using the perceptual associative matching task with person labels (self, familiar (friend), other/stranger) paired with geometric shapes (circle, square, triangle) in Spanish–English participants and a comparison group of English native speakers. Notably, they primarily made comparisons between 'self versus other/stranger ' and 'familiar versus other/stranger' but not between 'self versus familiar'. They found that the response times for 'other/stranger minus self' was significantly reduced (almost halved) in the foreign language (English) compared to the native language (Spanish). Similar results were found in a follow-up study with Spanish-Basque-English trilinguals (Ivaz et al., 2019) and a small study with Korean-English bilinguals (Shin & Kim, 2017, Experiment 2). The explanation proffered was that as the foreign language is associated with greater emotional distance than the native language, then this leads to a reduction in the 'other minus self' response times in the foreign language compared with the native language (Ivaz et al., 2016). Ivaz et al. (2019) suggest that an emotional blunting occurs in the foreign language context.

Vietnamese culture

The present study was conducted with a highly collectivist culture, Vietnamese. In fact, Vietnam

scored 20 on the individualism index, where a score less than 50 is classified as a collectivistic country (Hofstede, 1980). In a more recent country comparison on the dimension of individualism-collectivism (Minkov & Kaasa, 2022), Vietnam scored 78, China 31, Hong Kong 5, and India 101 in comparison to countries that are considered to be more individualistic, such as the United Kingdom 93, the USA 33, and Spain 58. While a nuclear family structure is common in the West, Vietnamese culture is characterised by a higher degree of involvement from the extended family and multigenerational interactions (Stone, 2005). A household in Vietnam may host the parents, their children, daughters-in-law, grandparents, grandchildren, as well as unmarried siblings. This collectivist lifestyle may even extend to neighbours, where Vietnamese individuals typically refer to strangers with kinship pronouns simply because they live nearby. This emphasis on the community is how collectivist countries like Vietnam conceptualize families and the community (Mestechkina et al., 2013; Stone, 2005).

The present study

The current study aimed to investigate the self-bias effect in both the native language, Vietnamese, and the foreign language, English, in Vietnamese participants living in Vietnam. The perceptual associative matching task was used (Sui et al., 2012) with person labels (self, mother, and other/stranger) paired with geometric shapes (circle, square, and triangle). First, we predicted that in highly collectivist Vietnamese participants, there would be no significant difference in response times and accuracy between mother- and self-paired stimuli, as has been found in another highly collectivist culture, Indian (Verma et al., 2021). Furthermore, as the first language acquired is considered to be more closely connected to emotions than the foreign language, the difference in response times to self- and mother- paired stimuli would be greater in the more emotionally distant foreign language, English, than the native language, Vietnamese. Another possibility based on Ivaz et al. (2016) is that the difference between response times to 'self' and 'other/stranger' might be less in the foreign language, English, than the native language, Vietnamese.

Method

Participants

The current study recruited 104 Vietnamese (43 males, ages 17–45 years, mean age 20.1, SD=5.2 years) in Hanoi, Vietnam. Participants were predominantly university students. Demographic information was collected on age, gender, nationality, dominant language, estimated age of acquisition of English (in years), and frequency (in percentage) of English and Vietnamese being used in their daily lives. Self-rating information about participants' ability to speak, understand, read, and write English was also collected. Items were rated on a 7-point Likert scale (1=very poor, 7= excellent), where higher ratings indicated higher proficiency, was also collected. An overall mean language proficiency score was calculated. Notably, for all participants, Vietnamese was the first or native language and English was learned as a foreign language. Participants' level of closeness with their mother was also assessed on a 7-point Likert scale ranging from 'not close at all' to 'extremely close', with higher ratings connoting a closer relationship between participants and their mothers. Table 1 contains background information of the participants.

Materials and procedure

The experiment was conducted using *Testable*, an online experimental platform. Participants were able to access the experiment from their personal computers. *Testable* has an inbuilt calibration system that caters for

Table 1 Background information of the Vietnamese participants

	Mean	SD
Age	20.1	5.2
Age of acquisition of English (in years)	8.8	2.9
English language proficiency rating (out of 7)	4.5	1.3
Estimated daily use of English	36%	17%
Estimated daily use of Vietnamese	79%	22%
Closeness to mother (out of 7)	5.6	1.3
Independent self-construal score	68.5	10.2
Interdependent self-construal score	70.3	9.3
Independence minus Interdependence score	− 1.9	11.0

the different sizes of computer screens used by participants, such that any visual content is presented in the same size.

In the perceptual associative matching experiment based on Sui et al. (2012) and Ivaz et al. (2016), participants were presented with three person labels (you, mother, and other/stranger) paired with three geometric shapes (triangle, circle, and square) in Vietnamese and English versions of the experiment. All participants completed the task in both English and Vietnamese. Half of the participants carried out the matching task first in English and half completed the task first in Vietnamese. To avoid effects derived from specific shape–label associations in the matching conditions, all combinations were also counterbalanced across participants in different versions of the experiment.

Participants were instructed to learn and remember three associations between person labels (self, mother, or other/stranger) and geometric shapes (a triangle, a circle, or a square). Subsequently they were told that during the experiment they would be seeing pairings of the person labels and geometric shapes that would either match or mismatch, and that they would need to indicate as quickly and accurately as possible whether or not the specific pair displayed matched the previously learned associations using the appropriate key on the keyboard. Instructions were given in the language in which the experimental version was conducted.

The perceptual association matching task involved two phases: the practice phase, followed by the experimental phase. In the practice phase, participants were given 24 practice trials (12 matching, 12 mismatching). Participants were given feedback on whether their response was correct or incorrect. Participants could only move on to the next phase of the experiment if they provided 70% or more correct responses; otherwise, they repeated the practice trials. Subsequently, they proceeded to the 180 experimental trials (90 matching and 90 mismatching). A black central fixation cross (0.8°×0.8° visual angle) was presented for 1000 ms. Next a shape (covering 3.5°× 3.5° of visual angle) paired with one of three written labels (“you”, “mother”, or “other” in the English version or “bạn”, “mẹ”, or “khác” in the Vietnamese version) in lowercase Courier New font (covering 1.80°/2.50°×1.80°) of visual angle) was displayed above and below the fixation cross for 100 ms (see Fig. 1). After the participant had responded, a feedback message (correct or incorrect) was then given in the centre of the screen for 500 ms. All stimuli were displayed against a white background. Each version of the experiment contained an equal number of matching and mismatching paired stimuli (see Fig. 1). The presentation of trials was randomized in participants in all language versions. Finally, participants completed the Singelis Self-Construal Scale (SCS). The study took approximately 10 min to complete for each language version.

The Singelis Self-Construal Scale (Singelis, 1994) was designed to measure an individual’s independent and interdependent self-construal, thus providing insights into how they perceive themselves in relation to others and their cultural context. It assesses the extent to which people prioritize personal attributes and emotions versus social roles and relationships in shaping their self-concept. Participants responded to the set of 30 items for the self-construal scale (e.g., “I will sacrifice my self-interest for the benefit of the group I am in.”), with response options to each item ranging from 1 (strongly disagree) to 7 (strongly agree). The scale consists of two subscales, independence and interdependence, each consisting of 15 items. To achieve an overall self-construal score, an independence subscale score minus the interdependence subscale score was calculated (based on Kitayama et al., 2014).

Results

A 3 (Person label: self, mother, other)×2 (Language: Vietnamese, English) repeated measures ANOVA was conducted for the critical matching trials separately to assess response times and accuracy. Pairwise comparisons were also performed on the mismatching trials collapsed across conditions to examine whether there was a language effect.

Reaction time analysis

Incorrect responses (7.5%) and outliers less than 200 ms and greater than 1400 ms (3.5%) were removed from the RT analysis.

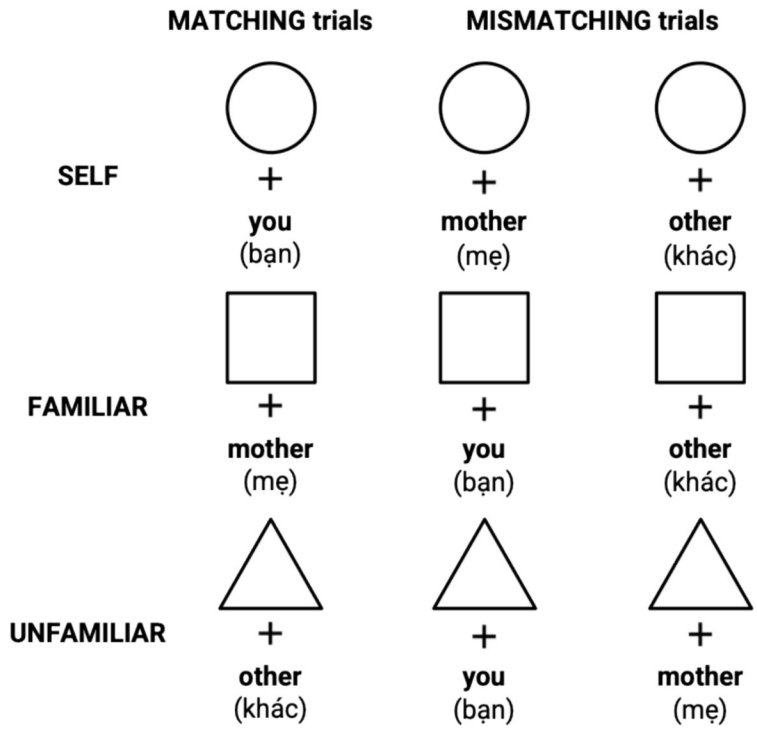

Fig. 1 Examples of matching and mismatching person-shape paired stimuli in Vietnamese and English

Matching trials

A 3×2 ANOVA for matching trials revealed a significant main effect of person label, $F(2,103)=45.52$, $p<0.001$, $\eta_p^2=0.306$. Follow-up analyses revealed that response times to self (789 ms) and mother (783 ms) conditions were not significantly different, $F(1,103)=0.45$, $p=0.50$. However, participants responded faster to self than other condition (877 ms), $F(1,103)=56.14$, $p<0.001$, $\eta_p^2=0.353$ and mother compared to other condition, $F(1,103)=61.83$, $p<0.001$, $\eta_p^2=0.375$. In contrast, there was no significant main effect of language, $F(1,103)=0.60$, $p=0.44$, or interaction between person label and language, $F(2, 103)=2.52$, $p=0.10$ (refer to Table 2).

Mismatching trials

For the mismatching trials, there was no significant effect of language for Vietnamese ($M=906$ ms, $SD=131$) and English ($M=911$ ms, $SD=130$), $t(103)=0.47$, $p=0.64$.

Table 2 Mean reaction times (RT in ms) and percentages of errors for person-paired stimuli in the matching trials for Vietnamese and English

	Mean RT	% errors
Vietnamese		
Self	799 (130)	6.86 (6.48)
Mother	776 (122)	6.87 (5.01)
Other	887 (216)	11.38 (10.42)
Mother minus self	− 23 ms	0.01
Other minus self	89 ms	4.52
English		
Self	779 (134	6.25 (7.04)
Mother	790 (130)	5.80 (5.80)
Other	867 (140)	11.11 (7.82)
Mother minus self	10 ms	− 0.45
Other minus self	88 ms	4.86

Standard deviations (*SD*) are in parentheses

Accuracy analysis

Matching trials

An accuracy analysis on matching trials was conducted to compare error rates across person paired stimuli and language. There was a significant main effect of person label, $F(2,103)=27.96$, $p=0.001$, $\eta_p^2=0.214$. Follow-up analyses revealed that percentage of errors for self (6.6%) and mother (5.8%) conditions did not differ significantly, $F(1,103)=1.33$, $p=0.21$. However, responses to self had significantly fewer errors than other (11.2%) paired stimuli, $F(1,103)=25.75$, $p<001$, $\eta_p^2=0.200$, and mother had significantly fewer errors than other condition, $F(1,103)=48.08$, $p<0.001$, $\eta_p^2=0.318$ (refer to Table 2). However, there was no significant main effect of language, $F(1,103)=0.29$, $p=0.59$, or an interaction effect between person label and language. $F(2,103)=0.15$, $p=0.86$.

Mismatching trials

For accuracy for the mismatching trials, there was no significant effect of language for Vietnamese ($M=7.12$, $SD=4.8$) and English ($M=7.12$, $SD=5.4$), $t(103)=0.02$, $p=0.99$.

First language tested reaction time analysis

We also conducted statistical analyses on only the first language tested in participants. In this study, 52 participants completed the experiment first in Vietnamese and 52 first in English. A 3 (Person label: self, mother, other)×2 (First Language tested: Vietnamese, English) ANOVA was conducted for reaction time (RT) and accuracy. First language tested was a between-subjects factor.

Matching trials

The results revealed that there was a main effect of person label, $F(2, 103)=36.98$, $p<0.001$, $\eta_p^2=0.266$. Follow up analyses revealed that response times to self (819 ms) and mother (811 ms) were not significantly different, $F(1,103)=0.45$, $p=0.50$. However, responses to self were significantly faster than other (911 ms), $F(1,103)=56.14$, $p<.001$, $\eta_p^2=0.353$, and mother was significantly faster than other, $F(1,103)=61.83$, $p<0.001$, $\eta_p^2=0.375$. There was not a significant main effect of language, $F(1,103)=1.36$, $p=0.25$. However, there was a small significant interaction between person label and language, $F(2, 103)=3.59$, $p=0.03$, $\eta_p^2=0.034$ (refer to Table 3). In order to examine the interaction effect between person and language on the matching trials, separate follow-up ANOVAs were conducted for Vietnamese and English.

For participants who completed the Vietnamese version of the experiment first, the reaction times for mother (806 ms) were only marginally faster than the self (840 ms) condition, $F(1, 51)=3.19$, $p=0.08$, $\eta_p^2=059$. Participants responded significantly faster to the stimuli in the self than other condition (937 ms), $F(1, 51)=21.55$, $p<0.001$, $\eta_p^2=0.297$, and faster to mother than other condition, $F(1, 51)=56.43$, $p<0.001$, $\eta_p^2=0.525$.

For participants who completed the English version first, the response times for self (798 ms) and mother (817 ms) conditions was not statistically significant, $F(1, 51)=1.86$, $p=0.18$. However, participants were found to respond significantly faster to the stimuli in the self than other condition (884 ms), $F(1, 51)=24.81$, $p<0.001$, $\eta_p^2=0.327$ and responded faster to the stimuli in the mother than other condition, $F(1, 51)=11.85$, $p=0.001$, $\eta_p^2=0.188$.

Table 3 The mean reaction time (RT in ms) and percentage of errors for person-paired stimuli in the matching trials for the Vietnamese first language tested group and the English first language tested group

	Mean RT	% errors
Vietnamese		
Self	840 (125)	8.08 (7.39)
Mother	806 (126)	6.41 (4.93)
Other	937 (163)	14.10 (11.84)
Mother minus self	− 34 ms	− 1.67
Other minus self	97 ms	6.02
English		
Self	798 (153)	8.27 (8.21)
Mother	817 (144)	6.54 (6.80)
Other	884 (143)	12.31 (8.15)
Mother minus self	19 ms	− 1.73
Other minus self	86 ms	4.04

Mismatching trials

For the mismatching trials, there was no significant effect of language for Vietnamese (M=953 ms, SD=123) and English (M=934 ms, SD=145), $t(103)=0.70$, $p=0.49$.

First language tested accuracy analysis

A 3 (Person label: self, mother, other)×2 (First Language tested: Vietnamese, English) ANOVA was conducted for accuracy for matching.

Matching trials

There was a significant main effect of person label, $F(2, 103)=19.83$, $p<0.001$, $\eta_p^2=0.163$. Follow-up analyses revealed that error percentage for self (8.17%) and mother (6.47%) conditions did not reach significance, $F(1,103)=3.67$, $p=0.06$, $\eta_p^2=0.034$. However, there were significantly fewer errors for self than other condition, $F(1,103)=14.94$, $p<0.001$, $\eta_p^2=0.127$ and mother had fewer errors than other condition, $F(1,103)=37.46$, $p<0.001$, $\eta_p^2=0.267$ (refer to Table 3). There was no significant main effect of language, $F(1,103)=0.27$, $p=0.61$, and the interaction between language and person was not significant, $F(2, 103)=0.52$, $p=57$.

Mismatching trials

Results for accuracy revealed no significant effect for language for Vietnamese (M=8.44, SD=5.06) and English (M=7.68, SD=5.44), $t(103)=0.79$, $p=0.43$.

Comparison of self-bias in the native and foreign language

On the basis that the first language acquired is considered to be more closely connected to emotions than the foreign language, it was predicted that the difference in response times to self- and mother-paired stimuli would be greater in the more emotionally distant foreign language, English, than the native language, Vietnamese. In order to test this specific prediction, a series of ANOVAs were conducted for matching trials in Vietnamese and English for 'mother minus self' RTs.

For the within-subject design, the difference for 'mother minus self' was significantly higher for English (10 ms) than Vietnamese (− 23 ms) for matching trials, $F(103)=9.36$, $p=0.003$, $\eta_p^2=0.083$ (refer to Table 2). Similarly, in the between-subject design, the difference was significantly higher in English (19 ms) than Vietnamese (-34 ms) for matching trials, $F(103)=5.05$, $p=0.03$, $\eta_p^2=0.147$ (refer to Table 3). In sum, the results support the prediction that 'mother minus self' is less when the native language, Vietnamese, was used in comparison to the foreign language, English. When responding in Vietnamese, the participants had a tendency to respond faster to mother-paired stimuli than self-paired stimuli.

In order to examine the prediction made that response times to 'other minus self' would be less in the foreign language, English, than in the native language, Vietnamese (Ivaz et al., 2016, 2019; Shin & Kim, 2017), a series of ANOVAs for matching trials for 'other minus self' RTs were conducted.

For the within-subjects design, there was no significant difference for Vietnamese (89 ms) and English (88 ms) for the matching trials for 'other minus self' RTs, $F(103)=0.002$, $p=0.96$ (refer to Table 2). For the between-subjects analysis, there was no significant difference for Vietnamese (97 ms) and English (86 ms) for matching trials, $F(103)=0.18$, $p=0.67$ (refer to Table 3). Based on these results, the prediction that the difference between response times to 'self' and 'other/stranger' would be less in the foreign language, English, than the native language, Vietnamese, was not supported.

A series of bivariate correlations were also conducted to examine the relationship between 'mother minus self' RTs, closeness of mother rating scores, English language self-rating proficiency, and self-construal scores (independent, interdependent, and independent minus interdependent). However, there were no significant relationships between these factors.

Discussion

In the current study, we investigated the self-bias effect in collectivist Vietnamese using a perceptual associative matching task based on the paradigm devised by Sui et al. (2012). Participants responded to matching and mismatching person labels (self, mother, other/stranger) paired with a geometric shape (circle, square, triangle). In this task, participants had to decide whether the person-label-shape pairs correctly matched

or mismatched previously learned associations. The study was conducted in both Vietnamese, the native language, and English, the foreign language.

As Vietnamese culture is a collectivist familial culture, we predicted that there would be no significant difference between response times and accuracy to self- and mother-paired shape stimuli. The results confirmed this prediction as there were no significant differences between response times and accuracy to 'self' and 'mother' paired stimuli for the matching trials. These findings align with the results of a previous study conducted with collectivist Indian participants (Verma et al., 2021). Thus, in these collectivist cultures, it appears that participants' individual-self overlaps with their relational-self (i.e., mother). These findings diverge from the conventional results from Western participants (e.g., Nijhof et al., 2020; Sui et al., 2012, 2013; Sui & Humphreys, 2015; Woźniak & Knoblich, 2019), where participants typically respond faster to self-relevant than stimuli relevant to a person's relational-self (e.g., mother or close friend). This also contrasts with findings from other studies conducted with participants from other Asian cultures (e.g., Chinese: Jiang et al., 2019; Sui et al., 2014; Zheng et al., 2022; Korean: Shin & Kim, 2017), where a distinct self-bias effect has been observed. These disparate findings highlight culture-specific differences affecting self-representation in Asian cultures, as reflected in the variation in individualism-collectivism scores collated by Minkov and Kaasa (2022). Hence, it is important to consider culture-specific characteristics beyond the individualism-collectivism or independent-interdependent dichotomy. Notably, Vietnamese culture is a highly collectivist, familial culture characterised by close relationships with family and extended family members (Hofstede, 1980; Mestechkina et al., 2013; Stone, 2005).

We also predicted that, as the first language acquired is considered to be more closely connected to emotions than the foreign language, the difference in response times to self- and mother-paired stimuli would be greater in the more emotionally distant foreign language, English, than in the native language, Vietnamese. We found qualified support for this, as when we analysed 'mother minus self' responses, RTs were less in the native than foreign language. Thus, the Vietnamese participants even prioritised mother over self when the experiment was conducted in the native language, Vietnamese. Similar results were found in a study comparing memory recognition accuracy for self-owned with other-owned objects in Western and Asian participants in Australia (Sparks et al., 2016). The Asian participants similarly showed higher recognition accuracy for mother-owned than self-owned objects.

Based on previous research on the foreign language effect (Ivaz et al., 2016, 2019; Shin & Kim, 2017), it was also predicted that 'other minus self' RTs would be less in the foreign language, English, than the native language, Vietnamese, due to the foreign language being more emotionally distant than the native language. However, the results did not support this prediction in the Vietnamese cohort. This could be due to cultural differences in self-construal and/or English language proficiency in the Vietnamese and Spanish participants. The Spanish participants had relatively high proficiency in English. Vietnamese culture is also considered to be more collectivist-leaning than Spanish culture (Minkov & Kaasa, 2022: individualism-collectivism score for Vietnamese -78 in comparison to Spanish 58).

The current study found no significant relationship between participants' self-construal scores (independence, interdependence) and the response time difference between self and mother (i.e., 'mother minus self'). This lack of results corresponds to the findings in the study conducted by Jiang et al. (2019), who also found no significant relationships between behavioral responses from the experimental task and measures of independent and interdependent self. Self-construal questionnaires have been criticised for not providing specific contextual cues in the questions posed. This is pertinent to interdependent individuals, who are particularly sensitive to contextual cues (Harb & Smith, 2008). The context provides information that can influence self-construal (Oyserman & Sorensen, 2009). Furthermore, in Jiang et al.'s (2019) study, UK and Hong Kong participants (whose default responses were considered to lie at two ends of the collectivistic-individualistic continuum) produced similar scores on independent and interdependent subscales in the self-construal questionnaire. This suggests that this measure may lack reliability in certain contexts. In addition, we did not find any significant relationships between behavioural response times in the experiment, self-rated language proficiency, and closeness to mother ratings.

A useful follow-up study would be to conduct a similar experimental design as used by Ivaz et al. (2016) (Experiment 2). Instead of blocking the native and foreign language trials, intermixed trials are presented in both languages within a session. This would provide further insights into language-driven modulations of self-bias and would also eliminate some of the issues associated with first-language-used effects and provide additional robustness to the findings.

The self is a dynamic concept shaped by interactions within socio-cultural and environmental contexts (Markus & Kitayama, 1991). According to the tripartite model (Brewer & Gardner, 1996), there is an interplay between three core representations of the self, namely the individual self, the relational self (e.g., kinship and friendships), and the collective self (e.g., ethnic and cultural groups). These core representations can be conceptualised as being a dynamic system rather than a fixed hierarchy shaped by cultural context. As illustrated by the current study, there is a level of flexibility in the overlap between the individual self and relational self (e.g., mother) that can be shaped by culture. In the collectivist Vietnamese, there was an overlap between the individual self and relational self (i.e., mother), whereas typically in Western participants, there is a marked distinction. This reflects the highly collectivist familial nature of traditional Vietnamese culture.

Differences in response times to other/stranger and self have also been found in some studies. Ivaz et al. (2016) found that 'other minus self' RTs were significantly reduced (almost halved) in the foreign language, English, than in the native language, Spanish. Moreover, Jiang et al. (2019) in a cross-cultural study found a larger self-bias toward other/stranger-associated stimuli in the individualist British participants than the more collectivist Hong Kong participants.

In conclusion, a significant self-bias effect was not found in the collectivist Vietnamese participants, in that there was not a significant difference in response times when responding to self- and mother-shape pairs. We also found evidence of a small effect of language, as the difference in response times between 'mother minus self' was less when the native language, Vietnamese, was used than the foreign language, English. Thus, participants even prioritised mother in comparison to self-related stimuli when responding in Vietnamese. Self-representation can be conceptualised as a dynamic system, rather than a fixed hierarchy, that can be shaped by cultural context and language to some extent.

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Data availability Data is available on request.

Declarations

Conflict of interest The authors declare no competing interests.

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