

Generalisation of Self-Reference Effect: Group Reference Effect on the basis of Visual Features



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Introduction

Self-relevant association resulting in ‘anecdotal’ self-concept is like a perceptual glue integrating all processing leading to continuity of experience. (Sui Humphrey 2012)

Sui et al(2011) showed how robust self-associations with neutral geometrical shapes causing similar advantages.

Johnson (2002) evidenced for Group Reference Effect,

We test (Expt.1) if biases of certain associations extend from one personal individual exemplar to a group of similar exemplars associated to that particular salient label.

It now needs to be made explicit if one is attaching labels to specific figures, or are they also learning categorisation rules, which once learned may be used to categorise and prefer all similar objects, as per learned labels

We thus also test (Expt2) if apart from associations of specific exemplars, indeed one or more or a combination of categorising rules are learnt and are socially prioritised

Methods

Participants:

Expt 1 had 18 reported participants, college students of IIT Kanpur (6W 12M; 22 to 32 years of age, M age=24.78±2.48).

Experiment 2 had 20 reported participants, college students of IIT Kanpur (seven women; 21 to 32 years, Mean age=24.9±2.5)

All except one participant were right-handed. All had normal/corrected-to-normal vision, no colour blindness.

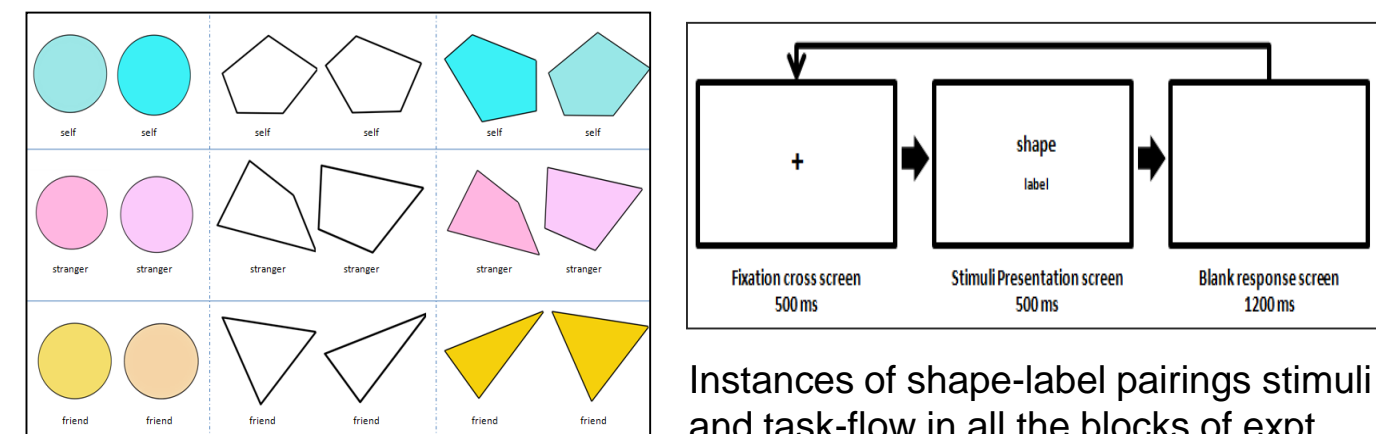
Informed consent taken prior to experiment as approved ethics committee. Participants were compensated duely.

Stimuli and Task:

One of 3 geometric shapes (triangle-quadrilateral-octagon in Expt 1a-1b, & triangle-quadrilateral - pentagon in Expt. 2a; 3.5° × 3.5°), and circles with luminence-controlled shades of 3 triadic colours (cyan-magenta-yellow, 3.5°×3.5°, in Expt 2b), and coloured-shape combinations (3.5° × 3.5°, Expt 2c) were the stimuli used on white background.

Each stimuli figure had labels of **Self**, or **Friend**, or **Stranger** (2.5°/3°×1.4°) associated with, balanced across subjects, and displayed below shape, below centre-place or the fixation cross.

Subjects judged if shape-label pairs matched or not



Instances of shape-label pairings stimuli and task-flow in all the blocks of expt.

Procedure:

All the experiments had two stages.

First, training stage where participants encoded blank shapes (Expt 1, 2a) or colours (Expt 2b) or coloured shapes (Expt 2c) with self, friend, stranger labels

In Expt1, all the shape-pair association were shown while in Expt2 only a non-exhaustive list of associations.

In the matching stage, participants responded, whether the presented shape-label, colour-label, coloured-shape-label pairings, were actually matching or not.

First, a black fixation cross for 500ms follows a starting blank screen. A stimuli figure with a label (*self*, or *friend*, or *stranger*) then flashed for 100 ms. Either pairing was congruent to initial learnt associations or it was a random orthogonal combination.

Responses were recorded from key press while within a displayed blank frame of 800ms-1,200ms. Response feedback flashed for 500ms after each run in trial block, but not test block.

Total accuracy may be seen at end of test blocks

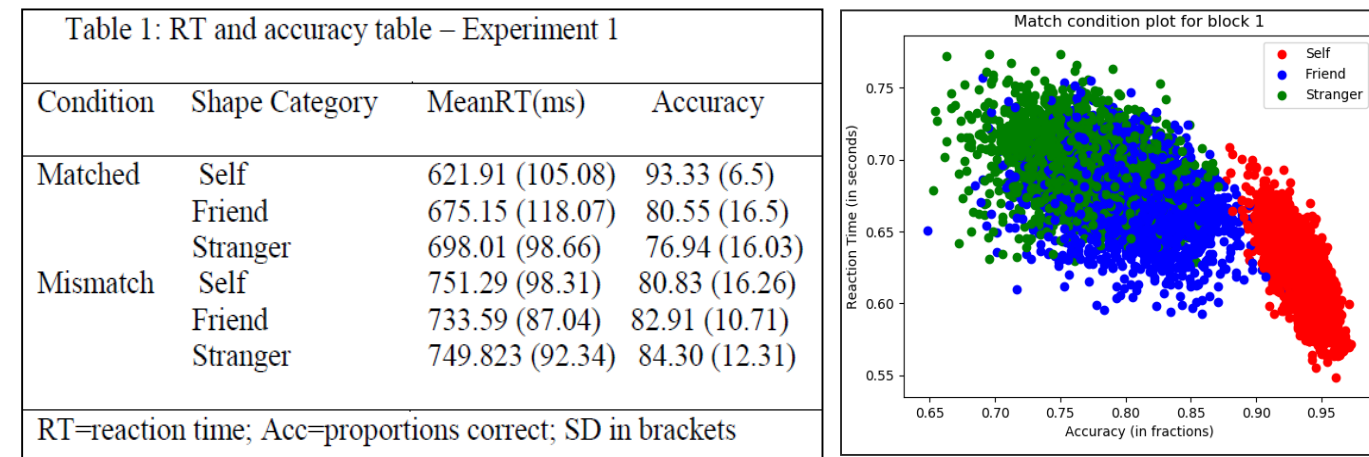
Overall, there were 40 trials in each condition (self-matched, & nonmatched; friend-matched & nonmatched and stranger matched & nonmatched) for expt 1a and 80 each in Expt 1b.

There were 30 trials for each match conditions in Expt 2

Results

Experiment 1a:

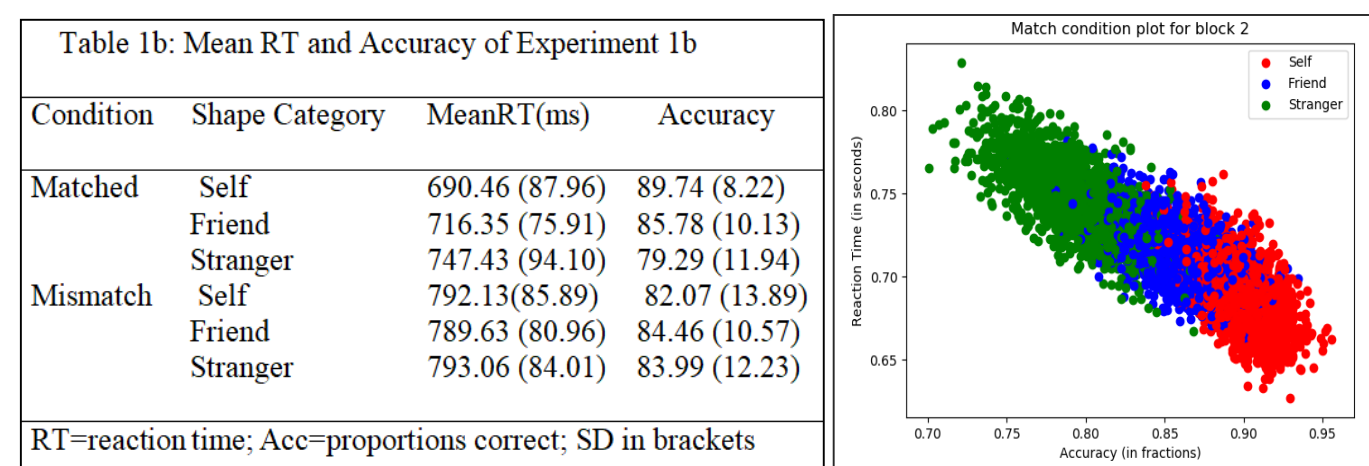
We emulate of Sui et. al(2012) for our case. Participants did respond faster and more accurately at matching individual exemplar of self compared to the other two.



ANOVAs of accuracy & RT, category type and interaction of category type and matching judgement reflected significant effect with all $p < 0.05$

Experiment 1b:

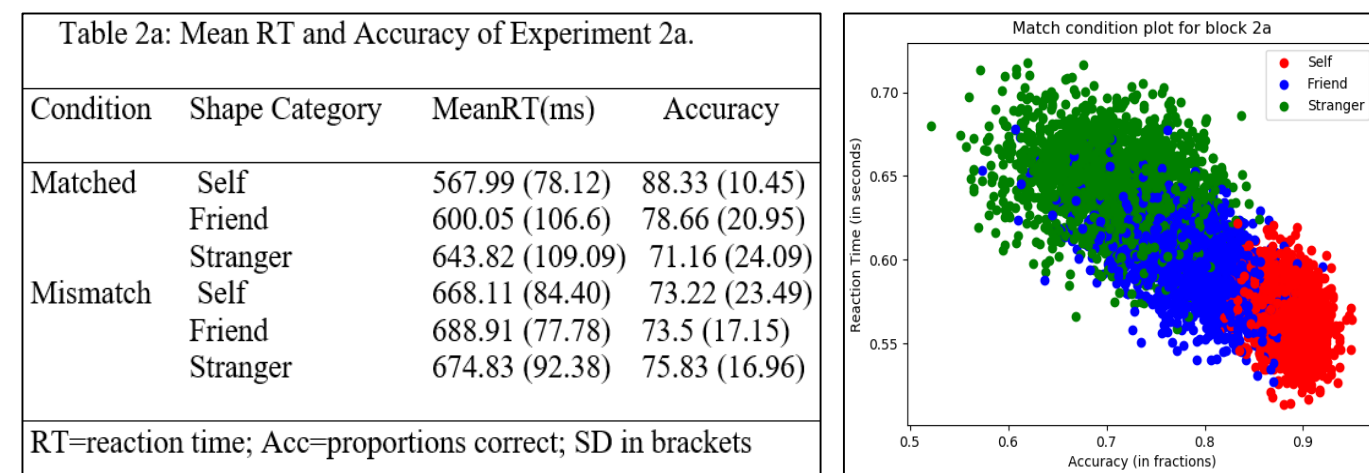
Benefits of Self Referential Effect is tested not just for one sole exemplar, but association with a family of similar exemplars to ‘self’. Participants did respond with significantly lower RTs & higher accurately to ‘self’ matching, as compared to the others.



ANOVAs of accuracy & RT, category type and interaction of category and matching judgement reflected significant effect with all $p < 0.05$

Experiment 2a:

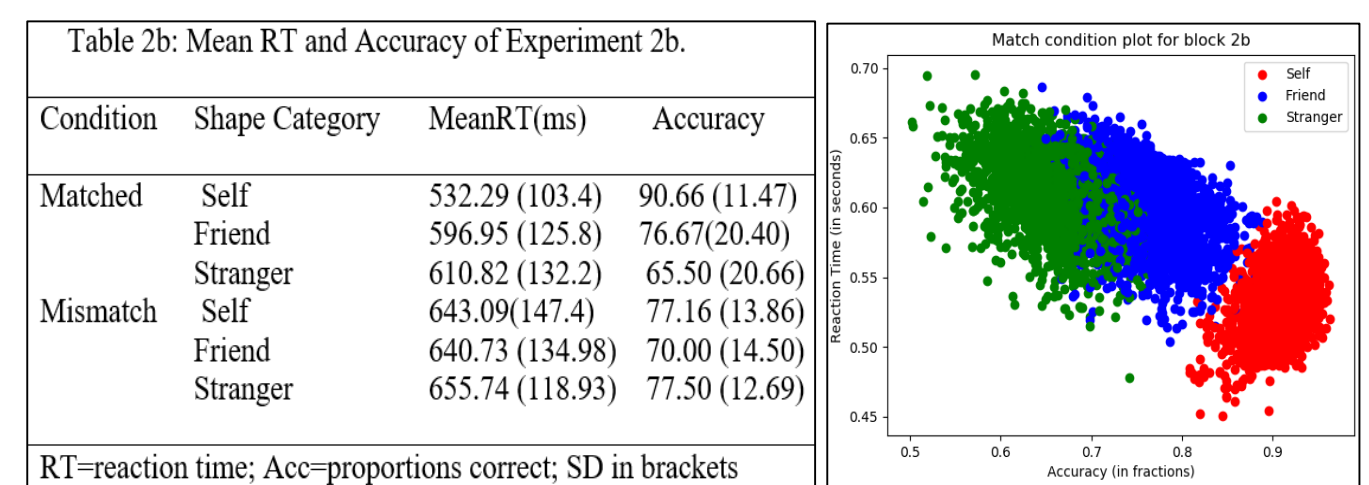
Participants seem to learn some rules regarding blank shapes of different edges and thus responded significantly faster and more accurately to all the exemplars of matching ‘self’ than to ‘other’1



A significant effect of category type was seen in both accuracy and RT while in accuracy, matching judgement just fell above .05. But in RT data the significant effect of shape, judgement and interaction is visible.

Experiment 2b:

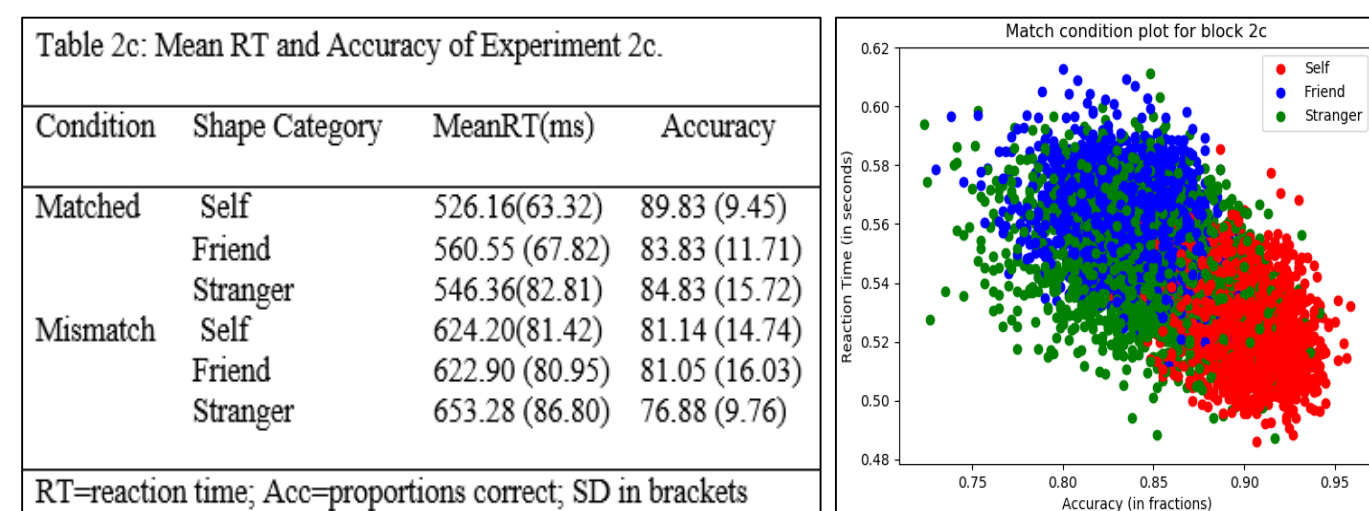
Colours also seem to have been learnt to be categorised with significantly lower RTs and higher accuracy across all shades of the colours associated with the more socially salient labels.



Repeated measures ANOVA had significance of $p < 0.05$ of category shape and its interaction with Matching judgement. For RT, evident significance for all of Type judgement, Matching choice, Interaction.

Experiment 2c:

We tested if Self Referential Effect still persists with conjunction of multiple independent rules of categorisation. Subjects still did respond significantly faster & more accurately to the ‘self’ matching, compared to the both friend and stranger, both of whom weren’t treated much different from each other.



ANOVAs of both accuracy and RT, significant effect was observed for category type and matching judgement with $p < 0.05$ for both in both.

Discussion

Replicating Sui et al (2012) with our set of stimuli for baseline purposes of our study, we saw significant evidence of self referential effect, even for simple visual shape-label pairing task.

Advantages of Group Referential Effect also seemed to materialise with the preferential processing of exemplars with ‘Self’ getting generalised from one individual to a whole family of similar exemplars associated with the more salient label.

Similar results of significant effects seen with shape judgement, matching judgement and their interaction for RTs and accuracies with Self (highest priority), Friend (medium), Stranger (lowest) .

We followed up on the possible implication that- participants are probably also learning some rules of the exemplar and extrapolating them to a whole class of similar shapes.

We found that perceptual benefits and prioritised processing manifesting self relevant bias definitely can be generated from learning class specific rules for a particular family of a specific saliency value reflected again through higher accuracy and lower RTs aggregated for the class

We also saw that the association can be learnt and the preference for the self concept can be reflected for more than one independent rules, that too off such primitive and non identity nature, viz. shape and colour of a neutral geometric shape.

Preference for Self or the Self Reference Effect for simple perceptual information stays even with stimuli with conjunction of two different independent rules, though the degrees in variation of overall responses may be interesting to look upon.

Conclusion

Ours as a study is among the first ones exploring into this possible nature of generalization of Self Referential Effect to Group Referential Effects through simple but instantaneous visual matching and judgement tasks.

This study also effectively tries to objectively gauge if the extension of preference for a group of similar objects associated with higher social salience is from learning each of the exemplars or from learning certain patterns or rules of categorisation which may work independently or in conjugation with other independent rules to represent a socially salient identity.

We have thus built on Sui’s initial work to try and reach a more solidify analogy for how people typically prioritise self-relevant stimuli and categorise individuals, social groups in the real life.

Future Work

We need to now extend these findings on the nature of preference through possible generalisation and rule learning and relate priority to real world group behaviours of selective blindness, negative prejudices among others through similar simple cognitive experiments with basic stimuli conditions.

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