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No evidence for a common self-bias across cognitive domains

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Abstract

It is generally acknowledged that humans have an egocentric bias; processing self-related stimuli in a specialised, preferential manner. The self-bias has been studied within cognitive domains such as memory, attention and perception; but never across cognitive domains in order to assess whether self-biases are a product of a common bias, or independent. This has relevance for conditions such as Autism Spectrum Disorder: certain self-biases are reduced in those with autism, but the pattern of results is not consistent across different cognitive domains. Self-bias was measured across the attentional and perceptual domains on two well-established tasks: the attentional blink (attention) and shape-label matching (perception) tasks. Processing of each participant's own name was compared to processing of the name of another individual very familiar to the participant (to control for familiarity), and the name of an unfamiliar other. In the attentional domain, the attentional blink for the participant's own name was reduced compared to that for the name of a familiar or unfamiliar other. In the perceptual domain, participants showed stronger associations between their own name and a geometric shape than between the other classes of names and associated shapes. Thus, strong evidence of a self-bias, independent of familiarity, was found on both tasks. However, across two experiments, the magnitude of the self-bias on the attentional blink and shape-label matching tasks was not correlated, supporting the idea that self-biases across cognitive domains are distinct. Furthermore, in contrast with extant models, neither type of self-bias was predicted by autistic traits.

Introduction

Over the centuries, the concept of 'the self' has fascinated philosophers and psychologists alike. Despite the lack of consensus on what exactly constitutes the human self-concept (for two recent views, see Gallagher, 2013; Northoff, 2016), it is generally agreed that our experience of a unified sense of self strongly biases the way we process the world around us. Across different sensory modalities, and while performing a multitude of tasks, humans show a strong bias for processing self-related information such as one's own face (Keyes & Brady, 2010) or name (Wood & Cowan, 1995). This self- (or egocentric) bias is argued to be closely linked to social functioning: a strong bias to process self-relevant cues is likely to lead to a more accurate model of the self and of those similar to us, enabling us to better infer their emotions and thoughts in a given situation (Conway, Catmur, & Bird, 2019; Goldman, 2006; Mitchell, 2009; Nijhof & Bird, 2019). However, should the self-bias be so extreme that it results in too little processing of other-related information, the development of associative links between cues to particular states in others and corresponding states in the self may be impacted. These links have been argued to be crucial in the development of imitation (Catmur, Walsh, & Heyes, 2009; Cook, Bird, Catmur, Press, & Heyes, 2014), empathy (Bird & Viding, 2014; Heyes & Bird, 2007; Quattrocki & Friston, 2014), and Theory of Mind (Ondobaka, Kilner, & Friston, 2017). Such an extreme focus on the self ('egocentrism') has been argued to be a cardinal feature of Autism Spectrum Disorder (ASD; Frith & de Vignemont, 2005; Lombardo & Baron-Cohen, 2010), although several studies have since found the opposite pattern, that is: a *decrease* in specific aspects of self-preferential processing in ASD (Uddin, 2011; Williams, 2010). Studying the self-bias may therefore lead not only to understanding how individuals process self-related information and develop a self-concept, but may also shed light on their socio-cognitive ability and how this may be impacted in conditions such as ASD.

While a self-bias has been observed on a number of tasks, the exact cognitive process it impacts is not yet clear. Across tasks, it has been claimed that a self-bias can be observed for several cognitive domains, including perception, memory and attention (see Cunningham & Turk, 2017, for an overview). For example, evidence for the claim that self-bias can be observed in the perceptual domain is provided by work by Sui and colleagues using the 'shape-label matching task' (Humphreys & Sui, 2015; Sui, He, & Humphreys, 2012). In this task participants learn to associate the self or others with neutral geometric shapes. When they subsequently have to judge whether specific shape-label combinations are correct, they show faster and more accurate performance for associations made to the self. Evidence that this effect is on perception (rather than attention) is provided by the fact that 1) the effect is maintained even when the self- or other-label is cued by the associated shape (minimising attentional effects) (Humphreys & Sui, 2016; Wang, Humphreys, & Sui, 2016), 2) functional Magnetic Resonance Imaging indicated less engagement of the frontoparietal attentional network for self-associations than other associations (Sui, Rotshtein, & Humphreys, 2013), and 3) the self-bias influences reaction times in the same manner as manipulations of perceptual salience such as increasing or decreasing contrast (Sui, Liu, Mevorach, & Humphreys, 2015).

In the attentional domain, Shapiro, Caldwell and Sorensen (1997) have investigated the bias for one's own name in the context of the attentional blink, using rapid serial visual presentation (RSVP): presenting streams of visual stimuli at a fast, fixed rate. The attentional blink describes the phenomenon that between approximately 200 and 500 milliseconds after the presentation of a first target (T1) in a RSVP stream, the ability to detect a second target (T2) is significantly reduced (Raymond, Shapiro, & Arnell, 1992). By presenting the T2 at different temporal lags with respect to T1, the time course of the attentional blink can be studied with great precision. Theoretical accounts of the attentional blink suggest there is a temporal capacity-limit on selective attentional resources, and therefore attentional demands of processing the first target prevent these resources from being applied to the second target, thus creating the attentional blink (Dux & Marois, 2009; Martens & Wyble, 2010). This implies that people will show a reduced attentional blink for highly salient stimuli, as these require less attentional resources to be processed. Assuming the own name is such a highly salient stimulus, Shapiro and colleagues (1997) hypothesised that the attentional blink would be reduced for one's own name (compared to another name). In a series of experiments, they tested attentional blink effects, contrasting the participant's own name with another person's name. It was indeed found that when presented as T2, one's own name, in contrast to a stranger's name, is resistant to the attentional blink: detection of one's own name was similarly high at all temporal lags. Since the attentional blink is thought to reflect the depletion of attentional resources, the authors concluded that the own name survives the attentional blink because less resources are required to process it (see also Tibboel, De Houwer, Van Bockstaele, & Verschuere, 2013).

Finally, in the domain of memory, it has been repeatedly shown that humans have superior memory for material that has been related to the self, a finding referred to as the self-reference effect (Symons & Johnson, 1997). The self-reference effect was initially found for stimuli that allow elaborate self-related processing, such as for personality traits after participants were asked to judge whether a trait applies to themselves, as compared to a specific other. However, a self-reference effect is also present for random objects after it is stated that they are owned by the participant versus by someone else: the 'ownership effect' (Cunningham, Turk, Macdonald, & Macrae, 2008).

A key question to be answered with respect to the effect of the self-bias on perception, attention and memory is whether these effects are 1) really one effect, 2) distinct but related, or 3) distinct and unrelated. The different self-biases could be considered one effect (1) if, for example, the effects on perception and memory were the product of the attentional self-bias such that self-related shapes were perceived faster / as if they had greater contrast, or items / traits remembered better, as a result of being accorded greater attention. Alternatively, the self-biases observed in perception, attention and memory could be distinct effects, but driven by a common self-bias (2) such that, across individuals, the magnitude of the self-bias in one domain predicts the magnitude of the self-bias in another domain. Alternatively, the self-biases may be distinct effects and the magnitude of each effect unrelated to the others (3) such that, across individuals, there is no correlation between the magnitude of different self-biases. It is this question that the current study attempts to address.

Specifically, the current study attempts to determine whether the self-biases reported in the perceptual and attentional domains are distinct by asking participants to complete both the shape-label matching task and the attentional blink task. The perceptual basis of the self-bias observed in the shape-label matching task is supported by the psychological and neurological evidence indicated previously (Humphreys & Sui, 2016; Sui et al., 2013; Sui et al., 2015). However, problematically, the attentional nature of the self-bias observed in the attentional blink task is called into question by the results of Shapiro et al. (1997) when comparing the effects of using one's own name (in contrast to a stranger's name) as T1 in the attentional blink paradigm. If the attentional blink is driven by a temporal capacity-limit on selective attentional resources such that attentional demands of processing the first target prevent these resources from being applied to the second target, and one's own name is less subject to the attentional blink when shown as T2 as it requires less attentional resources to be processed, then one would expect that one's own name should elicit less of an attentional blink if used as T1 in comparison to a stranger's name. However, Shapiro et al. (1997) did not find any difference in the attentional blink elicited following one's own name, in comparison to a stranger's name, when used as T1. Importantly however, sample size for this experiment was extremely low (N = 8), and we are not aware of any attempt to replicate this null result.

Accordingly, Experiment 1 attempted to replicate this experiment with a larger sample size in order to establish whether any evidence for an attentional basis of the self-bias observed on the attentional blink could be found. If truly attentional, when one's own name is used as T1 the attentional blink elicited should be reduced in magnitude compared to other names, as less attentional resources are required to process it, leaving additional resources for T2. In addition, we also sought to control for effects of familiarity (to the extent that this is possible for one's own name). Problematically for many studies of the self-bias, self-related stimuli tend to be more familiar than other-related stimuli, making it ambiguous as to whether any effects are a product of self-relatedness specifically, or are instead a general effect of stimulus familiarity. To reduce this ambiguity, studies of self-bias typically contrast self-related stimuli (e.g. one's own name) with familiar but not self-related stimuli (e.g. the name of someone close to you). When compared to unfamiliar stimuli (e.g. a stranger's name), distinct effects of self-relatedness and familiarity can be observed (Cygan, Tacikowski, Ostaszewski, Chojnicka, & Nowicka, 2014; Nijhof, Goris, Brass, Dhar, & Wiersema, 2018; Tacikowski et al., 2011; Yang, Wang, Gu, Gao, & Zhao, 2013). To date, studies of the self-bias using the attentional blink have not used a familiarity control, so it was included in both Experiments 1 and 2.

In order to address the relationship between self-biases observed in the shape-label matching task and the attentional blink task, Experiment 2A compared the magnitude of these self-biases within the same individuals. Experiment 2B constituted a replication of 2A and also investigated the reliability of self-bias effects within the same task over a one week period. Surprisingly, to our knowledge, self-biases have never been compared in the same individuals before, and therefore there are no relevant data on the relationship between different self-biases. At the theoretical level however, the relationship between self-biases has attracted a lot of attention with respect to the differences in self-related processing observed in those with ASD. This theoretical work has been based on separate studies comparing the magnitude of different self-biases in autistic[1] and neurotypical individuals (Nijhof & Bird, 2019). For example, ownership self-reference effects have been shown to be diminished in autistic individuals (Grisdale, Lind, Eacott, & Williams, 2014), and responses to one's own name and face are reduced in autistic children and adults (Cygan et al., 2014; Nijhof et al., 2018; Werner, Dawson, Osterling, & Dinno, 2000). In contrast, the size of the self-bias observed on trait memory tasks and on the shape-label matching task did not differ between autistic and neurotypical individuals (Lind, Williams, Nicholson, Grainger, & Carruthers, 2019; Williams, Nicholson, & Grainger, 2017). Results such as these have led researchers to argue for a distinction between the representation of psychological and physical aspects of the self (Uddin, 2011; Williams, 2010), and a distinction between first- and second-order representations of the self (Williams et al., 2017) in autism. As noted, however, these theoretical distinctions are based on empirical work which compares self-biases in different samples of

[1] To respect the wishes of autistic individuals and to report the study in line with scientific parlance, we use language preferred by clinical professionals (e.g., 'individuals with autism'), as well as the term 'autistic', a term endorsed by many individuals with ASD (Kenny et al., 2016).

individuals rather than in the same individuals, further highlighting the need to compare self-biases in the same individuals. Given the relevance to ASD, autistic traits were measured in both Experiments 1 and 2.

Experiment 1

Experiment 1 sought to determine whether the self-bias observed on the attentional blink task is attentional in nature by determining whether one's own name, in comparison to the name of someone close to the self (whose name should be familiar), and a stranger's name, elicits a different attentional blink when used as T1 in the attentional blink paradigm. Specifically, if the self-bias is an attentional effect, one should expect a significantly reduced attentional blink following one's own name compared to a stranger's name. By comparing one's own name with a close other's name, Experiment 1 also allowed it to be determined, as far as is possible, whether any effect is a self-related effect, or an effect of familiarity.

Experiment 1 – Methods

Participants

We aimed to recruit a minimum of 33 participants, based on a calculation performed using G*Power (version 3.1), as this would provide 80% power to detect a medium-sized interaction effect between Lag and Condition ($\eta_p^2 = .09$) at $\alpha = .05$. Thirty-six participants took part in Experiment 1. However, two participants showed extremely low levels of T1 detection, and therefore data from 34 participants (5 male, mean age: 26 years, S.D.: 7.3) were analysed. All participants reported no history of neurological or mental health difficulties, gave written informed consent prior to the study, and were financially compensated for their participation. The study was approved by the ethics committee of King's College London (approval code MR/17/18-274).

Attentional blink – Experimental task

The attentional blink task was presented using PsychoPy version 1.85.4 (Peirce, 2007) on a 23-inch monitor. Prior to the experiment, participants completed a short online form in which they provided their own name and the name of somebody close to them (Close Other condition). In addition, they eliminated names from a list of forty common English first names if there was somebody close to them with that name. Eliminated names were excluded as stimuli, and one of the remaining names was selected for the Stranger condition. Names in all three conditions were on average six digits long, with no significant differences between conditions ($F(2, 66) = 0.88$, $p = .38$, $\eta_p^2 = 0.03$). Finally, another remaining name from the list was selected as the name to be detected as T2. RSVP streams of 15 first names were presented to participants (see Figure 1). Distractor names were selected from those that were not eliminated from the list of forty first names. The different T1 conditions (own name, close other's name, stranger's name) were randomised on a trial-by-trial basis. Following a red fixation cross presented centrally for 1,000 ms, all 15 names were presented for 80 ms, with an inter-stimulus interval of 17 milliseconds. All stimuli were presented centrally on the screen in capitalised 40-point Arial, on a light grey background. Except for the T1, which was printed in white, all of the other 14 names were printed in black. T1 was presented either at the third, fourth or fifth position in the stream. The T2 name was presented at four different lags: Lag 1, Lag 2, Lag 5 and Lag 8, where the number corresponds to the number of stimulus presentations after T1 that T2 was presented. T2 was presented at each lag 9 times, thus for streams in which T2 was present this resulted in a total of 108 trials (3 (Condition) x 4 (T2 Lag) x 9 repetitions). An additional 108 trials were presented in which T2 was absent, leading to a total of 216 trials. After the RSVP stream had finished, participants were prompted with two questions: 1. 'What was the white word? Press spacebar when finished.' 2. 'Was [T2 name] present or not present? Press 'c' for present, 'n' for not present.' To answer the first question, they typed in the name on the keyboard; to answer the second, they pressed either the 'c' or 'n' key.

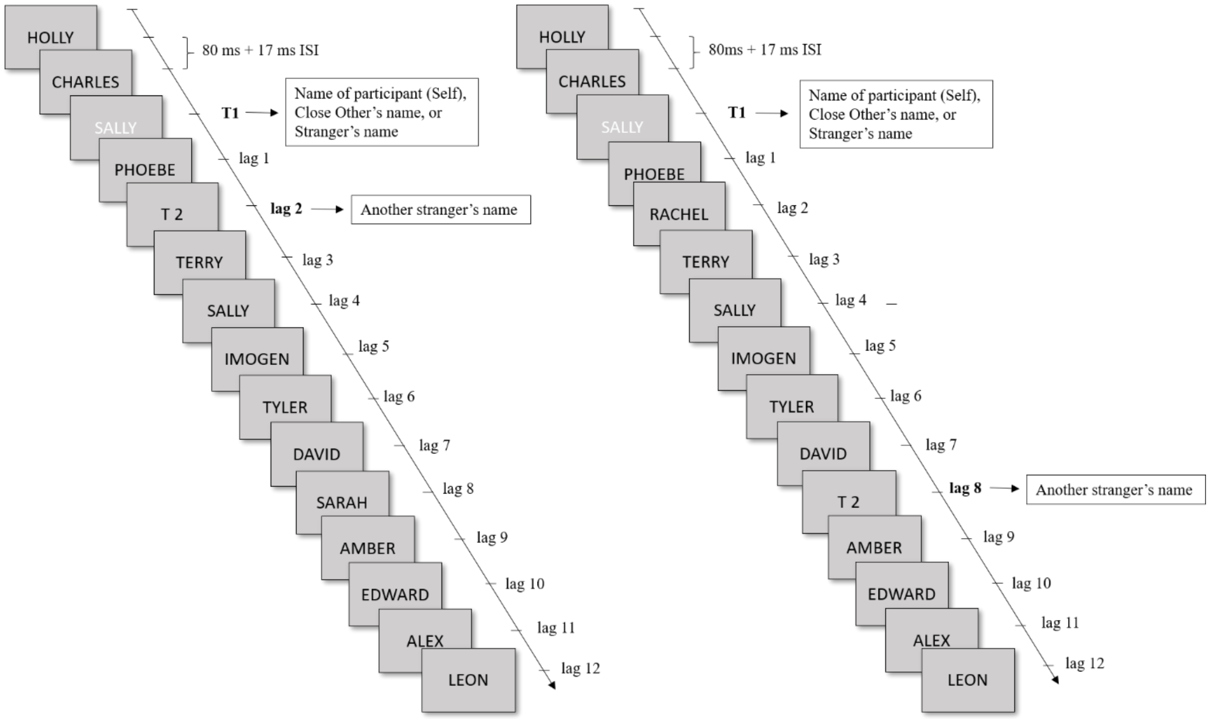

Figure 1. A visualisation of the Attentional Blink paradigm, with examples for the second target (T2) at Lag 2 and Lag 8. Note that the first target (T1) could be presented at position 3 (as shown here), 4 or 5.

Attentional blink – Control task.

The stimuli, presentation and number of trials were identical to the experimental task, but on the control task participants were instructed that they were only required to determine whether T2 was present or not.

Questionnaires

To allow for correlating any found self-bias effects with autistic traits, all participants completed the 50-item Autism Spectrum Quotient (AQ; Baron-Cohen, Wheelwright, Skinner, Martin, & Clubley, 2001), a widely-used self-report measure of autistic traits (observed Cronbach's alpha across all studies: .84). They also completed the 'Inclusion of Other in the Self' scale (IOS; Aron, Aron, & Smollan, 1992) as a measure of 'interpersonal closeness' for the other two names that were used as T1 stimuli. Participants provided a rating between 1 and 7 for each name, where 1 indicated feeling 'not close at all', and 7 'very close' to that person. This measure was included as a manipulation check to verify that participants rated the close other as being significantly closer to them than the stranger. Results indicated that this was the case ($t(33) = 17.54$, $p < .001$, $d = 3.01$; Close Other: 5.6, Stranger: 1.2).

Procedure

Order of the Experimental and Control tasks was counterbalanced between participants. The first task was preceded by ten practice trials. Participants completed the AQ and the two IOS scales after completion of the computer-based tasks.

Analysis

Data were analysed using IBM SPSS version 24. Where data are analysed using ANOVA, partial eta squared (η_p^2) values are reported as a measure of effect size, and Cohen's d for t-tests. In cases where the assumption of sphericity was violated, a Greenhouse-Geisser correction was applied and these values are reported.

For the Experimental task, first, the number of correct T1 detections for each condition was calculated. Minor spelling mistakes were tolerated (e.g. 'Lacy' for 'Lacey') if the answer was still recognisable as the correct name. Using this criterion, all incorrect responses were manually checked by two independent raters, who showed an agreement rate of 98.1%. Any disagreements were resolved through discussion. Second, a one-way repeated-measures ANOVA was performed to test whether T1 detection accuracy differed by condition (Self/Close Other/Stranger). Third, we calculated the proportion of 'T1-correct' trials on which T2 was also correctly detected, for each lag and condition. The proportion of T2 trials correctly detected (given correct T1 detection) served as the dependent variable in a 3 x 4 repeated-measures ANOVA, with factors of Condition (Self/Close Other/Stranger) and Lag (1/2/5/8). This last analysis was also carried out for the Control task, with the proportion of correct T2 detections serving as the dependent variable. For the Experimental task, planned comparisons were carried out for the difference between Lag 2 and Lag 8, as attentional blink effects are typically largest at Lag 2, and Lag 8 is least susceptible to attentional blink effects (Raymond et al., 1992).

Finally, correlational analyses were performed between participants' AQ scores and their self-bias effects. Self-bias was operationalised by subtracting the difference between Lag 2 and Lag 8 for the Self condition, from that difference in each of the Close Other and Stranger conditions (thus encompassing both the effect of self-relatedness and of familiarity). We also carried out correlational analyses within a Bayesian framework using JASP (https://jasp-stats.org; JASP Team, 2016), to examine the strength of the evidence in favour of the null (r = 0) and alternative hypotheses (r ≠ 0). A Bayes Factor (BF01) approaching zero indicates that the data provide more evidence in favour of the alternative hypothesis (H1) than the null hypothesis (H0), a value of 1 indicates that H0 and H1 are equally likely given the data, and values above 1 indicate greater support for H0. By convention, values below 1/3 and above 3 are taken as evidence in favour of H1 and H0, respectively, while values between these values are judged to provide no evidence to favour either hypothesis. We used a stretched beta prior width of 0.5 as an estimate of a realistic H1 effect size.

Experiment 1 – Results and Discussion

Results for the Experimental and Control tasks are displayed in Figure 2.

Although correct T1 detection was very high overall (94.7% on average), the ANOVA did reveal a significant effect of Condition ($F(2, 66) = 6.06$, $p = .006$, $\eta_p^2 = 0.16$), with detection in the Self (97.4%) and Close Other (95.6%) conditions being significantly better than in the Stranger condition (91.0%, $p = .007$ and $p = .02$, respectively). Detection rates in the Self and Close Other conditions were not significantly different ($p = .24$).

For the Experimental task, the 3 (Condition) x 4 (Lag) repeated-measures ANOVA showed a significant main effect of Condition ($F(2, 66) = 25.81$, $p < .001$, $\eta_p^2 = 0.44$), with better T2 detection in the Self condition than either Close Other or Stranger conditions (both $p < .001$), and better in the Close Other than the Stranger condition ($p = .008$). Furthermore, the main effect of Lag was significant ($F(3, 99) = 54.01$, $p < .001$, $\eta_p^2 = 0.62$): T2 detection was worse at Lag 2 than at any of the other three lags (all $p < .001$), indicative of the typical attentional blink effect. Finally, the data showed a significant Condition x Lag interaction ($F(6, 198) = 5.41$, $p < .001$, $\eta_p^2 = 0.14$). Planned comparisons showed that the difference between Lag 2 and Lag 8 was significantly smaller in the Self than the Close Other condition ($t(33) = 2.10$, $p < .05$, $d = 0.36$) and the Stranger condition ($t(33) = 2.59$, $p = .01$, $d = 0.45$), with no difference between Close Other and Stranger ($t(33) = 0.89$, $p = .38$, $d = 0.10$).

AQ scores ranged from 3 to 38 ($M = 16.6$, $SD = 7.9$). No significant correlations of differences between Self and Close Other (mean difference = 10.4, $SD = 29.0$), or Self and Stranger (mean difference = 14.6, $SD = 32.8$), with AQ score were found (Close Other: $r(34) = .22$, $p = .22$, BF01 = 0.62; Stranger: $r(34) = .27$, $p = .12$, BF01 = 0.95).

For the Control task, the ANOVA showed no significant main or interaction effects.

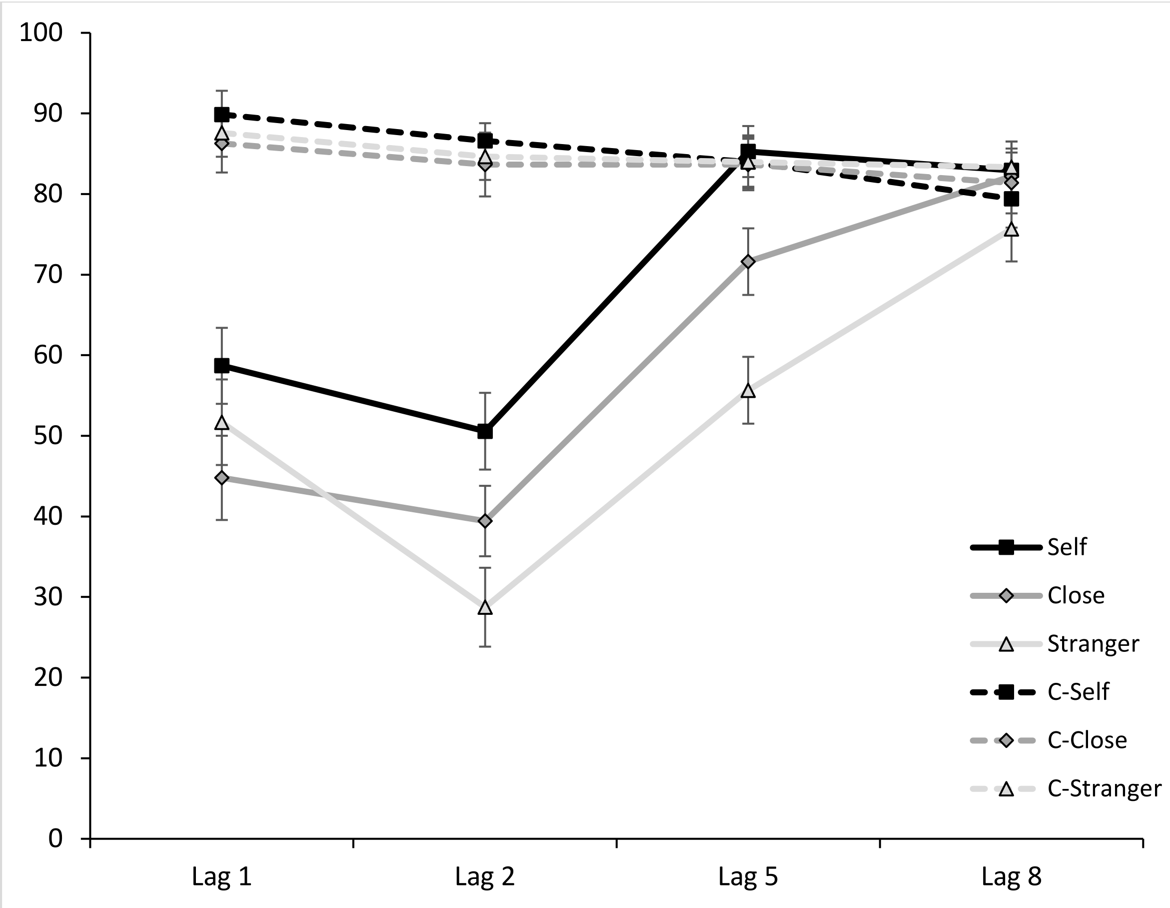

Figure 2. Detection rates of T2 (given correct detection of T1 on the experimental task), +/- 1 standard error of the mean. Solid lines: experimental task, dashed lines: control task. T1 was either of the three names (Self, Close Other, Stranger), T2 was a stranger's name.

Experiment 1 provided evidence of the attentional basis of the self-bias observed in the attentional blink task. The attentional blink effect was smaller following one's own name when used as T1 than when a close other's or stranger's name was used. In contrast to extant theories (Lombardo & Baron-Cohen, 2010; Uddin, 2011; Williams, 2010; but see Williams et al., 2017, for a more nuanced view), the size of the self-bias was not predicted by autistic traits. It should however be noted that given the small sample size, combined with the BF only providing anecdotal evidence for H0, further research is warranted.

Experiment 2A

Experiment 1 provided evidence that the self-bias observed on the attentional blink task has an attentional basis, Experiment 2A therefore compared the magnitude of the self-bias observed in the attentional blink task with that observed on the shape-label matching task (where the self-bias is thought to reflect an effect on perception) in the same set of participants.

The attentional blink task used in Experiment 2A was the same as that used in Experiment 1, except that the experimental manipulation (own name, close other's name, stranger's name) occurred for T2 as is standard. Importantly, shape associations on the shape-label matching task were learnt with the same three first names that were used for the attentional blink task. This is a departure from the original task (Sui et al., 2012) in which the shapes were paired with the labels *You*, *Friend,* and *Stranger*. The use of such labels has been criticised as the self-label is a pronoun and the other two are nouns, introducing a potential lexical confound (Schäfer, Wentura, & Frings, 2017; Wade & Vickery, 2017). The use of three names avoids this potential confound, and allows comparison with the attentional blink task (although the use of the original labels may reduce any familiarity confound).

Experiment 2A – Methods

Participants

Reported effect sizes for the differences between self and others on both the attentional blink and the shape-label matching task are large ($\eta_p^2 > 0.60$; Sui et al., 2012; Tibboel et al., 2013). However, as the comparison between the Self and Close Other conditions was hypothesised to lead to smaller effect sizes, we aimed to test a minimum of 52 participants, corresponding to 80% power to detect an effect size of $d = 0.40$ at $\alpha = .05$ for planned contrasts (paired-samples t-tests). With no prior research to guide the expected size of correlations between tasks, it should be noted that Experiment 2A had approximately 80% power to detect a correlation of .35.

62 participants (10 male, mean age: 24 years, S.D.: 4.3) were recruited via online advertisements and a database of potential research volunteers held at King's College London. Eight participants did not score above chance on the matching element of the shape-label task and were therefore excluded from analysis for this task, resulting in an overlapping sample of 54 participants

for both tasks (8 male, mean age: 24 years, S.D.: 4.3). Participants had no reported history of neurological or mental health difficulties. All participants gave written informed consent prior to the study and were financially compensated for their participation.

Tasks

Names were selected in the same way as for Experiment 1. Names in all three conditions were on average six digits long, with no significant differences between conditions ($F (2, 122) = 0.67$, $p = 0.46$, $\eta_p^2 = 0.01$).

Attentional blink task. All parameters were identical to those of Experiment 1, except where noted. The biggest change from Experiment 1 was that T1 was now one of ten strangers' names that were not eliminated from the list of 40 names, and T2 was one of the three name conditions (Self/Close Other/Stranger), with the different T2 conditions divided over three blocks. All trials within the blocks were presented randomly and repeated 12 times. On 48 trials per block, T2 was present (4 T2 Lags x 12 repetitions). In addition to these trials, another 48 trials were presented in which T2 was absent, leading to a total of 96 trials per block. Participant instructions were the same as in Experiment 1. For each of the three blocks, there was a corresponding Control block, in which participants were instructed to only detect T2.

Shape-label matching task: Association. The initial association of shapes and labels followed an adapted version of the procedure adopted by Wang, Humphreys and Sui (2016). Participants were required to associate three geometric shapes (circle, square, triangle) with three labels. To allow comparison with the attentional blink task and to control for possible effects of stimulus differences other than self-relevance (e.g., the lexical confound induced by using a pronoun versus two nouns; Schäfer et al., 2017), we used first names (the participant's own name, the name of their close other, and the name of an unknown other) instead of the 'you, friend, stranger' labels used in previous studies (Sui et al., 2012; Wang et al., 2016).

Participants were shown an instruction screen which included the following text: 'You will learn to associate: the (Circle/Square/Triangle) with (name 1), the (Circle/Square/Triangle) with (name 2), and the (Circle/Square/Triangle) with (name 3). Your task is to choose which of the labels matches the shape in the display. Please press left for (name 1), down for (name 2), and right for (name 3).' The individual shape-label pairs, and the order in which the labels appeared on the screen, was counterbalanced between participants. At the start of each trial, a central fixation cross was presented for 2,000 ms. Subsequently, a shape (3.3° x 3.3°) and the three labels (capitalised 40-

point Arial) were presented together for 1,000 ms in white on a light grey background. The shape was presented above a fixation cross, and the labels were presented on the left, middle and right lower half of the screen. A blank screen followed the stimuli until participants' response (left, down or right arrow) or for 2,000 ms, whichever was sooner. Finally, feedback was displayed for 500 ms; participants were shown the word 'Good!' if they answered correctly within the 2,000ms time limit, 'Too slow!' if they did not respond in time, or 'Wrong!' if they answered incorrectly within the time limit. This phase of the task started after six practice trials and terminated as soon as participants responded correctly to each of the shapes six times consecutively.

Shape-label matching task: Matching. For the matching task, the original paradigm developed by Sui et al. (2012) was used with the modified labels described above. All stimuli were presented in white on a light grey background. After an initial fixation cross that was on screen for 500 ms, combinations of names and shapes were presented for 100 ms, with the shape (3.3° x 3.3°) presented above the fixation cross and the name (capitalised 40-point Arial) below it. Stimulus presentation was followed by an inter-trial interval varying between 800 and 1,200 ms. Participants were asked to respond to a matching combination of shape and name with the (left or right) arrow key, and with the other arrow key for a mismatch (left/right correspondence was counterbalanced between participants). After 12 practice trials, 360 trials were divided over three blocks. In each block, 20 matching and 20 non-matching pairs were presented for each of the three name conditions, in random order. Participants received feedback on each trial, for 500 ms, in the same format as during the association phase, and they were informed of their overall accuracy at the end of each block.

Procedure

Upon arrival, participants first performed the two computer-based tasks (attentional blink and shape-label matching task), the order of which was counterbalanced. For the attentional blink task, control and experimental blocks of the same condition (self, close other, stranger) were always presented together. Whether the control or experimental conditions came first was counterbalanced between participants, as was the order of the three conditions. Before starting the first block, participants carried out ten practice trials. After completion of the computer tasks participants completed the AQ and IOS questionnaires. Analysis of the IOS data revealed that participants rated the close other as being significantly closer to them than the stranger ($t(61) = 31.3$, $p < .001$, $d = 3.42$; close other: 5.8, stranger: 1.3).

Analysis

For the attentional blink task, data were analysed in the same way as for Experiment 1, with the only difference being that the factor Condition now refers to T2, rather than T1.

For the shape-label matching task, the analysis strategy of Sui et al. (2012) was adhered to. Accordingly, data were analysed using a 2 (Matching/Non-Matching) x 3 (Condition) repeated-measures ANOVA, for both reaction time (RT) on correct trials, and accuracy. Given that self-referential effects on this task are usually only found for the matching pairs, we planned follow-up analyses for matching and non-matching pairs separately. RTs three standard deviations above or below an individual's mean RT were removed, eliminating 2% of the trials overall.

Finally, correlational analyses were performed on self-bias effects across the two tasks, and for both effects with participants' AQ score. On the attentional blink task, self-bias was operationalised as the difference in size of the attentional blink (Lag 8 – Lag 2) between the Self and Close Other conditions. Self-bias on the shape-label matching task was operationalised as the RT difference between the Self and Close Other conditions on matching trials.

Experiment 2A – Results and Discussion

Attentional blink task

T2 detection rates (given correct T1 detection on the Experimental task) as a function of condition are displayed in Figure 3, for both the Experimental and the Control task.

On the Experimental task, the T1 name was correctly detected on 86.3% of trials (agreement between two independent raters: 96.0%). T1 detection did not differ significantly between the three T2 conditions ($F(2, 122) = 0.46$, $p = .64$, $\eta_p^2 < 0.01$). The 3 x 4 repeated-measures ANOVA carried out on the T2 correct detection data with factors Condition and Lag revealed a significant main effect of Condition ($F(2, 122) = 105.90$, $p < .001$, $\eta_p^2 = 0.64$), with T2 detection being better in the Self than the Close Other and Stranger condition (both $p < .001$), and better in the Close Other than Stranger condition ($p < .001$). In addition, there was a significant main effect of Lag ($F(3, 183) = 58.13$, $p < .001$, $\eta_p^2 = 0.49$): detection at Lag 2 was significantly worse than at all other lags (all $p < .001$), in line with the expected attentional blink effect. There was also a significant interaction effect between

Condition and Lag ($F(6, 366) = 15.23$, $p < .001$, $\eta_p^2 = 0.20$). Planned comparisons revealed that the difference in detection rate between Lag 2 and Lag 8 was significantly smaller for the Self than for both the Close Other ($t\ (61) = 4.61$, $p < .001$, $d = 0.59$) and Stranger condition ($t\ (61) = 6.21$, $p < .001$, $d = 0.79$), and that this difference was also significantly smaller for the Close Other condition compared to the Stranger condition ($t\ (61) = 2.40$, $p = .02$, $d = 0.30$).

For the Control task, the ANOVA revealed a significant main effect of Condition ($F(2, 122) = 29.54$, $p < .001$, $\eta_p^2 = 0.33$), with pairwise comparisons showing that T2 detection was better in the Self than in both the Close Other and Stranger condition ($p = .002$ and $p < .001$, respectively), and better for Close Other than for Stranger ($p = < .001$). Further, there was a main effect of Lag ($F(3, 183) = 8.69$, $p < .001$, $\eta_p^2 = 0.13$): T2 detection was worse at Lag 8 than at any of the other lags (all $p < .01$). The interaction effect between Condition and Lag was not significant ($F(6, 366) = .625$, $p = .68$).

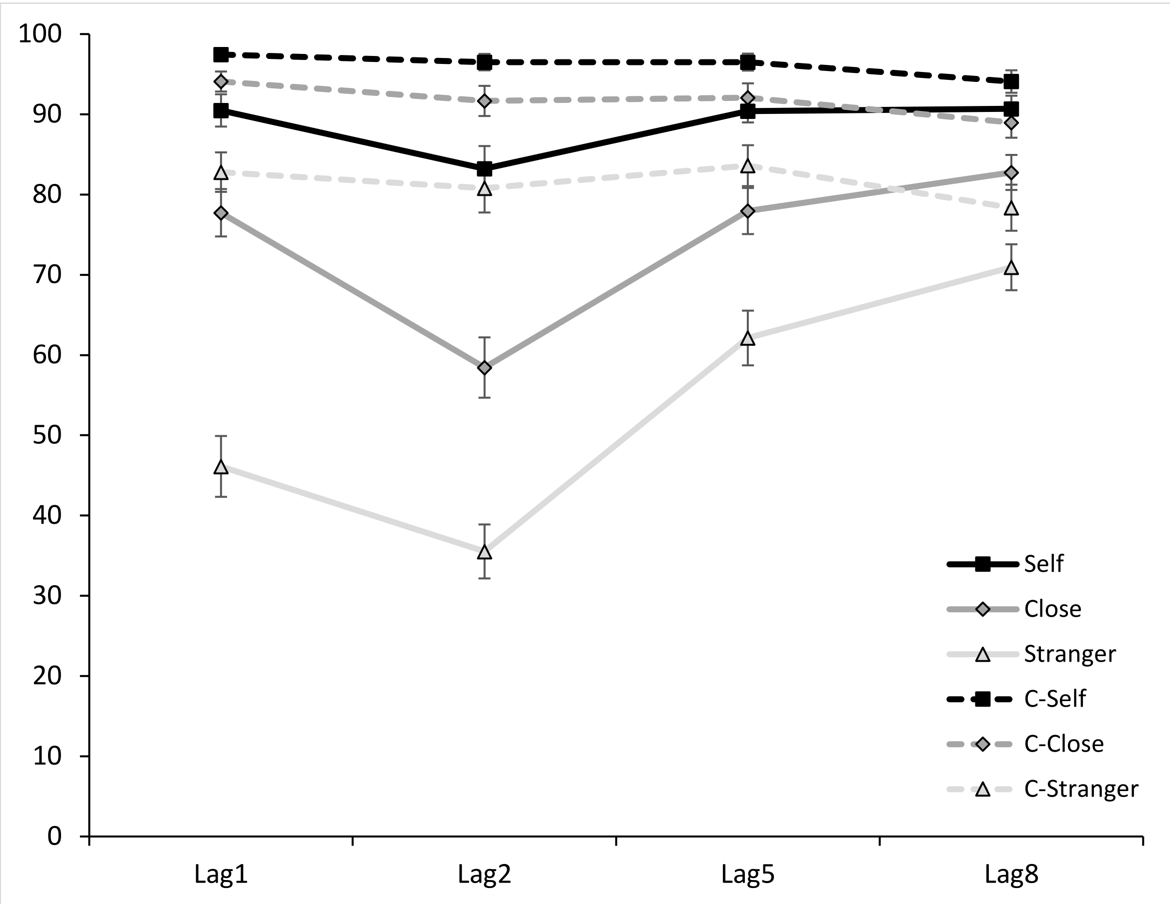

Figure 3. Detection rates of T2 for the four different lags (given correct detection of T1 on the experimental task), +/- 1 standard error of the mean. Solid lines: experimental task, dashed lines: control task. T1 was a stranger's name, T2 was either the participant's own name, the name of somebody close to them, or the name of a stranger.

Matching task

RT and accuracy data from the matching task are displayed in Table 1.

For reaction times, the 2 x 3 repeated-measures ANOVA revealed a significant main effect of Match ($F(1, 53) = 120.72$, $p < .001$, $\eta_p^2 = 0.70$), with responses being faster for matching than for non-matching pairs. Furthermore, there was a significant effect of Condition ($F(2, 106) = 18.06$, $p < .001$, $\eta_p^2 = 0.25$). RTs were significantly faster in the Self condition than in the Close Other and Stranger conditions ($p = .001$ and $p < .001$, respectively), and faster for the Close Other than Stranger conditions ($p = .01$). The interaction effect between Match and Condition was also significant ($F(2, 106) = 5.25$, $p = .01$, $\eta_p^2 = 0.09$), and so the planned comparisons for the effect of Condition on matching and non-matching trials were performed separately. These revealed that the Condition effect was significant for the matching pairs ($F(2, 106) = 13.36$, $p < .001$, $\eta_p^2 = 0.20$), with RTs in the Self condition being faster than those in the Close Other ($t (53) = 3.13$, $p = .003$, $d = 0.43$) or Stranger conditions ($t (53) = 4.65$, $p <.001$, $d = 0.63$), and faster in the Close Other than Stranger conditions ($t (53) = 2.39$, $p = .02$, $d = 0.32$). For the non-matching pairs, the Condition effect was also significant ($F(2, 106) = 5.31$, $p = .01$, $\eta_p^2 = 0.09$), but planned comparisons revealed that only the difference between the Self and the Close Other ($t (53) = 2.61$, $p = .01$, $d = 0.36$), and Self and Stranger conditions were significant ($t (53) = 3.02$, $p = .004$, $d = 0.42$). The difference between the Close Other and Stranger ($t (53) = 0.34$, $p = .74$, $d = 0.05$) conditions was not significant.

Analysis of the accuracy data revealed a significant main effect of Match ($F(1, 53) = 6.13$, $p = .02$, $\eta_p^2 = 0.10$), with responses being more accurate for matching than for non-matching pairs, as well as a main effect of Condition ($F(2, 106) = 4.25$, $p = .02$, $\eta_p^2 = 0.07$), driven by a significant difference between Self and Stranger ($p = .01$). Further, there was a significant Match x Condition interaction ($F(2, 106) = 11.61$, $p < .001$, $\eta_p^2 = 0.18$). Separate analyses for matching and non-matching trials showed a significant Condition effect for matching pairs ($F(2, 106) = 10.89$, $p < .001$, $\eta_p^2 = 0.17$), with lower accuracy on the Stranger condition than the Self ($t (53) = 4.28$, $p < .001$, $d = 0.58$) and Close Other ($t (53) = 2.79$, $p = .01$, $d = 0.38$) conditions, and the difference in accuracy between Self and Close Other trials being close to significant ($t (53) = 1.97$, $p = .05$, $d = 0.27$). For non-matching pairs, the effect of Condition was not significant ($F(2, 106) = 1.69$, $p = .19$, $\eta_p^2 = 0.03$).

Table 1. Mean reaction times and accuracy data for each condition in the shape-label matching task.

	Condition	Mean RT (ms)	Accuracy
Match	Self	550 (66)	0.81 (0.14)
	Close Other	571 (66)	0.77 (0.14)
	Stranger	589 (67)	0.70 (0.19)
Non-match	Self	612 (64)	0.71 (0.14)
	Close Other	622 (67)	0.72 (0.13)
	Stranger	624 (57)	0.74 (0.13)

Note: RT = reaction time in milliseconds; standard deviations in brackets.

Cross Task Comparison and Autistic Traits

Self-bias effects across the two tasks were not correlated (r (54) = .03, p = .85) and the Bayesian analysis provided stronger support for the null hypothesis (r = 0) than for the alternative hypothesis (r > 0); BF01 = 3.44). No significant correlation was found either when using accuracy rather than RT on the matching task (see Supplementary Material).

AQ scores ranged from 4 to 31 (M = 17.7, SD = 6.2). A larger difference between Self and Close Other (M = 16.8, SD = 28.8) on the attentional blink task was associated with lower AQ scores, but this effect did not reach significance and its presence was not supported by the Bayesian analysis (r (62) = -.23, p = .07, BF01 = 0.94). The correlation between AQ and the Self-Stranger difference (M = 28.0, SD = 35.5) was also not significant (r (62) = .09, p = .48, BF01 = 3.35). Similarly, the level of self-bias on the shape-label matching task did not correlate significantly with AQ score for either Self-Close Other (M = 21.5, SD = 50.5; r (54) = -.12, p = .40, BF01 = 2.85) or Self-Stranger (M = 39.1, SD = 61.8; r (54) = -.07, p = .64, BF01 = 3.61), and Bayesian analyses indicated evidence in favour of the null hypothesis for all analyses.

Robust self-biases (in addition to familiarity-biases) were observed on both the attentional blink and shape-label matching tasks. However, the magnitude of the self-biases was not correlated. Indeed, the use of Bayesian statistical techniques provided support for the null hypothesis of no association. Autistic traits did not predict the magnitude of the self-bias on either the attentional blink or shape-label matching task. Bayesian analyses indicated support for no association between AQ scores and the self-bias on the matching task, but that the evidence was inconclusive with respect to the relationship between the AQ and the self-bias on the attentional blink task.

Experiment 2B

Experiment 2B was designed to achieve two objectives. First, to replicate Experiment 2A in investigating the association between self-biases on the attentional blink and shape-label matching tasks in an independent sample. Second, to assess the reliability of the self-biases over a one-week period.

Experiment 2B – Methods

Participants

We aimed to recruit the same number of participants as in experiment 2A, to provide a similar degree of power. Sixty-six participants were recruited via online advertisements, of whom 59 (5 male) formed the final sample as they completed both tasks in week 1 as well as week 2. Five participants did not score above chance on the matching element of the shape-label task, and an additional four participants did not score above chance on T1 detection during the attentional blink task. These participants were therefore excluded from analysis. Participants had no reported history of neurological or mental health difficulties. All participants gave online informed consent prior to the study and were financially compensated for their participation.

Tasks

Task parameters were identical to those of Experiment 2A, except where noted. Both tasks were programmed to be carried out online, using Gorilla Experiment Builder (Anwyl-Irvine, Massonnié, Flitton, Kirkham, & Evershed, 2019).

Attentional blink task. In order to reduce testing time, no Control blocks were presented on this task.

Shape-label matching task. After an initial pilot, stimulus presentation in the matching phase was lengthened to 150 ms to accommodate visibility on screens with different refresh rates. Feedback was displayed as a green tick mark for correct answers, and as a red cross for answers that were incorrect or too slow.

Procedure

Participants performed the two computer-based tasks (attentional blink and shape-label matching task) online, with counterbalanced task order. They were instructed to perform the tasks on a laptop or PC (not a phone or tablet), and to avoid any distraction during task completion by turning off their mobile phone, music, and television. After completing both tasks successfully, six days later they received a reminder with a link to the tasks to be completed the next day. At week 2, tasks were presented in a reversed order relative to week 1. A sub-sample of participants completed the AQ alongside the attentional blink ($N = 36$) or matching ($N = 35$) task.

Analysis

Data were analysed in the same way as for Experiment 2A, both for week 1 and week 2. In addition, to assess the test-retest reliability of the self-bias measures, the correlation between the difference in size of the attentional blink (Lag 8 – Lag 2) between the Self and Close Other conditions between week 1 and week 2 was calculated. For the shape-label matching task, the correlation between the RT difference between the Self and Close Other conditions on matching trials for week 1 and week 2 was calculated.

Experiment 2B – Results and Discussion

Attentional Blink task

T2 detection rates (given correct T1 detection) as a function of condition are displayed in Figures 4A (week 1) and 4B (week 2). A full description of the results can be found in the Supplementary Materials.

Replicating the results of Experiment 2A, we found a significant interaction effect between Condition and Lag (Week 1: $F(6, 324) = 23.76$, $p < .001$, $\eta_p^2 = 0.31$; Week 2: $F(6, 324) = 27.38$, $p < .001$, $\eta_p^2 = 0.34$). Planned comparisons revealed that the difference in detection rate between Lag 2 and Lag 8 was significantly smaller for the Self than for the Close Other (Week 1: $t(54) = 4.38$, $p < .001$, $d = 0.59$; Week 2: $t(54) = 4.19$, $p < .001$, $d = 0.57$) and the Stranger condition (Week 1: $t(54) = 7.82$, $p < .001$, $d = 1.06$; Week 2: $t(54) = 9.16$, $p < .001$, $d = 1.24$), and for the Close Other condition compared to the Stranger condition (Week 1: t (54) = 2.44, p = .02, d = 0.33; Week 2: t (54) = 4.89, p < .001, d = 0.66).

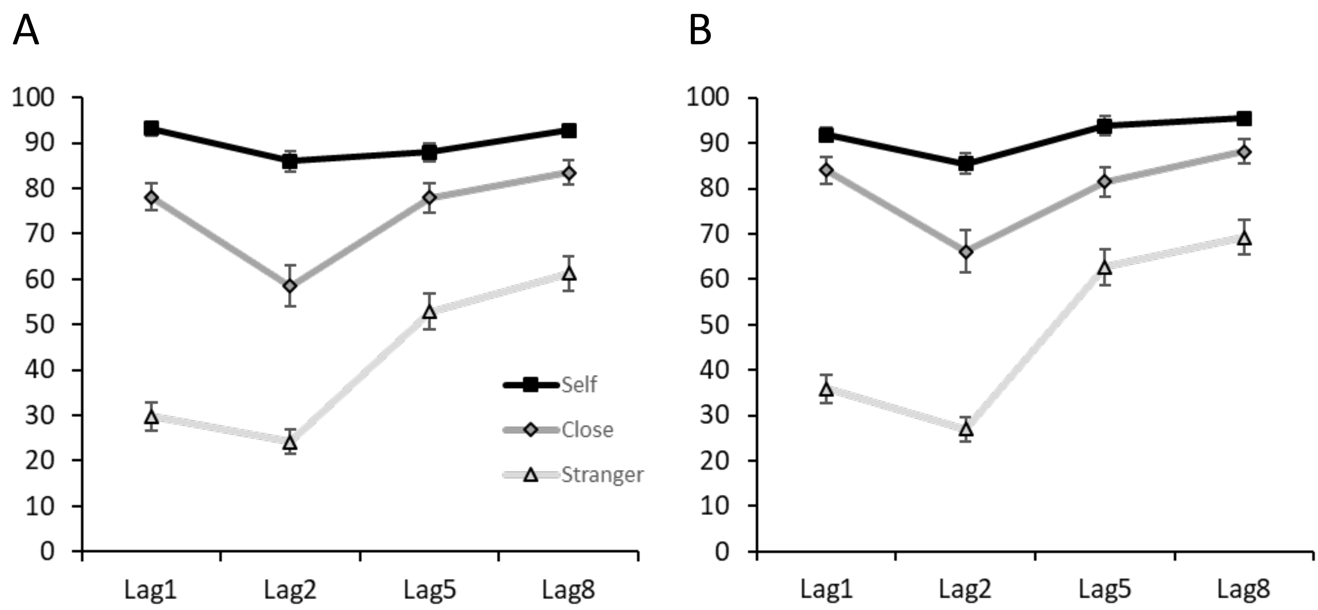

Figure 4. Detection rates of T2 for the four different lags (given correct detection of T1), +/- 1 standard error of the mean. A: week 1, B: week 2. T1 was a stranger's name, T2 was either the participant's own name, the name of somebody close to them, or the name of a stranger.

Shape-label matching task

RT and accuracy data from the matching task are displayed in Table 2. Replicating Experiment 2A, the Condition effect was significant for the matching pairs on both testing sessions (Week 1: $F(2, 106) = 28.56$, $p < .001$, $\eta_p^2 = 0.35$; Week 2: $F(2, 106) = 29.01$, $p < .001$, $\eta_p^2 = 0.35$), with RTs in the Self condition being faster than those in the Close Other (Week 1: t (53) = 4.44, p < .001, d = 0.60; Week 2: t (53) = 3.70, p = .001, d = 0.50) and Stranger conditions (Week 1: t (53) = 8.37, p < .001, d = 1.14; Week 2: t (53) = 8.34, p < .001, d = 1.14), and faster in the Close Other than Stranger conditions (Week 1: t (53) = 2.55, p = .01, d = 0.35; Week 2: t (53) = 3.62, p = .001, d = 0.49). A more detailed description of the results for week 1 and week 2 can be found in the Supplementary Materials.

Table 2. Mean reaction times and accuracy data for each condition in the shape-label matching task, for both week 1 (W1) and week 2 (W2).

	Condition	W1 mean RT (ms)	W1 accuracy	W2 mean RT (ms)	W2 accuracy
Match	Self	645 (69)	0.87 (0.09)	631 (59)	0.90 (0.09)
	Close Other	678 (72)	0.81 (0.12)	652 (58)	0.87 (0.11)
	Stranger	696 (65)	0.73 (0.15)	673 (59)	0.82 (0.14)
Non-match	Self	735 (63)	0.77 (0.14)	707 (62)	0.82 (0.13)
	Close Other	750 (67)	0.76 (0.13)	715 (66)	0.82 (0.11)
	Stranger	737 (71)	0.82 (0.11)	709 (56)	0.86 (0.10)

Note: RT = reaction time in milliseconds; standard deviations in brackets.

Comparison Within and Across Tasks

Experiment 2B revealed, in line with the findings of Exp 2A, that levels of self-bias across the two tasks were not significantly correlated between any of the time points, with Bayesian analyses indicating evidence for the null hypothesis for all comparisons: Matching week 1 (M = 33.4, SD = 56.2) x AB week 1 (M = 16.3, SD = 29.9): r (50) = -.26, p = .07, BF01 = 10.30; Matching week 1 x AB week 2 (M = 11.3, SD = 20.6): r (50) = -.03, p = .83, BF01 = 4.49; Matching week 2 (M = 19.8, SD = 41.6) x AB week 1: r (50) = -.24, p = .09, BF01 = 9.69; Matching week 2 x AB week 2: r (50) = -.04, p = .78, BF01 = 4.70. Combining the data from Experiments 2A and 2B (week 1 only) further confirms the absence of a relationship between the two measures of self-bias: in the total sample of 104 participants, the correlation was still not found to be significant (r(104) = -.12, p = .22), with evidence strongly favouring the null hypothesis (BF01 = 11.55). The absence of a relationship is unlikely to be due to a lack of inter-individual variability: unconditional mixed modelling confirmed that the random effect of participant contributed significantly on both tasks (see Supplementary Material).

The reliability of the self-bias on the attentional blink task was acceptable over a week, with higher reliability of the self-bias on the matching task (Attentional Blink: r (55) = .53, p < .001, BF01 < 0.001; Matching: r (54) = 0.69, p < .001, BF01 = 0.001). These figures are over a week (and participants completed the two tasks immediately after each other during a test session) and so should be considered the lower-bound for reliability within a testing session, but they limit the size of the correlation that may be expected between tasks. Even though 5 of the 6 relevant correlations were weakly (and non-significantly) in the opposite direction to that expected if driven by a common self-bias, a measurement-error-corrected correlation between the attentional blink and matching tasks was calculated as specified by Fan (2003) using the combined data from Experiments 2A and

2B. As expected, this resulted in a negative correlation of slightly greater magnitude ($r(104) = -.19$), and thus was even further from the expected pattern of results if a common self-bias was driving performance on the attentional blink and matching tasks.

Finally, combining data across Experiments 2A and 2B revealed non-significant correlations between AQ scores and the attentional blink ($r(98) = -.06$, $p = .58$, $BF01 = 4.60$) and matching ($r(89) = .03$, $p = .77$, $BF01 = 4.88$) tasks, with Bayesian analyses favouring the null hypotheses.

General Discussion

The aim of this study was to investigate further the human bias for self-relevant information by comparing self-bias effects across different cognitive domains: in the attentional domain using an attentional blink paradigm (Shapiro et al., 1997), and in the perceptual domain using the shape-label matching paradigm (Sui et al., 2012). In order to control for familiarity and lexical confounds, we compared the processing of first names in three categories (self, close other and stranger), and found that previous findings of self-bias could be replicated on both measures. Crucially however, the results also indicated that individuals' level of self-bias was unrelated across the two different domains. The absence of any relationship calls into question the generalisability of self-biases across cognitive domains, contrasting with the idea of the self as an 'associative glue'; Sui & Humphreys, 2015). It suggests there may be a multitude of independent effects of self-preferential processing in different domains, instead of one common effect of self-bias impacting all domains. Of course, as only two self-bias effects were investigated here, additional comparisons of different self-bias effects (such as those found in the memory domain) are needed in order to gain a more complete understanding of how self-relevant information is processed.

In addition to the finding that the bias for one's own name has independent effects on attentional and perceptual processing, the current results provide novel insights into the nature of self-processing within these two domains. In the attentional domain, we replicated and extended the findings of Shapiro and colleagues (1997). In three separate experiments, it was shown that seeing one's own name within an attentional blink paradigm will decrease the size of the attentional blink. This was the case not only when the own name was used as T2 (Experiments 2A and B), but also when it was T1 (Experiment 1).

In Experiments 2A and B, the attentional blink effect was significantly reduced when the T2 to be detected was the participant's own name, in comparison to either the name of somebody close to the participant or a stranger's name. The reduction in the attentional blink for one's own name has already been shown in comparison with a stranger's name (Shapiro et al., 1997; Tibboel et al., 2013), but since no previous study had compared the effect of one's own name with a close other's name, previous studies failed to distinguish between a self-related effect and a more general effect of familiarity. The present design was able to show both an effect of familiarity (the attentional blink was smaller for the name of a close other than that of a stranger) and a self-specific effect (the attentional blink effect was smaller for one's own name than for a close other's name), emphasising the importance of using highly familiar control stimuli in future research. It should be acknowledged, however, that it is likely the case that one's own name is still more familiar than a close other's name, and so a portion of the self-bias may still be attributable to familiarity. Findings from neuroimaging studies, however, showing selective patterns of activity in response to one's own name, even when contrasted with a familiar other name, suggest that at least some of the self-bias is likely to be self-specific (Nijhof et al., 2018; Tacikowski et al., 2011).

Interestingly, the results of Experiment 1 revealed that the attentional blink effect was also reduced when the participant's own name was used as T1, in contrast to the null finding of Shapiro and colleagues (1997) in a small sample of 8 participants. This attentional blink reduction suggests that the own name is processed more efficiently, taking up less attentional resources, which are therefore available for processing of the T2. These results not only add insight into the processing of self-relevant information, but also inform theoretical accounts of the attentional blink more generally (Dux & Marois, 2009; Martens & Wyble, 2010). Dux and Marois (2009) hypothesize that the attentional blink reflects the processing of T1, which suppresses the attentional enhancement of T2. This stands in contrast to initial explanations of the attentional blink in terms of an all-or-none attentional bottleneck, where T2 processing is stalled until T1 has been fully processed. In line with their hypothesis, our findings suggest that if *either* T1 or T2 can be processed efficiently, as is the case for one's own name, this reduces the size of the attentional blink. Reasoning about the attentional blink in terms of a resource-dependent attentional suppression, instead of an inflexible bottleneck, also fits with the finding that increasing the perceptual load on the T1 task can eventually eliminate the own-name effect on the attentional blink (Giesbrecht, Sy, & Lewis, 2009).

Another finding from Experiment 1 suggests that the familiarity effect on the attentional blink task observed in Experiment 2 may not be purely attentional in nature. The T1 detection rate of one's own name and a close other's name was higher than that of a stranger's name, but not significantly different from each other. As this effect was on detection of T1, it cannot be explained in terms of the attentional blink, and therefore may reflect a perceptual effect due to familiarity with the name stimuli. Similarly, the self-bias effect on the shape-label matching task may well have nonperceptual components; the evidence presented in terms of its perceptual basis is compelling, but it has also been explained as an associative learning advantage (Fuentes, Sui, Estévez, & Humphreys, 2016), and neither explanation excludes a portion of the self-bias observed on the task being attentional in nature. If one allows that the tasks are not 'process pure' - that self-biases observed on both tasks may contain an element of an attentional and a perceptual effect with the balance differing between tasks – it becomes even more striking that the magnitude of the self-biases was not correlated within individuals.

Importantly, the key finding from the work by Sui and colleagues (2012) of a self-bias in the perceptual domain was also replicated across two experiments when using first names instead of the labels 'You', 'Friend', and 'Stranger'. As noted above, the use of individual first names as well as a 'close other' category was designed to control for the confounding of self-relevance with familiarity. It is unlikely to completely remove all of the familiarity effect however, as one's own name is still likely to be much more familiar than that of even the closest other person to us. It is therefore encouraging that reaction time patterns on the shape-label matching task are relatively independent of the exact self- and other-related labels that are used (Schäfer et al., 2017; Sui et al., 2012).

Finally, participants' level of autistic traits as measured with the AQ was found not to correlate significantly with the level of self-bias on either of the tasks. However, even the total sample size of 98 participants completing the AQ and the attentional bias task, and 89 people completing the AQ and the matching task may be considered relatively small to detect individual difference effects. It should also be noted that even though the AQ score distribution was representative of that found in the general population (Ruzich et al., 2015), samples across the experiments largely consisted of female undergraduate students. It may be that the homogeneous student samples prevented us from finding significant correlations, as reductions in self-bias have previously been shown for autistic individuals (Cygan et al., 2014; Grisdale et al., 2014; Nijhof et al., 2018). Future studies, using heterogeneous samples adequately powered for detecting small effect sizes, could resolve these issues. In the case of the matching task, however, the absence of a relationship replicates recent findings showing undiminished self-bias effects both for neurotypicals with high levels of autistic traits and for adults with autism (Williams et al., 2017). Regardless, as mentioned above, the absence of a correlation between measures of self-bias across the two cognitive domains suggests that the different self-biases observed across cognitive domains may not result from a common process.

In summary, robust self-bias effects for one's own name as compared to familiar and unfamiliar names were found across three experiments: in the attentional domain using an attentional blink paradigm, and in the perceptual domain using a shape-label matching task. The magnitude of the self-bias effects was unrelated across the two domains. This finding suggests that self-biases are distinct rather than common across cognitive domains, a finding which has important implications for future research on, and models of, self-preferential processing in both typical and atypical populations.

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