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Research article

I, me, mine: Automatic attentional capture by self-related stimuli

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Abstract

Drawing on decades of research suggesting an attentional advantage for self-related information, researchers generally assume that self-related stimuli automatically capture attention. However, a literature review reveals that this claim has not been systematically examined. We aimed to fill in this dearth of evidence. Following a feature-based account of automaticity, we set up four experiments in which participants were asked to respond to a target preceded by a cue, which was self-related or not. In Experiment 1, larger cuing effects (faster reaction times to valid versus invalid trials) were found with a participant's own name compared with someone else's name. In Experiment 2, we replicated these results with unconscious cues. Experiment 3 suggested that these effects are not likely driven by familiarity. In Experiment 4, participants experienced greater difficulties from having their attention being captured by their own compared with someone else's name. We conclude that attentional capture by self-related stimuli is automatic in the sense that it is unintentional, unconscious, and uncontrolled. Implications for self-regulation and intergroup relations are discussed. Copyright © 2012 John Wiley & Sons, Ltd.

> I looked around and everything I could see was relative to my ego. You know, like "that's my piece of paper", and "that's my flannel", or "give it to me", or "I am."– George Harrison, *I, Me, Mine (1980)*.

With his commentary, George Harrison alluded to the fact that people always make every little thing about them. People seem to have a fundamental tendency to be more interested in them and matters that are related to them than any other thing. In line with this idea, social psychological studies have shown various forms of egocentric biases. For example, information encoded in relation to the self is better recalled (Ross & Sicoly, 1979; Symons & Johnson, 1997), judgments about the self are made faster and more confidently (Kuiper & Rogers, 1979), and stimuli associated with the self are preferred (Koole, Dijksterhuis, & van Knippenberg, 2001; Nuttin, 1985). Some of these effects are so pervasive that they can subtly influence important life decisions. For example, studies have shown that people are more likely to live in cities and choose careers that resemble the self (i.e., possess letters in common with their name; Pelham, Carvallo, & Jones, 2005).

Among other factors, these biases could be due to our cognitive system being attuned to information that relates to us (e.g., our own name). The idea that self-related stimuli are prioritized by the cognitive system is reminiscent of the so-called "cocktail party effect" (Cherry, 1953). This effect not only describes one's capacity to concentrate on a source of information (e.g., input from the left ear) while ignoring another (e.g., the right ear) but also that one's own name attracts attention when appearing in the unattended channel (e.g., Johnston & Dark, 1986). This notion is now part of every social psychologist's theoretical toolbox, and, accordingly, it is taken for granted that attention is automatically "drawn to," "captured by," or "oriented to" self-related stimuli (e.g., Kitayama, 1996; Moskowitz, 2002; Smallwood & Schooler, 2006).

We believe there are at least two shortcomings with this state of affairs. First, although the cocktail party/own name effect is widely accepted by social psychologists, the cognitive literature is far from consensual on the very existence of this effect (e.g., Devue, Van der Stigchel, Brédart, & Theeuwes, 2009). Second, because of the work on intensional definitions of automaticity (e.g., Bargh, 1996; Moors & De Houwer, 2006), one might infer that attentional capture by self-related stimuli has the four features of automaticity, namely unintentionality, unconsciousness, uncontrollability, and efficiency. This might be a concern because although early work (e.g., Bargh, 1982) seems to deal with the last feature, the literature review that follows reveals that the first three features have not been demonstrated convincingly. Our goal in this contribution is to demonstrate that self-related stimuli (in the present case, one's own name) capture attention automatically (i.e., unintentionally, unconsciously, and uncontrollably) in a greater extent than other stimuli unrelated to the self (e.g.,

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someone else's name). We first begin by clarifying what we mean by attentional capture and why the first three automaticity features are of particular interest in light of such a definition.

ATTENTIONAL CAPTURE AND AUTOMATICITY FEATURES OF INTEREST

Our working definition of attentional capture is a priority for attention to certain locations in the environment (Posner, 1980). In other words, it refers to the locus of the attentional spotlight. This definition encompasses both situations in which the attentional spotlight is attracted or held to a specific location (Fox, Russo, Bowles, & Dutton, 2001). Although we acknowledge that this is a potentially important distinction, here we focus more generally on *where* attention is more likely to be located. We do so because it tells us which information is more likely to be selected. This also leads us to be less interested in *how* easily it is processed. With such a location-based definition of attention, the features of automaticity that signify particular interest are (un)intentionality, (un)consciousness, and (un)controllability. If self-related stimuli capture attention automatically more than other stimuli, we should be able to show that attention is shifted or locked to locations previously occupied by self-related stimuli without any intention, without consciousness of this stimulus, and when a goal to stop or avoid this attention response is set. Because we are particularly interested in the locus of attention, we will not deal with the question of whether self-related stimuli consume attentional capacity or not (the efficiency feature of automaticity; see for instance, Bargh, 1982). Having circumscribed the goal of the current contribution, let us present a brief review of the not so consensual literature on the own name/own face effect.

COCKTAIL PARTY/OWN NAME/OWN FACE LITERATURE

As processors of information, people constantly receive large amounts of information and have to rely on selection processes (James, 1890). For instance, at a cocktail party, people are not able to process every single conversation; they have to select and process only one. The general question of the own name literature is most often concerned with what is picked up from the unattended sources of information. In other words, is it an early selection where only physical properties (e.g., the pitch of the voice speaking) are processed (Broadbent, 1958) or is it a late selection where all the properties, including semantic ones, are processed (Deutsch & Deutsch, 1963; see Driver, 2001 for a review)?

To answer this question, researchers first turned to the dichotic listening task developed by Cherry (1953). Hence, Moray (1959) asked his participants to repeat aloud (i.e., to shadow) a text that was presented to one ear while ignoring another text presented to the other ear. When asked questions about what was presumed to be the unattended message, participants were better at mentioning information when it was preceded by their own name (versus other information). Similar effects were later replicated using one's own name as well as other self-related information (Bargh, 1982; Wood & Cowan, 1995). Besides being in favor of the late selection theory (but see Lachter, Forster, & Ruthruff, 2004), these studies seemed to support the existence of the own name effect. The dichotic listening task, however, was later put aside because of the difficulty in ensuring that the unattended ear was indeed unattended (Lachter et al., 2004).

Other evidence supporting the existence of such an effect of self-related stimuli came later from a visual analog of the dichotic listening task. In these studies, participants were generally asked to respond to peripherally displayed information while being presented with other information (including their own name or self-related information) at fixation. Results showed that self-related information interfered with the primary task more than other information (e.g., Bargh & Pratto, 1986; Wolford & Morrison, 1980). Other studies showed that participants were particularly prone to detect their name when it was rapidly (and centrally) presented, while having more difficulty detecting other names (Arnell, Shapiro, & Sorensen, 1999, for data within the repetition blindness paradigm; Shapiro, Caldwell, & Sorensen, 1997, for data within the attentional blink paradigm). Finally, a more recent set of evidence comes from event-related potential studies showing that one's own name and self-related information are associated with enhanced P300 (Gray, Ambady, Lowenthal, & Dedlin, 2004; Tacikowski & Nowicka, 2010), a late component often attributed to attention allocation processes (for a review, see Polich, 2007).

Even though these studies seem to support an attentional priority to self-related information, other sets of studies are far less consensual. These studies point to important limits that cast doubts on the extent to which automaticity features apply to this attentional prioritization. First, a host of studies failed to find reliable effects when self-related information was not displayed inside the focus of attention (i.e., at fixation; Bundesen, Kyllingsbaek, Houmann, & Jensen, 1997; Devue & Brédart, 2008; Gronau, Cohen, & Ben-Shakhar, 2003). Second, other studies failed to find reliable effects when self-related information was not made relevant for the task at hand (Devue et al., 2009; Gronau et al., 2003; Kawahara & Yamada, 2004). Third, the own name effect often seemed to vanish (to become unreliable) after the first presentation, which, some authors suggested, might imply that most of the effect was due to the surprise of seeing self-related information during a psychological experiment (Devue & Brédart, 2008; Harris & Pashler, 2004; Harris, Pashler, & Coburn, 2004).

In sum, this brief review reveals that the own name effect is less consensual than social psychologists often think. Although recent event-related potential studies seem to confirm that self-related information receives heightened attention, it says little about *where* attention is directed to, because information is displayed inside the focus of attention (Gray et al., 2004; Tacikowski & Nowicka, 2010). As more directly relevant studies failed to find significant effects, one cannot definitely conclude one way or another; and it remains unclear whether self-related stimuli, such as one's own name, automatically capture attention (i.e., without intention, without consciousness, and a relative lack of control) more than someone else's name.

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OVERVIEW OF THE CURRENT RESEARCH

In the present research, we provide a systematic test of this claim by examining automatic attentional capture in locations cued by first names. Again, to do so, we investigated the most relevant features of automaticity for our purpose, namely (un) intentionality, (un)consciousness, and (un)controllability (Moors & De Houwer, 2006). We relied on two tasks: the *peripheral* (or *exogenous*) *cuing* task and the *antisaccade* task. The peripheral cuing task (Experiments 1, 2, and 3) is particularly appropriate to reveal an automatic attentional capture for at least three reasons (e.g., Jonides, 1981). First, in this task, (un)intentionality is tapped by focusing on shifts of attention to cued locations: Participants are not required to process the cues that can be made irrelevant for the task at hand. Second, the cues are outside the focus of attention as they are displayed peripherally at unattended locations. Third, this task allows displaying orienting cues subliminally, which enables to explore the (un)consciousness feature. Finally, the antisaccade task (Experiment 4) tapped the (un)controllability feature in that participants are explicitly asked to suppress a prepotent (orienting) response toward the cue (Hallett, 1978).

EXPERIMENT 1

We applied the peripheral cuing paradigm to a previously used visual search task (Muller & Butera, 2007). In this task, a first display containing an orienting cue is presented briefly, followed by the measure display with the target to be detected. The cue is randomly displayed either where the target will appear (valid cue) or somewhere else (invalid cue). This typically produces a cuing effect with faster reaction times for valid versus invalid cues (Posner, 1980). Interestingly for our purpose, studies showed that peripheral cues displayed with Stimulus Onset Asynchronies (SOA) of less than 500 ms do not produce an intentional or strategic use (Briand, 1998). Given our automatic capture hypothesis, which implies unintentionality, we therefore used an SOA clearly inferior to 500 ms, namely 235 ms, but still predicted that the cuing effect (faster reaction times with valid versus invalid cues) should be larger with self-related compared with less personally significant stimuli.

Method

Participants and Design

Twenty-seven female undergraduate psychology students participated on a voluntary basis in what was presented as a study of visual perception. All participants had normal or corrected-to-normal vision. The experimental design included two repeated-measures variables: cue type (own name and other name) and cue validity (valid and invalid).

Material and Procedure

Participants were seated approximately 80 cm from a 17″ Samsung 85HZ monitor. They were instructed to detect as quickly as possible (without sacrificing accuracy) the location of the target letter "O" among three "Qs" in a visual display. As shown in Figure 1, the sequence was the following: A fixation cross appeared for a random duration of 500 to 2500 ms. Next, the orienting display remained 235 ms and included a cue appearing in one of the four quadrants of the screen at an angular distance of 5.3° from the fixation point. Mean height and width of the cues were 0.7 cm (0.5°) and 3.9 cm (2.7°). Then, the measure display was presented and consisted of four Arial black letters on a white background with a height of 5.8 cm (4.1°) and a width of 5.3 cm (3.7°). These were one O and three Qs and appeared on the four possible cue locations. The display remained until the participant responded or until 3000 ms elapsed.

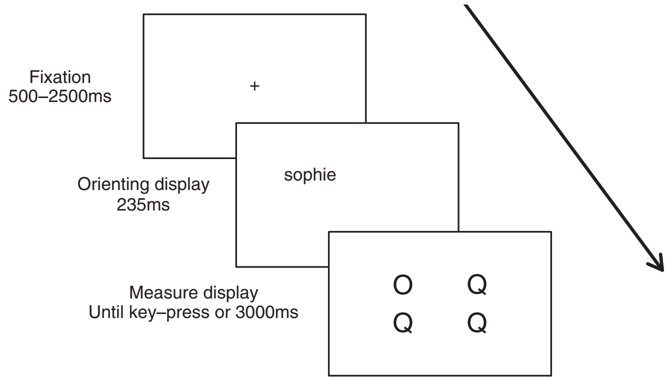

Figure 1. Example of a valid trial in Experiment 1

The cue appeared six times in each of the four quadrants. This cue was participant's own first name in 24 trials and the first name of another participant in 24 other trials.[1] The participant's name in a reverse order and a series of Xs were used as cues in the remaining 48 filler trials. Finally, 12 trials included no cue at all. Participants had to indicate the location of the O by pressing the corresponding key on a numeric pad. The location of the target was counterbalanced so that it appeared the same number of times in each location. In half of the trials, the cue indicated the target's location (i.e., valid). In the other half, the cue indicated the location of a Q (i.e., invalid). The cue was said to be irrelevant for the task at hand. Within valid and invalid trials, we presented the same number of cues for each category (one's own name, a previous participant's name, and one's own name in a reverse order). There were 15 practice trials followed by a block of 108 experimental trials.

Results and Discussion

Response Latencies

Only reaction times for correct responses were analyzed (the overall proportion of incorrect responses was 1%). Also, latencies shorter than 200 ms were discarded, whereas latencies longer than 1500 ms were replaced with 1500 ms

[1]For each participant, his or her first name was yoked with the first name of another participant. Thus, all the first names were used both as self-related information and as control names. From now on and for the sake of simplicity, "name" will refer to "first name."

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(the proportion of outlier latencies was 0.4%). Using these latencies, we then conducted a 2 (cue type: own name and other name) by 2 (cue validity: valid and invalid) within-participants analysis of variance (ANOVA).

This analysis revealed a cuing effect such that participants were faster to detect the target after a valid cue ($M = 582$ ms, $SD = 121$) than after an invalid one ($M = 644$ ms, $SD = 130$), $F(1, 26) = 27.41$, $p < .001$, $d = 2.05$. The predicted cue type by cue validity interaction was significant and confirmed that the cuing effect (i.e., the difference between valid and invalid cues) was larger with participants' own name than with someone else's name, $F(1, 26) = 5.67$, $p < .03$, $d = 0.93$. As Figure 2 illustrates, these two cuing effects were significant, $t(26) = 5.53$, $p < .001$, $d = 2.17$, and, $t(26) = 3.86$, $p < .001$, $d = 1.51$, respectively, for the own name and the other name.

Accuracy

The same analysis conducted on accuracy revealed no main effect, $F(1, 26) = 1.64$, $p > .21$, but the same interaction pattern, $F(1, 26) = 9.35$, $p < .006$, $d = 1.20$. When own name was used as a cue, participants were more accurate on valid trials ($M = 100\%$) than on invalid trials ($M = 97.8\%$, $SD = 3\%$), $t(26) = 3.02$, $p < .01$, $d = 1.18$. In contrast, this cuing effect was not significant when other name was used as a cue (*M*s = 98.7% and 99.6% with *SD*s = 3% and 1%, respectively), $t(26) = 1.36$.

EXPERIMENT 2

In Experiment 1, we showed that one's own name captures attention more than someone else's name. It does so even with peripheral cues displayed with an SOA that prevents an intentional/strategic use of the orienting cues (Briand, 1998). In Experiment 2, we go one step further in the test of our automatic capture hypothesis: We use an even shorter SOA (133 ms) and also tap the (un)conscious feature of automaticity by displaying the orienting cue subliminally.

Method

Participants and Design

Thirty-three undergraduate psychology students (27 women) participated on a voluntary basis in what was presented as a study of visual perception. All participants had normal or corrected-to-normal vision. The experimental design included two repeated-measures variables: cue type (own name and other name) and cue validity (valid and invalid).

Materials and Procedure

The procedure was similar to Experiment 1, except that orienting cues were presented for 33 ms and were preceded and immediately followed by a mask of the same length (i.e., a series of #) for 100 ms (which reduced the SOA to 133 ms). To ensure that the stimuli were presented below the threshold of awareness, we ran a pilot study on a different sample ($N = 17$), using the same procedure and parameters. On each trial, participants had to guess whether the stimulus was their own name or not. In half of the trials, their own name was displayed, whereas someone else's name (of similar length) was displayed in the other half. Results indicated that response accuracy was not above chance level ($M_{acc} = 0.55$, $SD = 0.16$), $t(16) = 1.36$, $p > .20$, and therefore that participants could not detect their own name.

Results and Discussion

Response Latencies

Only reaction times from correct responses were analyzed (the overall proportion of incorrect responses was 1.4%). Latencies shorter than 200 ms were discarded, whereas latencies longer than 1500 ms were replaced with 1500 ms (the proportion of outlier latencies was 0.2%). We then conducted a 2 (cue type: own name and other name) by 2 (cue validity: valid and invalid) within-participants ANOVA.

This ANOVA revealed the predicted cue type by cue validity interaction and confirmed that the cuing effect was larger with own name than with other name, $F(1, 32) = 4.77$, $p < .04$, $d = 0.77$. As Figure 3 illustrates, the cuing effect was significant for own name, $t(32) = 2.27$, $p < .03$, $d = .80$, but not for other name, $t < 1$. No other effect reached significance, $ps > .20$.

Accuracy

The same analysis was again conducted on accuracy, but the interaction was not reliable, $F < 1$. No other effect reached significance.

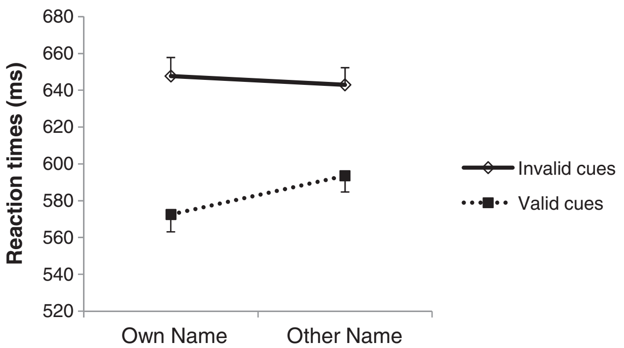

Figure 2. Reaction times as a function of cue type and cue validity in Experiment 1. Bars represent standard errors computed after Morey (2008)

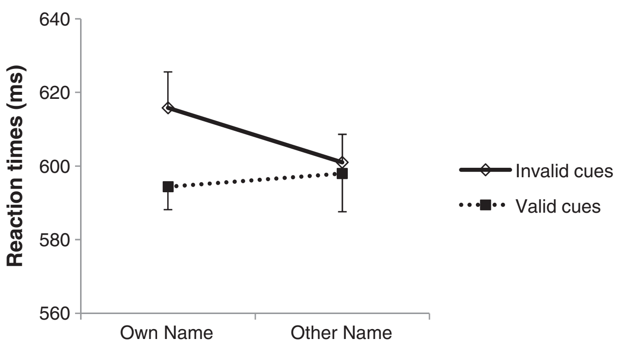

Figure 3. Reaction times as a function of cue type and cue validity in Experiment 2. Bars represent standard errors computed after Morey (2008)

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The fact that we replicated Experiment 1 results by using stimuli presented outside of conscious awareness strengthens our claim that self-related stimuli automatically capture attention. The next experiment was designed to test the role of familiarity and to extend our findings to different task settings.

EXPERIMENT 3

In Experiments 1 and 2, we found larger cuing effects when the participant's own name is used as a cue compared with someone else's name. In Experiment 3, we tested an alternative explanation of our effects in terms of familiarity. As self-related material is intrinsically familiar, one could argue that the automatic capture by one's own name is due to the higher familiarity of this stimulus. Thus, to disentangle a potential familiarity effect from a genuine self-advantage, we relied on the procedure designed by Dewitte, De Houwer, Koster, and Buysse (2007) and included the name of a known person.

Previous research has used various versions of the peripheral cuing task differing in terms of the response required to the target. These include not only the localization task we used in the first two experiments (e.g., Joseph & Optican, 1996) but also detection (e.g., Posner, 1980) and discrimination (e.g., Müller & Rabbitt, 1989). To increase the generalizability of our findings, we sought to replicate our results with a target detection task. This was also carried out to avoid a potential confound between attentional cuing effects and stimulus–response compatibility. In the first two experiments, besides being self-relevant or not, the cues also carried information that could trigger the required response (e.g., by priming a specific location). If the effects are indeed due to attentional shifts, we should be able to replicate them with a target detection instruction (i.e., a go/no-go task). We also changed two aspects of the task to reduce measurement error by making it easier. First, we used only two target locations instead of four. Second, the display included no distractor. We also presented the orienting cue (i.e., the names) and the mask above and below the possible target location. We did so to prevent visual interference. A last important change concerned the inclusion of a direct test of participants' cue awareness at the end of the experiment (Greenwald, Klinger, & Schuh, 1995; Ric & Muller, in press).

Method

Participants and Design

Thirty-three undergraduate psychology students (31 women) participated in what was presented as a study of visual perception in exchange for partial course credit. All participants had normal or corrected-to-normal vision. The experimental design included two repeated-measures variables: cue type (own name, known name, and neutral name) and cue validity (valid and invalid).

Material and Procedure

Before the ostensible study of visual perception, participants were asked to take part in a "name survey" (adapted from Dewitte et al., 2007). They were handed a questionnaire in which they first had to identify and provide the name of a same-sex person with whom they meet regularly but did not develop any particular affective or friendly relationship (i.e., the known person). On the second page, they were asked to select two (to increase the sample of possible stimuli) neutral same-sex names from a list containing 40 male and 40 female names (ranging from 3 to 10 letters). A neutral name was defined as a name representing a person they did not know. Participants were asked to select names with approximately the same number of letters as the known person. The own name, the name of the known person, and one of the neutral names were then included in the spatial cuing task.

In this task, participants were given go/no-go instructions such that they had to answer only when the target (i.e., a white arrow head pointing up on a black background) was present. The target appeared either on the left or the right side of the screen at a 5.3° visual angle from the center. Each trial started with a central fixation point appearing for a random duration of 800 to 1200 ms. This fixation point was followed by a pre-mask for 44 ms (an alternating series of # and @) displayed on both sides of the screen. This pre-mask was followed by a cue for 33 ms, which consisted of a duplicated name stimulus presented in Courier white font, displayed 1° above and 1° below the target's location either on the left or the right side of the screen. The mean height and width of the cues were 0.7 cm (0.5°) and 4.2 cm (3.1°). A second mask, identical to the first one, immediately followed the orienting cues. After this mask blanked out, the target appeared until the participant responded or until 1500 ms elapsed. The inter-trial interval was 600 ms. In half of the cued trials, cues appeared on the same side as the target (valid trials); and on the other half, they appeared on the opposite side (invalid trials). Within valid and invalid trials, the own name, the known name, and the neutral name were presented equally often (64 trials each). Additionally, there were 48 catch trials in which no target was presented. Overall, participants performed 16 practice trials followed by two blocks of 120 experimental trials. They had to press the space bar as quickly as possible when the target was present and to withhold their response when no target was presented. They were further informed that they should do this while maintaining their eyes on the central fixation cross.

Immediately after the spatial cuing task, participants were asked to perform a forced-choice test with the same parameters. For this block, however, we told them the three names were displayed subliminally and asked them (with an accuracy instruction) to indicate for each trial which name served as a cue. Once the awareness check was completed, they were thanked and debriefed.

Results and Discussion

Awareness

None of the participants reported having seen words or names during the spatial cuing task. One participant who did not understand and thus did not complete the awareness check was discarded from the analyses. Overall, results indicated that cue detection performance ($M = 34\%$, $SD = 11\%$) was not above chance level (i.e., 33%), $t(32) = 0.65$, $p > .50$.

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Response Latencies

Latencies shorter than 100 ms were discarded.[2] We then conducted a 3 (cue type: own name, known name, and neutral name) by 2 (cue validity: valid and invalid) within-participants ANOVA.[3] This analysis revealed the predicted cue type by cue validity interaction, $F(2, 62) = 4.31$, $p < .02$. A single degree of freedom decomposition of this interaction shows, as seen in Figure 4, that the cuing effect was larger for own name compared with the mean cuing effect of the other two conditions, $t(31) = 2.59$, $p < .02$, $d = .93$,[4] whereas the cuing effects in the known and neutral conditions were not significantly different from each other, $t < 1$. Simple effect tests further revealed that the cuing effect was significant for own name, $t(31) = 2.86$, $p < .001$, $d = 1.03$, but not for the other two conditions (i.e., the name of a known person or a neutral name), ts < 1.[5] The cue type and validity main effects did not reach significance, ps $> .10$.

In this experiment, we replicated the findings of Experiment 2 by using a different task (i.e., a detection task with only two locations) and by assessing the conscious perception of the cues on the same participants at the end of the session. This finding further strengthens our claim concerning the (un)conscious feature of the automatic attentional capture by self-related stimuli. Additionally, the larger cuing effect for the own name condition compared with the known person condition suggests that the findings of Experiments 1 and 2 are not driven by familiarity. One could still argue that a known name is not as familiar as one's own name. Although we concur with this reasoning, a familiarity explanation would predict a larger cuing effect in the known name as compared with the neutral name condition. This difference is not significant, without mentioning that there is actually no cuing effect in the known name condition to begin with. Of course, such counterarguments are not definitive as they rely on non-significant results, but they nevertheless argue against a crucial role of familiarity in the production of our effects. Future work, however, should provide convergent evidence by including an indirect measure of stimulus familiarity that permits to statistically control it. In the final experiment, we assess the (un)controllable component of the automatic attentional capture by one's own name.

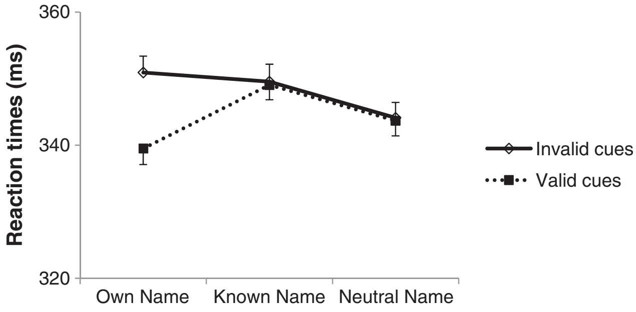

Figure 4. Reaction times as a function of cue type and cue validity in Experiment 3. Bars represent standard errors computed after Morey (2008)

EXPERIMENT 4

Experiments 1, 2, and 3 tapped the (un)intentionality and (un) conscious features of automaticity. To assess (un)controllability, we used the antisaccade task (Hallett, 1978; Roberts, Hager, & Heron, 1994). In this inhibition task, and this is a crucial difference with the peripheral cuing task, the cue is always displayed on the opposite side of the target. Hence, it requires participants to consciously suppress inappropriate responses (i.e., reflexive saccades) to the cue because they are explicitly instructed not to look at it. Our automatic capture hypothesis suggests that participants should be less able to inhibit these reflexive saccades when their own name is used as a cue. More specifically, as this task requires identifying the target displayed only for 150 ms (Jamieson & Harkins, 2007), we predicted that accuracy should be reduced with one's own name (as compared with someone else's name) as a cue.[6] The antisaccade task classically comes with the prosaccade task, a task where the cue is always displayed on the same side as the target. We had no specific prediction for this task.

Method

Participants and Design

Nineteen undergraduate female psychology students participated in what was presented as a study of visual perception. All participants had normal or corrected-to-normal vision. The experimental design included two repeated-measures variables: cue type (own name and other name) and type of task (antisaccade and prosaccade).

Materials and Procedure

Participants performed two versions of a study of visual perception. Their main task was to indicate as fast and accurately as possible the orientation of an arrow head (subtending 0.5° of visual angle) that pointed either up, to the left, or to the right (Jamieson & Harkins, 2007). As can be seen in Figure 5, this arrow target appeared (randomly) on the left or right side

[2]We chose a reduced cutoff value (down to 100 ms) because of the simpler format of the task (i.e., a detection instruction and two locations). This is in accordance with previous research using similar paradigms (e.g., Fox et al., 2001; Friesen & Kingstone, 2003, Friesen & Kingstone, 1998; Kingstone, Friesen, & Gazzaniga, 2000).

[3]Five participants were outliers according to studentized residuals and Cook's distance values. However, excluding the outliers from the analysis did not change the reported results, so we decided to keep them in the reported analyses.

[4]Although we only report an orthogonal set of contrasts in the text, the cuing effect was larger for participants' own name than for both the known name condition, $t(31) = 2.44$, $p < .03$, $d = .88$, and the neutral name condition, $t(31) = 2.32$, $p < .03$, $d = .83$.

[5]Although there has been a controversy concerning this approach (Klauer, Greenwald, & Draine, 1998), to further test the unconsciousness feature, we also conducted a regression analysis strategy (Greenwald et al., 1995). Each within-subject effect is tested as the intercept of a regression having the level of conscious perception (centered on the 0.33 value; i.e., random detection) as a predictor. By doing so, each effect is tested for a zero level of conscious perception (i.e., random detection). This analysis revealed the same pattern of statistical results.

[6]Using a longer SOA, we could have predicted the effect on reaction times (Jamieson & Harkins, 2007), but we chose to rely on a shorter SOA as a mean to have our participants particularly motivated not to attend the cue (as attending the cue would lead them to arrive too late where the target had appeared).

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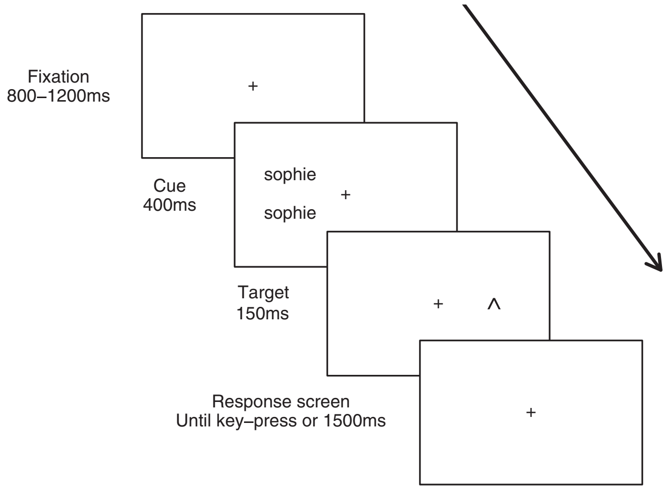

Figure 5. Example of a trial in the antisaccade task in Experiment 4

of the screen. In the *antisaccade* task, participants were informed that before the target, their own or someone else's name would always appear on the opposite side of the screen. Accordingly, they were explicitly told to look away from it to respond more efficiently to the target. In the *prosaccade* task, participants were informed that, before the target, their own or someone else's name would always appear on the same side of the screen.

Each trial began with a fixation cross that was displayed throughout the experiment. Then, after a random duration of 800 to 1200 ms, the cue was presented for 400 ms on the left or the right side of the fixation cross. The cue consisted of a duplicated name presented in Arial white font on a black background (subtending 2.5° on average), displayed 1.3° above and below the target's location at an angular distance of 5.2° from the center. After the cue disappeared, the target was presented for 150 ms at an angular distance of 4.8°, always on the opposite side of the screen for the antisaccade task and always on the same side for the prosaccade task. Finally, a blank screen appeared until participants responded or until 1500 ms elapsed. The intertrial interval was 600 ms. Participants completed six training trials and 72 experimental trials for the antisaccade and prosaccade tasks. For each task, the cue was participants' own name in 36 trials and the name of another participant in 36 other trials. The cue side and the target's orientation were randomized across trials. The order of the tasks was counterbalanced across participants.

Results and Discussion

Accuracy

We conducted a 2 (task order: antisaccade first versus prosaccade first) by 2 (cue type: own name versus other name) by 2 (task: antisaccade versus prosaccade) within-participants ANOVA. This analysis yielded a main effect of task, $F(1, 18) = 4.89$, $p < .05$, $d = 1.07$, such that participants were more accurate on the prosaccade ($M = 98.32\%$, $SD = 2.77\%$) than on the antisaccade task ($M = 97.20\%$, $SD = 3.39\%$). This main effect was qualified by a task by cue type interaction, $F(1, 18) = 5.58$, $p < .03$, $d = 1.10$. Critically for our contention, in the antisaccade task, participants were less accurate ($M = 96.43\%$, $SD = 3.51\%$) when the cue was their own name compared with someone else's name ($M = 98\%$, $SD = 3.16\%$), $t(18) = 2.25$, $p < .04$, $d = 1.05$ (Figure 6). No effect emerged in the prosaccade task.

Response Latencies

Only reaction times for correct responses were analyzed (the overall proportion of incorrect responses was 2%), and latencies shorter than 200 ms were discarded (the proportion of outliers was 3%). The analysis yielded a marginally significant effect of task, $F(1, 18) = 3.41$, $p < .08$, $d = .87$. Participants were faster in the prosaccade task ($M = 306$ ms, $SD = 65$) than in the antisaccade task ($M = 327$ ms, $SD = 79$). No other effect reached significance, $ps > .10$.

These results support our claim: In the critical antisaccade task, it was harder for participants to prevent their attention from being captured by their own name compared with someone else's name. This strongly suggests that attentional capture by self-related stimuli is difficult to control.

GENERAL DISCUSSION

Our goal was to test whether one's own name captures attention more than someone else's name. More specifically, that it does so unintentionally, unconsciously, and out of the individual's control. The results of four experiments support this claim. In Experiment 1, we showed an attentional advantage of one's own name when this information is said to be irrelevant for the task at hand and is unlikely to be used intentionally due to a short SOA (Briand, 1998). Experiment 2 addressed the unconsciousness feature by displaying names subliminally. Again, we found a larger cuing effect for one's own name. These findings were replicated in Experiment 3 with different target instructions (i.e., detection) and a more stringent test of participants' cue awareness. In addition, the results of this experiment suggested that familiarity does not play a crucial role in the production of these effects as no cuing effect was found with the name of a known (familiar) person as a cue and this (non)effect was not different from what was observed with a neutral (non-familiar) name. Finally, the results of Experiment 4 showed that it was harder for participants to prevent their attention being captured by their name, as compared with someone else's name.

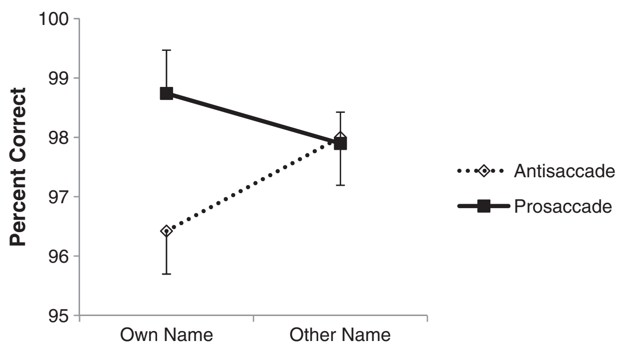

Figure 6. Antisaccade and prosaccade accuracy rates as a function of cue type (Experiment 4)

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The first contribution of these results, particularly Experiments 2 and 3, has to do with the literature on the own name effect. As names were presented subliminally, these experiments argue against an interpretation of one's own name as a transient surprise response (Harris & Pashler, 2004), according to which a conscious perception of one's own name would be a necessary precondition for the effect to occur. Second and more important, these four experiments contribute to the social psychology literature, because they complement previous work testing the efficiency feature (e.g., Bargh, 1982) but not addressing the last three features of automaticity (Bargh, 1996; Moors & De Houwer, 2006). Again, we think this is critical, as social psychologists often take for granted that self-related information automatically captures attention and by doing so, often believe that the four features of automaticity have been demonstrated. We think there are now safer grounds to believe so.

At this point, we suspect that the failure to find reliable attentional effects by one's own name in previous studies has much to do with methodological choices. For example, recent studies relied on paradigms that use interference effects as an index of attentional capture. The absence of clear evidence concerning the interfering effects of self-related stimuli could be due to the implication of endogenous attention that is more under voluntary control than exogenous attention (e.g., when one's own name appeared as a distractor in the foveal area; Bundesen et al., 1997; Kawahara & Yamada, 2004). Other studies added complexity to the task (e.g., by adding features that are made task-(ir)relevant or presenting an extended list of self-related stimuli; see Gronau et al., 2003) which precluded any firm conclusions concerning the existence of this effect.

In our studies, we used relatively simple paradigms that emphasize *where* attention is more likely to be located. This is important because it refers to which information is more likely to be processed, in addition to how efficiently it is being processed (Bargh, 1982). Taken together, these findings suggest that attentional capture is a serious candidate in the understanding of many processing biases related to the self. Indeed, we were able to observe processing differences at an early stage of attention deployment. This is important given that previous research focused on measuring global automatic components of the self (e.g., Greenwald et al., 2002) but remained relatively silent concerning the underlying processes. The automatization of self-related attentional processes could support information organization and integration at higher levels of processing by facilitating storage and retrieval of information (Logan, 1988). Specifically, this automatic attentional capture ensures that self-related information is not missed and it is effectively encoded when present in one's nearby environment. As a consequence, this should increase the opportunity for self-verification, a mechanism that serves to stabilize the self (Sedikides & Gregg, 2003). Additionally, such a bias toward the self could be explained, at least in part, by the fact that allocating more attention to self-related stimuli could translate into more positive evaluations (Zajonc, 1968). In sum, this self-related attentional capture enables the individual to preserve a certain stability and positivity of the self as a body of knowledge (Greenwald, 1980; Sedikides & Strube, 1997).

Future Research and Limitations

If, as we just suggested, early attention capture is responsible (at least in part) for egocentric biases, future work might be able to demonstrate that larger attentional capture by self-related stimuli predicts the amount of these egocentric biases. Additionally, it would be interesting to generalize our findings to stimuli that do not formally belong to us, but are nevertheless linked to the self, such as ingroup names (Smith & Henry, 1996). Showing an attentional capture by self-related stimuli at a collective level could strengthen the idea that important social phenomena such as ingroup favoritism or outgroup homogeneity could also be partially explained by basic cognitive mechanisms that involve automatic self-biases (e.g., Otten & Wentura, 1999).

We see two limitations to the current work. First, our research does not address *why* self-related stimuli automatically capture attention. A first answer might have to do with the fact that an early-stage attentional bias toward the self is undoubtedly an important feature of automatic self-regulation in that it allows automatic goal pursuit to effectively guide behavior (Fitzsimons & Bargh, 2004). Indeed, such attentional processes constrain which social information is available for further processing and should thus enable self-related information—which is important for goal setting—to be easily integrated into ongoing behavioral schemata. A second answer might be that self-related information captures attention because of its importance. The concept of importance, however, remains of poor help because threatening stimuli are also important for the individual (Donders, Correll, & Wittenbrink, 2008). Yet, these two kinds of stimuli seem to produce different early electrocortical reactions (Dickter & Bartholow, 2007). It will be left for future research to explore this issue, which is probably one of the most difficult in this domain.

The second limitation of our work is that we did not distinguish between attention being attracted or held by one's own name. Again, we did not rely on this distinction, because we were more concerned with the location of the attentional spotlight than whether attention was attracted or held to this location. Moreover, although this is an interesting theoretical question, we are unsure about the methodological strategy commonly used to distinguish between these two processes (Fox et al., 2001). This strategy relies on the assumption that differences between two types of orienting cues on valid trials reflect attraction processes, whereas differences between two types of orienting cues on invalid trials reflect holding processes. This reasoning, however, relies on the assumption that these simple effects reflect solely these processes and not an item main effect (meaning that one type of item is overall responded to more slowly). An illustration of this caveat is found in the results of Experiment 3. It can be seen in Figure 4 that the comparison of the cuing effect between own name and known name would suggest an attentional attraction effect by own name, whereas the comparison between own name and neutral name would suggest an attentional holding by own name. The caveat we see in this reasoning is that the change in conclusion could be driven by a cue main effect (although admittedly in our case this main effect is not reliable, $p = .14$), reflecting the fact that, overall, slower responses were obtained after known names (or faster responses after neutral names).

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In sum, previous research showed that self-related stimuli benefit from a general attentional advantage. The current investigation adds to this literature by showing that they are also capable of automatically capturing attention. Furthermore, they are the first studies to systematically assess distinct features of automaticity of this attentional capture. This finding adds nicely to the burgeoning literature on egocentrism and suggests that basic cognitive mechanisms could lie at the heart of what George Harrison termed "the eternal ego problem."

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REFERENCES

Arnell, K. M., Shapiro, K. L., & Sorensen, R. E. (1999). Reduced repetition blindness for one's own name. *Visual Cognition*, *6*, 609–635.

Bargh, J. A. (1982). Attention and automaticity in the processing of self-relevant information. *Journal of Personality and Social Psychology*, *43*, 425–436.

Bargh, J. A. (1996). Automaticity in social psychology. In E. T. Higgins, & A. W. Kruglanski (Eds.), *Social psychology: Handbook of basic principles* (pp. 169–183). New York: Guilford.

Bargh, J. A., & Pratto, F. (1986). Individual construct accessibility and perceptual selection. *Journal of Experimental Social Psychology*, *22*, 293–311.

Briand, K. A. (1998). Feature integration and spatial attention: More evidence of a dissociation between endogenous and exogenous orienting. *Journal of Experimental Psychology. Human Perception and Performance*, *24*, 1243–1256.

Broadbent D. E. (1958). *Perception and communication*. London: Pergamon Press.

Bundesen, C., Kyllingsbaek, S., Houmann, K. J., & Jensen, R. M. (1997). Is visual attention automatically attracted by one's name? *Perception & Psychophysics*, *59*, 714–720.

Cherry, E. C. (1953). Some experiments on the recognition of speech, with one and with two ears. *Journal of the Acoustical Society of America*, *25*, 975–979.

Deutsch, J. A., & Deutsch, D. (1963). Attention: Some theoretical considerations. *Psychological Review*, *70*, 80–90.

Devue, C., & Brédart, S. (2008). Attention to self-referential stimuli: Can I ignore my face? *Acta Psychologica*, *128*, 290–297.

Devue, C., Van der Stigchel, S., Brédart, S., & Theeuwes, J. (2009). You do not find your own face faster; you just look at it longer. *Cognition*, *111*, 114–122.

Dewitte, M., De Houwer, J., Koster, E. H. W., & Buysse, A. (2007). What's in a name? Attachment-related attentional bias. *Emotion*, *7*, 535–545.

Dickter, C. L., & Bartholow, B. D. (2007). Racial ingroup and outgroup attention biases revealed by event-related brain potentials. *Social Cognitive and Affective Neuroscience*, *2*, 189–198.

Donders, N. C., Correll, J., & Wittenbrink, B. (2008). Danger stereotypes predict racially biased attention allocation. *Journal of Experimental Social Psychology*, *44*, 1328–1333.

Driver, J. (2001). A selective review of selective attention research from the past century. *British Journal of Psychology*, *92*, 53–78.

Fitzsimons, G. M., & Bargh, J. A. (2004). Automatic self-regulation. In R.F. Baumeister, & K.D. Vohs (Eds.), *Handbook of self-regulation* (pp. 151–170). New York: Guilford.

Fox, E., Russo, R., Bowles, R., & Dutton, K. (2001). Do threatening stimuli draw or hold attention in subclinical anxiety? *Journal of Experimental Psychology. General*, *130*, 681–700.

Friesen, C. K., & Kingstone, A. (1998). The eyes have it! Reflexive orienting is triggered by nonpredictive gaze. *Psychonomic Bulletin and Review*, *5*, 490–495.

Friesen, C. K., & Kingstone, A. (2003). Abrupt onsets and gaze direction cues trigger independent reflexive attentional effects. *Cognition*, *87*, B1–B10.

Gray, H. M., Ambady, N., Lowenthal, W. T., & Dedlin, P. (2004). P300 as an index of attention to self-relevant stimuli. *Journal of Experimental Social Psychology*, *40*, 216–224.

Greenwald, A. G. (1980). The totalitarian ego: Fabrication and revision of personal history. *American Psychologist*, *35*, 603–618.

Greenwald, A. G., Banaji, M. R., Rudman, L. A., Farnham, S. D., Nosek, B. A., & Mellott, D. S. (2002). A unified theory of implicit attitudes, stereotypes, self-esteem, and self-concept. *Psychological Review*, *109*, 3–25.

Greenwald, A. G., Klinger, M. R., & Schuh, E. S. (1995). Activation by marginally perceptible ("subliminal") stimuli: Dissociation of unconscious from conscious cognition. *Journal of Experimental Psychology. General*, *124*, 22–42.

Gronau, N., Cohen, A., & Ben-Shakhar, G. (2003). Dissociations of personally significant and task-relevant distractors inside and outside the focus of attention: A combined behavioral and psychophysiological study. *Journal of Experimental Psychology. General*, *132*, 512–529.

Hallett, P. (1978). Primary and secondary saccades to goals defined by instructions. *Vision Research*, *18*, 1279–1296.

Harris, C. R., & Pashler, H. (2004). Attention and the processing of emotional words and names: Not so special after all. *Psychological Science*, *15*, 171–178.

Harris, C. R., Pashler, H. E., & Coburn, N. (2004). Moray revisited: High-priority affective stimuli and visual search. *The Quarterly Journal of Experimental Psychology*, *57A*, 1–31.

James, W. (1890). *The principles of psychology* (Vol. *1*). New York: Henry Holt.

Jamieson, J. P., & Harkins, S. G. (2007). Mere effort and stereotype threat performance effects. *Journal of Personality and Social Psychology*, *93*, 544–564.

Johnston, W. A., & Dark, V. J. (1986). Selective attention. *Annual Review of Psychology*, *37*, 43–75.

Jonides, J. (1981). Voluntary versus automatic control over the mind's eye's movement. In J. B. Long, & A. D. Baddeley (Eds.), *Attention and performance IX* (pp. 187–203). Hillsdale, NJ: Erlbaum.

Joseph, J. S., & Optican, L. M. (1996). Involuntary attentional shifts due to orientation differences. *Perception & Psychophysics*, *58*, 651–665.

Kawahara, J., & Yamada, Y. (2004). Does one's name attract visual attention? *Visual Cognition*, *11*, 997–1017.

Kingstone, A., Friesen, C. K., & Gazzaniga, M. S. (2000). Reflexive joint attention depends on lateralized cortical connections. *Psychological Science*, *11*, 159–166.

Kitayama, S. (1996). Remembrance of emotional speech: Improvement and impairment of incidental verbal memory by emotional voice. *Journal of Experimental Social Psychology*, *32*, 289–308.

Klauer, K. C., Greenwald, A. G., & Draine, S. C. (1998). Correcting for measurement error in detecting unconscious cognition: Comment on Draine and Greenwald (1998). *Journal of Experimental Psychology. General*, *127*, 318–319.

Koole, S. L., Dijksterhuis, A., & van Knippenberg, A. (2001). What's in a name: Implicit self-esteem. *Journal of Personality and Social Psychology*, *80*, 614–627

Kuiper, N. A., & Rogers, T. B. (1979). Encoding of personal information: Self-other differences. *Journal of Personality and Social Psychology*, *37*, 499–514.

Lachter, J., Forster, K. I., & Ruthruff, E. (2004). Forty years after Broadbent: Still no identification without attention. *Psychological Review*, *111*, 880–913.

Logan, G. D. (1988). Toward an instance theory of automatization. *Psychological Review*, *95*, 492–527.

Moors, A., & De Houwer, J. (2006). Automaticity: A theoretical and conceptual analysis. *Psychological Bulletin*, *132*, 297–326.

Moray, N. (1959). Attention in dichotic listening: Affective cues and the influence of instructions. *Quarterly Journal of Experimental Psychology*, *11*, 56–60.

Morey, R. D. (2008). Confidence intervals from normalized data: A correction to Cousineau (2005). *Tutorials in Quantitative Methods for Psychology*, *4*, 61–64.

Moskowitz, G. B. (2002). Preconscious effects of temporary goals on attention. *Journal of Experimental Social Psychology*, *38*, 397–404.

Muller, D., & Butera, F. (2007). The focusing effect of self-evaluation threat in coaction and social comparison. *Journal of Personality and Social Psychology*, *93*, 194–211.

Müller H. J., & Rabbitt, P. M. A. (1989). Reflexive and voluntary orienting of visual attention: Time course of activation and resistance to interruption. *Journal of Experimental Psychology. Human Perception and Performance*, *15*, 315–330.

Nuttin, J. M. (1985). Narcissism beyond gestalt and awareness: The name letter effect. *European Journal of Social Psychology*, *15*, 353–361.

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Otten, S., & Wentura, D. (1999). About the impact of automaticity in the Minimal Group Paradigm. Evidence from an affective priming task. *European Journal of Social Psychology*, *29*, 1049–1071.

Pelham, B. W., Carvallo, M., & Jones, J. T. (2005). Implicit egotism. *Current Directions in Psychological Science*, *14*, 106–110.

Polich, J. (2007). Updating P300: An integrative theory of P3a and P3b. *Clinical Neurophysiology*, *118*, 2128–2148.

Posner, M. I. (1980). Orienting of attention. *Quarterly Journal of Experimental Psychology*, *32*, 3–25.

Ric, F., & Muller, D. (in press). Unconscious addition: When we unconsciously initiate and follow arithmetic rules. *Journal of Experimental Psychology. General*.

Roberts, R. J., Hager, L. D., Heron, C. (1994). Prefrontal cognitive processes: Working memory and inhibition in the antisaccade task. *Journal of Experimental Psychology. General*, *123*, 374–393.

Ross, M., & Sicoly, F. (1979). Egocentric biases in availability and attribution. *Journal of Personality and Social Psychology*, *37*, 322–336.

Sedikides, C., & Gregg, A. P. (2003). Portraits of the self. In M. A. Hogg, & J. Cooper (Eds.), *Sage handbook of social psychology* (pp. 110–138). London: Sage.

Sedikides, C., & Strube, M. J. (1997). Self-evaluation: To thine own self be good, to thine own self be sure, to thine own self be true, and to thine own self be better. *Advances in Experimental Social Psychology*, *29*, 209–269.

Shapiro, K. L., Caldwell, J., & Sorensen, R. E. (1997). Personal names and the attentional blink: A visual "cocktail party" effect. *Journal of Experimental Psychology. Human Perception and Performance*, *23*, 504–514.

Smallwood, J., & Schooler, J. W., (2006). The restless mind. *Psychological Bulletin*, *132*, 946–958.

Smith, E. R., & Henry, S. (1996). An in-group becomes part of the self: Response time evidence. *Personality and Social Psychology Bulletin*, *22*, 635–642.

Symons, C. S., & Johnson, B. T. (1997). The self-reference effect in memory: A meta-analysis. *Psychological Bulletin*, *121*, 371–394.

Tacikowski, P., & Nowicka, A. (2010). Allocation of attention to self-name and self-face: An ERP study. *Biological Psychology*, *84*, 318–324.

Wolford, G., & Morrison, F. (1980). Processing of unattended visual information. *Memory & Cognition*, *8*, 521–527.

Wood, N., & Cowan, N. (1995). The cocktail party phenomenon revisited: How frequent are attention shifts to one's name in an irrelevant auditory channel? *Journal of Experimental Psychology: Learning, Memory, and Cognition*, *21*, 255–260.

Zajonc, R. B. (1968). Attitudinal effects of mere exposure. *Journal of Personality and Social Psychology*, *9*, 1–27.

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