Gatecrashing the Visual Cocktail Party:

How Visual and Semantic Similarity Modulate the Own Name Benefit in the Attentional Blink

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Abstract

The “visual cocktail party effect” refers to superior report of a participant’s own name, under conditions of inattention. An early selection account suggests this advantage stems from enhanced visual processing (Treisman, 1960; Shapiro, Caldwell & Sorensen, 1997). A late selection account suggests the advantage occurs when semantic information allowing identification as ones own name is retrieved (Deutsch & Deutsch 1963; Mack & Rock 1998). In the context of Inattentional Blindness (IB) the advantage does not generalise to a minor modification of a participants own name, despite extensive visual similarity, supporting the late selection account (Mack & Rock 1998). The current study applied the name modification manipulation in the context of the Attentional Blink (AB). Participants were presented with rapid streams of names, and identifed a white target name, whilst also reporting the presence of one of two possible probes. The probe names appeared either close (the third item following the target: lag 3), or far in time from the target (the eight item following the target: lag 8). The results revealed a robust AB; reports of the probe were reduced at lag 3 relative to lag 8. The AB was also greatly reduced for the own name compared to another name; a visual cocktail party effect. In contrast to the findings of Mack and Rock for IB the reduced AB extended to the modified own name. The results suggest different loci for the visual cocktail party effect in the AB (word recognition) compared to IB (semantic processing).

The question of the “locus of selection” is at least as old as the study of selective attention itself, and in one form or another has occupied cognitive psychologists for more than 60 years (see, Allport, 1992; Driver, 2001; Lachter, Forster, & Ruthruff, 2004; Lavie & Tsal, 1994, for reviews). Essentially, this debate revolves around the information processing stage at which stimuli must first be treated selectively, with critical processing operations applying to some stimuli but not others. Whilst some authors argue that selection must occur on the basis of elementary sensory properties, before stimuli are fully identified and processed for meaning (e.g. Broadbent, 1958; Treisman & Gelade, 1980), others argue all stimuli are fully processed for meaning and are only treated selectively when it comes to finally reporting (e.g. Deutsch & Deutsch, 1963; Duncan, 1980), or acting on them (e.g. Allport, 1980; Neuman, 1987). A corollary to this issue is the question of the fate or extent of processing of stimuli that are not selected. The earliest studies of selective attention using ‘dichotic listening’ (e.g. Cherry, 1953) showed that participants were often completely unaware of gross changes to the meaning of passages of speech that were played to an unselected ear. Such findings were consistent with the notion that little processing of the unattended speech occurs beyond an elementary level. However, subsequent research by Moray (1959) demonstrated that certain stimuli seemed to be processed for meaning even when not selected. Moray (1959) showed that when a participant’s own name was presented in the unselected passage they did notice it quite frequently, an effect that has become known as the “cocktail party effect” (see also Wood & Cowan, 1995; Conway, Cowan, & Bunting, 2001, for recent replications).

The question of the locus of selection and the extraction of semantic information for unselected stimuli, is not merely of historical interest. The issue remains hotly debated to this day with different researchers taking quite radically different views. Various researchers have extended the class of stimuli that should be considered special and may be processed for meaning before selection. For example whilst performing a difficult visual search task at fixation, observers remain able to determine whether a scene contains an animal or a vehicle (Li, VanRullen, Koch, & Perona, 2002), which type of animal it contains (Poncet, Reddy, & Fabre-Thorpe, 2012), whether a face is male or female (Reddy, Wilken, & Koch, 2004) and even the specific identity of a particular face (Reddy, Reddy, & Koch, 2006). However, other authors have argued forcefully against these claims maintaining that either only very impoverished (Evans & Treisman, 2005; Treisman, 2006) or no processing at all of unattended stimuli is possible (Cohen, Alvarez & Nakayama, 2011). One argument here is that whilst some elementary feature processing of stimuli maybe possible and this may be sufficient for some tasks this falls short of the kind of processing that is required for full identification and naming (Evans & Treisman, 2005). Another is that those experiments that apparently demonstrate processing of complex objects in the near absence of attention, have not really eliminated attention to these objects, and when sufficiently tough attentionally demanding tasks are used evidence for preserved processing breaks down (Cohen et al., 2011).

A parallel debate is ongoing in the domain of visual word processing (see Besner, Risko, Stolz, White, Reynolds, O'Malley & Robidoux, 2016 for a review). Here the debate centres on variations of the classic Stroop (1935) paradigm. Participants name a target colour while attempting to ignore an unattended distractor word that is presented in a different spatial location. Some authors find interference from the word on colour naming (e.g. Augustinova & Ferrand, 2010; 2015; Brown, Gore, & Carr, 2001; Lachter, Lien, & McCann, 2008), and argue for word identification without attention (see Augustinova & Ferrand, 2014 for discussion). Others find no interference (Labuschagne, & Besner, 2015;

Robidoux, & Besner, 2015) again arguing that cases of interference only occur when attention is not properly controlled.

Aside from dismissing these demonstrations of the extraction of meaning for unselected stimuli as methodological artefacts (e.g. Besner, Risko, Stolz, White, Reynolds, O'Malley, Robidoux, 2016; Holender, 1986; Lachter et al., 2004; Cohen, et al., 2011), there are two primary accounts of these data. The first is to abandon the early selection approach altogether and suggest that all stimuli are always fully identified, but they must be selected for subsequent report. This first option was the one advocated by Deutsch and Deutsch (1963; 1967; see also Mack & Rock, 1998; Mack 2003 for a recent incarnation of this view) who suggested that there are no limitations on processing stimuli for meaning, however subsequently becoming aware of those stimuli and being able to report on them requires selection. Essentially, we extract meaning for everything around us, but the vast majority does not reach consciousness. The second option is to modify the early selection account to suggest that whilst selection generally operates early, it is incomplete, and some stimuli may have a special status. This option is the one preferred by Treisman (1960) and subsequently by a range of authors (e.g. Broadbent, 1971; Bundesen, 1990). Treisman (1960) suggested that whilst selection operates early, before stimuli are processed for meaning, it is incomplete. Selected stimuli may be prioritised over unselected stimuli. However, unselected stimuli are not completely blocked, but merely attenuated. Unselected stimuli are thus processed less thoroughly than selected stimuli, thus for known stimuli the quality of the evidence for the presence of one stimulus over another is enhanced for selected over unselected stimuli. Furthermore, Treisman (1960) suggests that stimuli are identified when their representations in long-term memory are activated by sensory evidence (an idea that has stood the test of time see Coltheart, Rastle, Perry, Langdon, & Zeigler, 2001 and Tresiman 2006 for a recent incarnations). Some entries in this store (a mental dictionary or lexicon) have a lower threshold of evidence for their activation and thus can reach this criterion level of activation to indicate the presence of the stimulus in the environment even with impoverished attenuated input. Thus ones own name, or entries primed by the recent presentation of semantically related information can be identified and reach conscious awareness, even when not selected.

The idea that certain stimuli may access privileged representations is echoed in recent studies using naturalistic stimuli (see, Rousselet, Thorpe, & Fabre-Thorpe, 2004; Van Rullen, 2006). Whereas certain naturalistic stimulus categories (animals, vehicles, human figures) may be detected effectively in the periphery whilst observers complete an attention demanding task at fixation, other artificial stimuli are difficult or impossible to identify under identical conditions (a disk that is red on the left and green on the right, vs. a disk that is green on the left and red on the right, e.g. Li et al. 2002). The dominant account of these findings is that due to frequent exposure and high familiarity, special networks of representations may develop that are dedicated to detecting the features and combinations of features that are present in these objects (e.g. Van Rullen, 2006). This idea is related to the idea that the representations of familiar or important concepts are permanently facilitated. However, instead of the representations having a lower threshold, this facilitation is achieved by richer and more detailed representations, that are better tuned to detect these specific items.

One issue for studying perception without attention is that once a stimulus is expected it is difficult to have participants effectively ignore that stimulus: an attentional “white bear” situation (see Tsal & Makovski, 2006; Driver et al., 2000). Mack and Rock (1998; see also

Rock, Linnet, Grant, & Mack, 1992) introduced a novel paradigm for studying the fate of unselected stimuli in vision, that sidesteps this issue, by looking at incidental detection of an unexpected stimulus. Participants were informed that the task concerned size perception and asked to judge which arm of a briefly presented and masked cross was longest. Unknown to participants on the last (4^{th} or 5^{th}) trial an unexpected stimulus was presented somewhere in the display. Subsequently, participants were asked if they had noticed anything other than the cross and the mask. This task has many similarities to the dichotic listening task in audition. Over a large array of experiments Mack and Rock (1998) explored the factors that modulated participants awareness of the unexpected object, in some circumstances participants report of the unexpected object was very poor (as many as 90% of participants failing to report the stimulus). One factor that was shown to modify this so-called Inattentional Blindness (IB) was self relevance. In particular, when the unexpected stimulus was the participants own name the IB rate was only 10% whereas when it was someone else's name it was 70%; a visual cocktail party effect.

Mack and Rock (1998) asked whether this visual cocktail party effect occurred because of a reduced requirement for visual evidence for ones own name, essentially more efficient visual recognition of your own name as suggested by Treisman (1960), or whether it occurred at a subsequent stage of processing when the meaning of the name is accessed and the name is identified as belonging to the participant as suggested by Deutsch and Deutsch (1963). In order to test between these views they examined performance with a minimally modified version of the participants own name. They took the first vowel of the name after the first letter and replaced in with another vowel, thus 'Kevin' becomes 'Kovin'. If the cocktail party effect is rooted in the efficiency of word recognition, then 'Kovin' should also provide evidence for the special status 'Kevin' representation, and the cocktail party effect should generalise to the modified name. This generalisation could either take the form of participants mistaking the modified version of the name for their own name, or activation of the own name representation calling for immediate selection and further scrutiny. Alternatively, if it is only later in processing when the name is fully identified and recognised as belonging to the participant that the cocktail party effect is triggered, then the modified name should behave just like somebody else's name, and should be vulnerable to IB. The results reported by Mack and Rock (1998) demonstrated that a modified version of ones own name was just as susceptible to IB as someone else's name. On this basis, the authors prefer a late selection account where all stimuli are fully analysed for meaning (see also, Schnuerch, Krietz, Gibbons, & Memmert, 2016, for evidence of semantic processing in the attentional blink paradigm), before the most important are selected for awareness and report.

Other more recent work using visual search tasks, tells a somewhat different story about how the personal significance of a word affects visual processing. Harris, Pashler, and Coburn (2004; see also Bundesen 1997) demonstrated that when participants attempt to detect the presence of the own name amongst distractor words, performance is inefficient. In contrast to when the target is defined by a salient single feature like colour, own names do not "pop-out" to produce parallel search. However, there is some overall facilitation for own name targets, consistent with no more efficient visual processing of ones own name, but an advantage that emerges only after the name is selected. Harris and Pashler (2004) revisited a task introduced by Wolford & Morrison (1980) whereby participants ignore a word presented at fixation whilst deciding if two numbers match in parity or not. The results showed that when the central word was the participants own name the parity judgement task was disrupted. However, this disruption was sensitive to capacity limitations in the sense that it was eliminated when multiple words were presented, in addition it was maximal on the first presentation of the name but then rapidly diminished (see also Frings, 2006, for evidence of difficulty suppressing ones own name as a distractor). These results suggest that name identification is subject to capacity limitations arguing against late selection. In addition, personal significance does not seem to advantage the early visual processing of a name. However, once identified our names are recognised as special and this can produce a transient reaction that may interrupt processing on another task, again a late locus for the cocktail party effect.

Interestingly, Shapiro, Caldwell, and Sorensen (1997) examined the potential for a visual cocktail party effect in the context of the Attentional Blink (AB) using the Rapid Serial Visual Presentation (RSVP) paradigm. The AB refers to the difficulty participants have in explicitly reporting the second of two targets presented in rapid temporal sequence when the second target appears 2-500 ms after the first. Various models exist to account for the AB phenomenon, but the important point is that the AB constitutes a failure to select a target for report. It is thus informative to consider to what level this unselected target may be processed, and to explore which factors make this second target more or less reportable (see Dux, 2009, and Martens & Wyble, 2010, for reviews). Shapiro explored what would happen if the RSVP stream consisted of names, and compared performance for a second target that was either the participant's name or someone else's name. Participants viewed the RSVP streams and identified a single white name, subsequently in different blocks of trials they attempted to report the presence of a known probe that was either their own name or someone else's name. When the probe was someone else's name a classical AB with a typical time course was demonstrated. In contrast when the probe was the participants own name the AB was almost completely obliterated.

Although Shapiro et al. (1997) do not present direct evidence to adjudicate between an early or late locus for their cocktail party effect, they directly recruit Treisman's (1960) attenuation account to explain their data. The authors suggested that during the AB processing of the RSVP stream is attenuated. Specifically, the quality of the sensory evidence that is used to trigger representations of the names in long-term memory is impoverished, as a consequence these representations are less active. However, since the evidence requirements or threshold for the representation of ones own name is reduced, this special representation will be activated to a greater extent than the representation of someone else's name. Furthermore, stimuli which are supported in this way, are more salient and are weighted with a higher priority for report, thus escaping the AB.

However, it seems at least equally as likely that all the names are fully processed during the AB, and it is only later when the name is identified as belonging to the participant that it is prioritised for report. In their paper, Shapiro et al. showed that the effect of name ownership varied according to the nature of the other items in the RSVP stream. When these other items were not personal names but object names then neither ones own name nor someone else's name showed an attentional blink, but object name targets did. These findings suggest that the status of the probe as a personal or object name must be available to the system at some level, consistent with deep processing of the probe. In addition, other data from AB studies are consistent with this hypothesis. Shapiro, Driver, Ward, and Sorensen (1997; see also Maki, Frigen & Paulson, 1997) showed that a blinked target, could none the less semantically prime a subsequent item. Interestingly, Arnell, Shapiro, and Sorensen (1999) explored the effects of name ownership in the context of repetition blindness (RB): reduced reports of two identical targets compared to two different targets in the context of RSVP. They demonstrated less RB for ones own name. They suggested that this advantage was not purely the result of better identification of the own name, but rather enhanced “consolidation” of the own name representation once activated; a post-identification account akin to late selection.

Recently there has been a resurgence of interest in general effects of “personal relevance” beyond examinations of the own name advantage. Sui & Humphreys (2012) showed that merely associating a random and neutral geometric shape with the self (the triangle is you), led to subsequent processing advantages for the shape. Thus, it appears that enhanced processing of self-associated stimuli is not specific to our name, but can rapidly generalise to novel stimuli with which we are associated. This rapid onset of self-relevance benefits suggests that these benefits can arise quickly and do not always stem from greater familiarity built up through experience. Sui & Humphreys (2015) argue for multiple loci for this effect both perceptual and conceptual / semantic. Studies of redundancy gains show benefits to processing from the presentation of multiple instances of the self-associated shapes, both when these shapes are identical and when they are different, consistent with a perceptual component (tapped by identical shapes) and a conceptual locus, that permits generalisation across different shape exemplars. If the own name advantage in the attentional blink task is exclusively localised to this conceptual stage then it may not generalise to minimally modified versions of ones own name.

In order to account for relatively complete semantic processing of items during the AB, there are two theoretical strategies. The first suggested by Chun and Potter (1995) and drawing on Potter’s earlier (e.g. Potter, 1975) proposals, is that whilst items are completely processed during the AB period they remain in a fragile state vulnerable to being overwritten by subsequent stimuli, unless “consolidated” by a capacity limited process that renders the stimuli reportable. Thus, items that have special significance are likely to have priority for consolidation, creating the own name advantage. The second discussed by Shapiro, Raymond, and Arnell (1994; see Isaak, Shapiro, & Martin, 1999, for further development) is to suggest that whilst items are fully processed and stored in short-term memory, the AB occurs due to limitations on retrieving information from this system. In particular retrieval is framed as a competitive process, and stimuli which lose this competition, are not reported producing the AB. Since ones own name is likely to be weighted more highly and thus be a stronger competitor for retrieval it is less susceptible to the attentional blink.

The aim of the current study was to test whether the locus of the cocktail party effect in the AB is in the process of word recognition as suggested by Shapiro et al. (1997) drawing on Treisman (1960; see also Treisman, 2006), or whether it occurs later in processing as suggested by Mack and Rock (1998) drawing on Deutsch and Deutsch (1963), in the context of IB. In order to achieve this, the current study took the name modification manipulation used in the context of IB by Mack and Rock (1998) and applied it for the first time in the context of the AB. Thus, participants in the current study attempted to identify a white target presented during RSVP whilst also detecting the presence of a probe item that was either the participants own name, somebody else’s name, or a modified version of these names. Will the AB be fully reinstated for a slightly modified version of ones own name? Such a full reinstatement would be very difficult to account for by any account rooted in the process of visual word recognition, but could be accommodated by a late selection account of the type advocated by Chun and Potter (1995) or Isaak et al. (1999).

Method

Participants: A total of 64 undergraduate students from the University of Essex took part in return for course credit. Four participants made extremely large numbers of false alarms to the probe in one of the blocks (>80%), and four detected the white item very rarely (<30%), these participants and their partners were removed from the analysis leaving 48 participants in the final sample (10 males), mean age 20.6, range 19-30.

Design: The experiment manipulated three repeated measures factors, name ownership (own name vs. partner's name), name modification (unmodified name vs. modified name), and probe lag (lag 3 vs. lag 8). The name ownership manipulation used a yoked control design, such that all participants were arranged into pairs, with each participant using the paired name in the partner's name condition. This meant that each name served as a stimulus equally often in the own name and the partners name conditions.

Equipment: The experiment was generated using Inquisit software, and was displayed on the screen a of 21 inch iMac computer, running Apple OS X.

Stimuli: The words were black on a grey background except one the target item that was white. The distractors were most frequent names for boys and girls born in 1997 (the year of birth for most of the participants), according to data provided by the United Kingdom Office for National Statistics. There were two lists of distractors one composed of male names and one of female names. Within each list there were 30 possible distractors, 28 default items, and 2 reserves, the reserves were used if the participant's or the partner's names were present in the default distractor set. Female names were used for female participants, and male names for male participants. Each word was presented for 68 ms with a 17 ms blank screen in between. The names were 0.6 cm high but ranged in width between 1.5 and 3.7 cm. The black probe names that participants were instructed to detect, were either the participant's own name or a partner's name, in separate blocks. Modified versions of these names were created by finding the first non-initial vowel and replacing it with a randomly selected vowel to create a new string. No participant had a name without non-initial vowels apart from one participant called Amy, who was assigned the modified name Amu. The specific names used are presented in the Appendix.

Procedure: The experiment was divided into two major blocks of 128 trials, one using the participants own name and its modified form and one using the partners name and its modified form, the order of these two major blocks was counterbalanced. Each major block began with 8 practice trials and then 5 smaller blocks of experimental trials each with a break in between at the end of each rest period participants pressed enter to move on. On any particular trial the probe item when present was equally often an unmodified or modified name. Participants thus always attempted to detect one of two possible targets.

Each trial began with a cross in the display and then participants pressed the space bar to initiate the RSVP stream. The name RSVP stream then began 500 ms later. Each RSVP stream consisted of 15 names. There was always a single white name present (this could never be the same of one of the black targets). The white name could appear randomly in positions 3, 4, 5, or 6. The participant was tasked with identifying and remembering this item. A black probe item was present on 2/3 of trials, on 1/3 of trials it was an unmodified name, and on 1/3 of trials it was a modified name, the probe could appear at lag 3 or lag 8. Trials with an unmodified name probe, a modified name probe, or no probe, were randomised within blocks. Participants were thus tasked with detecting the presence of one of two possible probe items. Streams of names were terminated with a mask composed of a string of Xs. Participants first responded to indicate whether the probe was present or absent by pressing either “a” for absent or “s” for present. They were then presented with a list of all 28 possible white items, and they used the mouse to pick the white name from the list. A different random order of the names was used for each participant.

Results

The ability to report the white target, did not differ significantly between the own name and partners name blocks 76 % own name vs. 74 % partners name, t(47)=1.454, p=.152. However, there were slightly but significantly fewer false alarms for probe detection in the own name 9 % vs. partners name 14 % block, t(47)=2.08, d= 0.23, p<0.05.

Proportion probe detection (see Figure 1) was analysed using ANOVA with the factors of Name Ownership (own name, partners name), Name Modification (modified unmodified), and Probe Lag (lag 3, lag 8). There were main effects of Name Ownership F(1,47)= 69.4, η^2_p = 0.596, p<0.0001, Name Modification F(1,47)= 11.05, η^2_p= 0.19, p<0.002, and Lag F(1,47)= 158.177, η^2_p= 0.771, p<0.0001. Name Ownership and Name Modification interacted significantly F(1,47)= 9.28, η^2_p = 0.165, p<0.005. Analysis of simple main effects showed that while the effects of Name Ownership were significant for both unmodified, F(1,47)=86.4, η^2_p = 0.648, p<.0001, and modified names, F(1,47)=43.9, η^2_p = 0.483, p<.0001, there was an overall cost to performance for modified names only in the

Own name condition, F(1,47)=31.43, η^2_p = 0.401, p<.0001, but not in the partners name condition, F<1. Name Ownership interacted with lag F(1,47)= 20.65, η^2_p = 0.305, p<0.0001. Simple main effects analysis showed that the ownership effect was significant at both lag 3 F(1,47)= 88.49, η^2_p = 0.653, p<0.0001 and lag 8 F(1,47)= 27.29, η^2_p = 0.367, p<0.0001. Whilst the drop in performance for Lag 3 compared to Lag 8 was significant in both the own name F(1,47)= 47.39, η^2_p = 0.502, p<0.0001, and other name conditions F(1,47)= 118.84, η^2_p = 0.717, p<0.0001, it was substantially larger in the other name condition consistent with a larger attentional blink in this condition (see Figure 2 for a graphical representation of Attentional Blink magnitude in the present study). Name Modification also interacted with lag F(1,47)= 19.47, η^2_p = 0.293, p<0.0001. Simple main effects analysis showed that the drop in performance for Lag 3 compared to Lag 8 was significant for both modified F(1,47)= 162.39, η^2_p = 0.776, p<0.0001 and unmodified names F(1,47)= 109.38, η^2_p = 0.699, p<0.0001. However, whilst the effect of modification was significant at lag 3 F(1,47)= 21.271, η^2_p = 0.312, p<0.0001, it was not significant at lag 8 F<1, consistent with a larger attentional blink for modified names (see Figure 2).

Crucially the three-way interaction between all factors was not significant, F<1. To further assess this critical non-significant interaction the BayesFactor package in R (Morey & Rouder, 2018) was used to calculate the Bayes Factor indicating the relative probability of the full model including the three way interaction and the model excluding this interaction (Following the recommended strategy laid out in Rouder, Morey, Verhagen, Swagman, &

Wagenmakers, 2017). The analysis showed the model without the three way interaction was 5.33 times more likely than the model with this interaction. The results suggest that modification does not increase the attentional blink selectively for the own name condition.

Discussion

The current study was able to reproduce the visual cocktail party effect in the context of the AB. The AB was approximately half as large when the probe item took the form of the participants own name compared to the partners name. Modification also increased the magnitude of the AB but to a smaller extent than name ownership. In addition Modification reduced overall performance in the own name condition. However, the nature of this effect of name modification in the own name condition was general, it did not act to increase the magnitude of the AB. Note that participants responded present to either a name or a modified name within a block of trials. Any tendency for participants to misidentify modified names as names making a kind of proof-readers error, would work against this name modification cost, and this tendency may have been expected to be more pronounced in the case of familiar own names. Reliable costs of modification that are in fact *larger* in the own name condition, coupled with the overall low rate of false alarms, suggest that participants tended not to misidentify the modified names as names. The most important finding was that name modification did not fully reinstate the AB for one’s own name. In fact, the AB was substantially reduced for both the own name and the modified own name relative to the partners name.

The pattern of results observed here is very different to that observed by Mack and Rock (1998) in the context of IB. Whereas Mack and Rock reported that modifying the participants own name in this way fully reinstated IB, we did not observe this in the context of the AB. However, there were two distinct effects of name modification in the experiment. Firstly, name modification acted to generally increase the AB, such that the AB was larger for modified names. We suggest that the modification manipulation affects the efficiency with which name representations in long-term memory accumulate evidence for the presence of their referents in the environment. Thus modification likely affects the initial process of activating the representation of one's own name. Participants may then detect unmodified and modified names by monitoring for a certain minimum level of activation in the name representation. Alternatively, participants may monitor for the unmodified name by default and only respond present in the case of a modified name after this process fails, this extended processing sequence in the modified name case would make modified names more vulnerable to the AB.

Secondly, name modification has a more general effect on performance but only in the own name condition. At first glance this interaction appears at least consistent with a late selection account of the visual cocktail party effect. However, it is important to keep in mind that this is a general effect that is approximately equal in magnitude at both lags, it is not an effect on the AB. We attribute this own name specific modification effect to a process of self-relevance detection, that applies only to one's unmodified own name. Once fully processed participants are able to appropriately attribute self-relevance to their own name, and this serves to improve performance with this item. The mechanism of this conceptual self-relevance advantage may be increased attention to the stimulus (e.g., Harris & Pashler, 2004; Arnell et al. 1999). However, the specific advantage that can be traced to this conceptual self-relevance identification does not impact the magnitude of the AB in the same way as it impacts the magnitude of IB. We suggest that the availability of this self-relevance information occurs too late in processing to affect the stages of visual word processing that are primary in generating the AB in this specific paradigm. Thus while self-relevance affects performance it does so in a way that does not modulate AB magnitude.

The current results support the Shapiro et al. (1997) recruitment of Treisman's (1960) attenuation theory to explain the cocktail party effect in the context of the attentional blink. We suggest that when participants attempt to detect their own name or a modified version of it, representations of their own name in memory are enabled and monitored as part of the relevant "task-set" (e.g. Monsell, 1996), in order to make a present vs. absent response. Another way of putting this is that participants activate a target template to enable target detection (e.g. Desimone & Duncan, 1998; Duncan, Humphreys, & Ward, 1999). Overlapping representations are recruited for both the names and the modified names. During the period of the AB, when the white item is selected for prioritised processing, activation of these representations is attenuated, causing poorer detection. However, both the unmodified and modified names activate the same representation, and both forms are advantaged by a lower threshold or increased resting activation in this representation, allowing the advantage to be inherited by the modified own name. Likewise when participants are set to detect someone else's name visual representations of this name are enabled and monitored as part of a different "task-set", however since these representations do not enjoy permanently lowered thresholds or higher resting levels of activation they are more susceptible to the AB. An alternative explanation is similar but rather than permanent changes in the relevant representations, the effects stem from temporarily enhancing the activation of the relevant underlying visual representations once the task is underway. According to Sui & Humphreys (2012; see Sui & Humphreys, 2015 for a review) the ability to activate these representations top-down is enhanced by self-relevance. Since, both the modified and unmodified names both recruit these same representations the benefit generalises across name modification.

Why do these two paradigms AB and IB show differential sensitivity to modification of ones own name? The key difference likely revolves around the role of expectation and top-down task set. In the case of the AB the nature of the possible probe items is known in advance, and participants are explicitly set to attempt to detect them. In the case of IB participants do not expect the critical stimulus to appear and are therefore not explicitly set to detect the name stimulus. We suggest that in the case of the visual presentation of names there are no low level visual features that render ones own name more salient necessarily than another persons name. In these circumstances there is also no incentive to monitor activation in visual representations of ones own name. Thus here it is only relatively late in processing when self-relevance is detected and the stimulus is identified as ones own name that it is then prioritised for selection. In the case of AB participants have an explicit top-down task-set to detect a specific name, and here they are able to enable and monitor visual representations at earlier stages of processing, in order to complete the task. When participants are set in this way they may take advantage of the increased activation or lowered thresholds of visual own name representations, and this advantage may shared by visually similar strings. This may result from relatively long-term changes in the underlying representations due to the greater experience or familiarity with ones own name. Alternatively, it could result from enhanced temporary top-down activation of the representations underlying ones own name (e.g. Sui & Humphreys, 2012).

Thus, in summary the current results point to a flexible system for selection with multiple and variable loci. When participants do not have an expectation for a particular stimulus selection for visually similar stimuli may be driven by late computations related to self-relevance. In contrast this default setting may be overridden by top-down expectations that may serve to enable and permit the monitoring of activation at lower levels of the system. One manifestation of this top-down enabling of lower levels of the system is the inheritance of enhanced processing of ones own name by visually similar stimuli.

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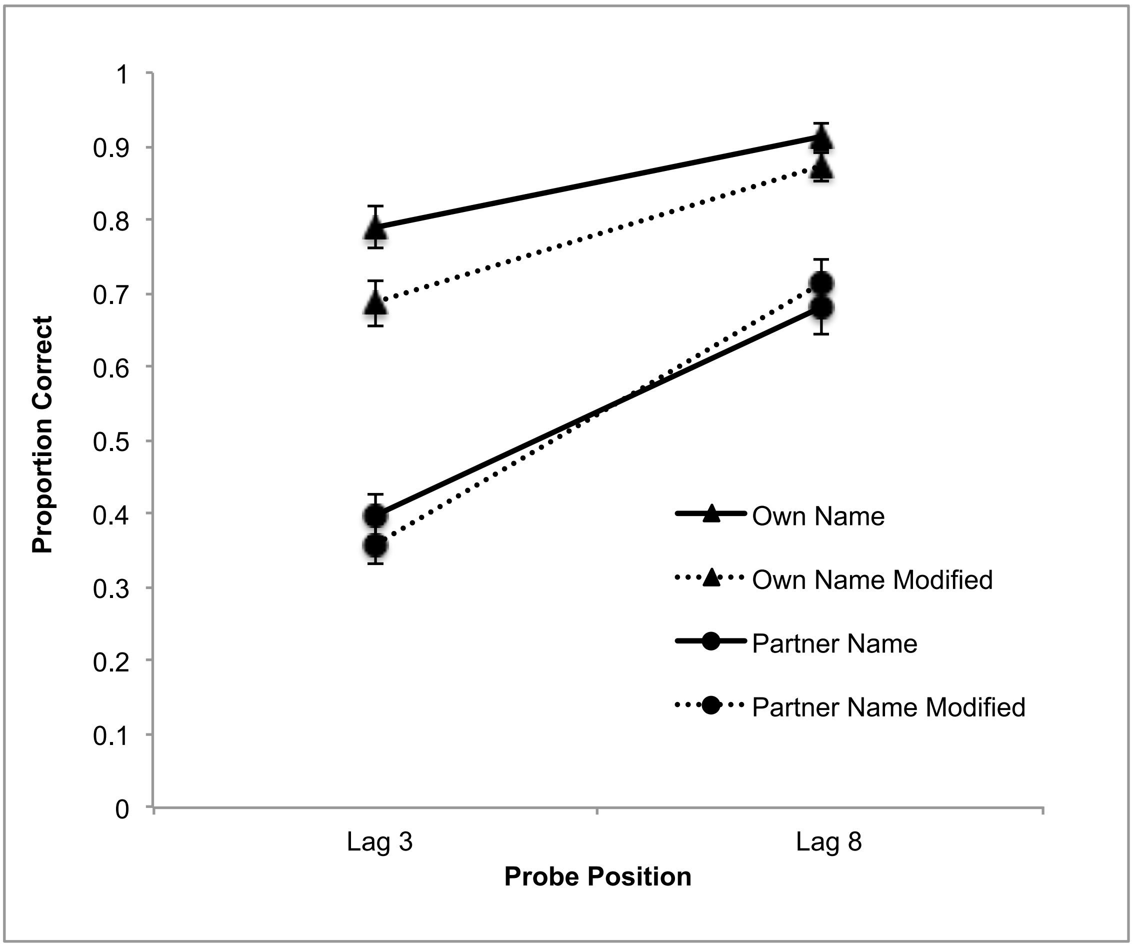

Figure 1: Proportion of trials on which the probe item was correctly reported, as a function of Name Ownership, Name Modification and Probe Lag.

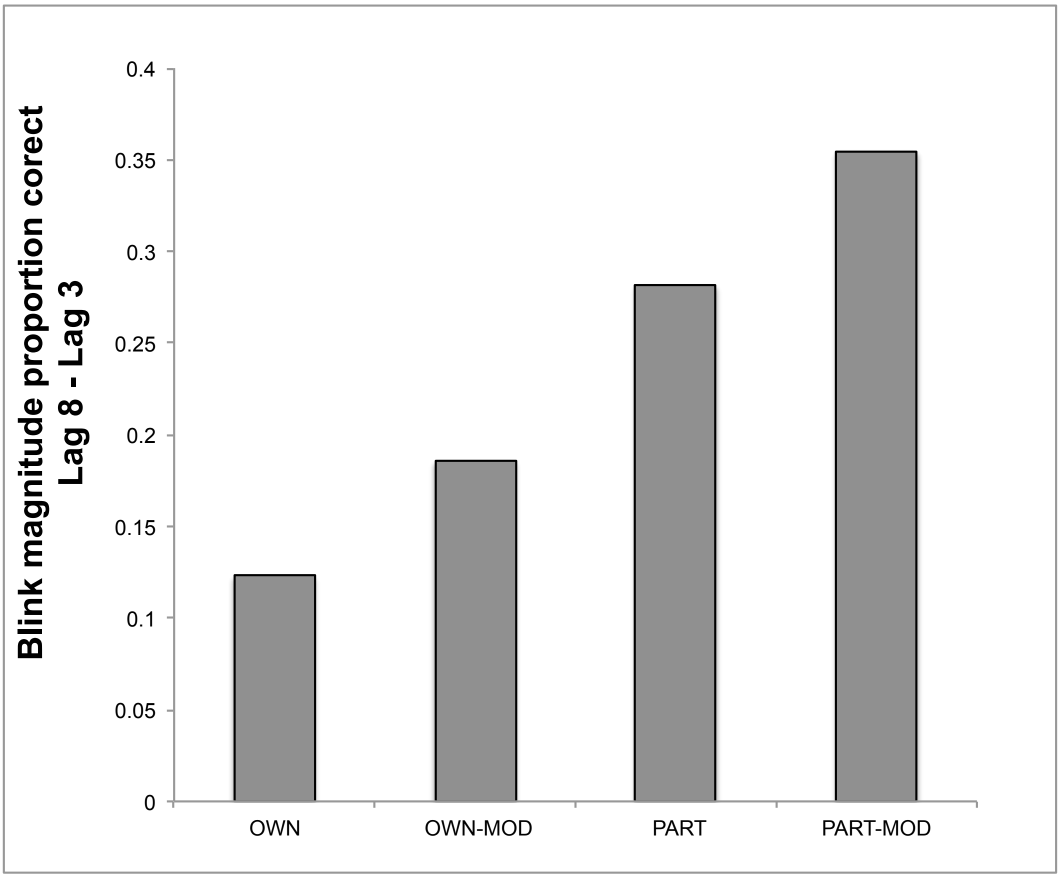

Figure 2: Attentional blink magnitude calculated as (proportion correct at Lag 8 – Lag 3). OWN shows performance with the participants own name, PART shows performance with the partners name. The suffix MOD indicates performance for modified names.

Appendix: Name stimuli used in the experiment.

Own Name	Modified Own Name	Partner Name	Modified Partner Name
Thomas	Thimas	Dominic	Duminic
Dominic	Diminic	Thomas	Thumas
Alana	Alona	Mishie	Meshie
Mishie	Meshie	Alana	Alina
Thomas	Thimas	Michael	Mechael
Michael	Muchael	Thomas	Thamas
Demi	Dimi	Megan	Magan
Megan	Migan	Demi	Dumi
Kristin	Krustin	Melissa	Mulissa
Melissa	Milissa	Kristin	Krustin
Lauren	Liuren	Rebecca	Robecca
Rebecca	Ribecca	Lauren	Louren
Nana	Nuna	Janvee	Jenvee
Janvee	Jenvee	Nana	Nena
Elliot	Elleot	James	Jomes
James	Jomes	Elliot	Elluot
Janice	Jenice	Katerina	Kiterina
Katerina	Kuterina	Janice	Junice
Charlotte	Chirlotte	Jess	Jass
Jess	Joss	Charlotte	Churlotte
Dicky	Ducky	Alexandru	Aloxandru
Alexandru	Alixandru	Dicky	Decky
Oda	Odi	Anna	Anne
Anna	Anne	Oda	Odi
Rosie	Resie	Brogan	Bragan
Brogan	Brigan	Rosie	Rusie
Tinecia	Tenecia	Francesca	Froncesca
Francesca	Frencesca	Tinecia	Tonecia
Joyce	Jayce	Christy	Chrosty
Christy	Chresty	Joyce	Jayce
Lauren	Louren	Amy	Amu
Amy	Amu	Lauren	Luuren
Alencia	Alancia	Monica	Manica
Monica	Minica	Alencia	Alincia
Feven	Fiven	Lucy	Licy
Lucy	Lacy	Feven	Fiven
Caroline	Coroline	Dee	Due
Dee	Die	Caroline	Coroline
Katie	Kitie	Raihanna	Roihanna
Raihanna	Roihanna	Katie	Ketie
Matthew	Mutthew	Thomas	Themas
Thomas	Thimas	Matthew	Mitthew
Summer	Sommer	Rhianne	Rheanne

Rhianne	Rhuanne	Summer	Sommer
Kelsey	Kalsey	Comfort	Cumfort
Comfort	Camfort	Kelsey	Kalsey
Priyanka	Preyanka	Megan	Magan
Megan	Migan	Priyanka	Pruyanka