

## Assimilation and contrast to group primes: The moderating role of ingroup identification

Hall, Natalie R.; Crisp, Richard J.

Postprint / Postprint

Zeitschriftenartikel / journal article

Zur Verfügung gestellt in Kooperation mit / provided in cooperation with:

[www.peerproject.eu](http://www.peerproject.eu)

### Empfohlene Zitierung / Suggested Citation:

Hall, N. R., & Crisp, R. J. (2008). Assimilation and contrast to group primes: The moderating role of ingroup identification. *Journal of Experimental Social Psychology*, 44(2), 344-353. <https://doi.org/10.1016/j.jesp.2007.07.007>

### Nutzungsbedingungen:

Dieser Text wird unter dem "PEER Licence Agreement zur Verfügung" gestellt. Nähere Auskünfte zum PEER-Projekt finden Sie hier: <http://www.peerproject.eu> Gewährt wird ein nicht exklusives, nicht übertragbares, persönliches und beschränktes Recht auf Nutzung dieses Dokuments. Dieses Dokument ist ausschließlich für den persönlichen, nicht-kommerziellen Gebrauch bestimmt. Auf sämtlichen Kopien dieses Dokuments müssen alle Urheberrechtshinweise und sonstigen Hinweise auf gesetzlichen Schutz beibehalten werden. Sie dürfen dieses Dokument nicht in irgendeiner Weise abändern, noch dürfen Sie dieses Dokument für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, aufführen, vertreiben oder anderweitig nutzen.

Mit der Verwendung dieses Dokuments erkennen Sie die Nutzungsbedingungen an.

**gesis**  
Leibniz-Institut  
für Sozialwissenschaften

### Terms of use:

This document is made available under the "PEER Licence Agreement". For more information regarding the PEER-project see: <http://www.peerproject.eu> This document is solely intended for your personal, non-commercial use. All of the copies of this documents must retain all copyright information and other information regarding legal protection. You are not allowed to alter this document in any way, to copy it for public or commercial purposes, to exhibit the document in public, to perform, distribute or otherwise use the document in public.

By using this particular document, you accept the above-stated conditions of use.

Mitglied der  
  
Leibniz-Gemeinschaft

## Accepted Manuscript

Assimilation and contrast to group primes: The moderating role of ingroup identification

Natalie R. Hall, Richard J. Crisp

PII: S0022-1031(07)00111-4  
DOI: [10.1016/j.jesp.2007.07.007](https://doi.org/10.1016/j.jesp.2007.07.007)  
Reference: YJESP 2012

To appear in: *Journal of Experimental Social Psychology*

Received Date: 13 June 2006  
Revised Date: 18 July 2007  
Accepted Date: 24 July 2007

Please cite this article as: Hall, N.R., Crisp, R.J., Assimilation and contrast to group primes: The moderating role of ingroup identification, *Journal of Experimental Social Psychology* (2007), doi: [10.1016/j.jesp.2007.07.007](https://doi.org/10.1016/j.jesp.2007.07.007)

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.



Running Head: OUTGROUP CONTRAST

Assimilation and contrast to group primes:  
The moderating role of ingroup identification.

Natalie R. Hall  
University of Reading  
and  
Richard J. Crisp  
University of Kent

Word count: 7,807

#### Author Note

Natalie R. Hall, University of Reading, Richard J. Crisp, University of Kent. This research was funded in part by an Economic and Social Research Council doctoral studentship (PTA-030-2002-00889) to N. R. Hall. Correspondence concerning this article should be addressed to N.R. Hall at School of Psychology and Clinical Language Sciences, University of Reading, Earley Gate, Whiteknights Road, Reading, Berkshire, RG6 6AL, Tel: +44 (0)118 378 5032 E-mail: Natalie.Hall@Reading.ac.uk or to R. J. Crisp, Department of Psychology, Keynes College, University of Kent, Canterbury, Kent, CT2 7NP, Tel: +44 (0)1227 823961, Email: R.Crisp@Kent.ac.uk.

## Abstract

This research examined the conditions under which behavioral contrast would be observed in relation to ingroup and outgroup primes. The authors tested the hypothesis that differing levels of commitment to the ingroup would predict diverging behavioral responses to outgroup but not ingroup primes. Across two studies, featuring both age and gender groups, we found that ingroup identification predicted responses to outgroup primes with higher identifiers showing an increased tendency to contrast, that is, behave less like the outgroup, and more like the ingroup. Ingroup identification did not predict responses to ingroup primes. The implications of these findings for social comparison and social identity theories are discussed.

Key words INGROUP IDENTIFICATION, CONTRAST, SOCIAL COMPARISON, AUTOMATIC BEHAVIOR

Assimilation and contrast to group primes:

The moderating role of ingroup identification

Some groups matter to some people more than others. When they do, there is considerable evidence that people self-stereotype. That is, we come to see ourselves as a group member more than an individual; we more readily accept, adopt and express the attitudes and opinions that we believe our group to hold. In this article we explore the most minimal conditions needed to invoke self-stereotyping at a behavioral level. We argue that it is outgroups, not ingroups, that drive tendencies to depersonalize because they invoke social comparison tendencies; but furthermore that this will only apply for people who highly identify with their ingroup, those people for whom social comparison will be critically important for self-definition.

*Social comparison and social identity*

Early writings on social comparison suggested that people have a fundamental need to compare themselves with others (Festinger, 1954) and this desire to learn about the self through comparison with others is considered universal (Gibbons & Buunk, 1999). The primary goal of such social comparison is to acquire information about the self (Festinger, 1954; Gibbons & Buunk, 1999; Stapel & Tesser, 2001). Not all social comparisons, however, will provide the perceiver with the same information about themselves. The perceiver's impressions of their own abilities are altered by exposure to different people, for example, asked to compare their athletic abilities with Michael Jordan people report themselves to be less athletic than those asked to compare themselves with Bill Clinton (Mussweiler, Rüter, & Epstude, 2004).

Social comparison does not only occur on an individual level but also on a group level "Categories do not exist in isolation. A category is only such in contrast with another" (Hogg & Abrams, 1988, p.14). In the same way that perceivers use social comparison with individuals to define themselves; "[categories] provide a system of *self*-reference: they create and define the individuals' place in society." (Tajfel & Turner, 1979, p.40). The idea that social comparison may occur at a group level is one of the core assumptions of the social identity perspective (Tajfel &

Turner, 1979; including self-categorization theory, Turner, Hogg, Oakes, Reicher, & Wetherall, 1987). A key tenet of the social identity perspective is that self-knowledge is derived through social comparisons (Hogg & Abrams, 1988). This means that all of an individual's perceptions both of themselves and of their group are relational and anchored in the current social context.

A salient social comparison at the group level will lead to self-categorization as an ingroup member; this will be evident in attitudinal assimilation to the group norm (Turner & Reynolds, 2001; Smith & Henry, 1996). Previous research has demonstrated that when the intergroup comparative context is salient perceivers self-categorize by self-stereotyping (Hogg & Turner, 1987; Simon, Glassenbayer, & Stratenwerth, 1991; Simon & Hamilton, 1994; Simon, Pantaleo, & Mummendey, 1995; Spears, Doosje, & Ellemers, 1997) assigning the same traits to the self and the ingroup (Cadinu & Rothbart, 1996; Study 1; Clement & Krueger, 2000, 2002; Gramzow, Gaertner, & Sedikides, 2001; Krueger & Zeiger, 1993; Mullen, Dovidio, Johnson, & Copper, 1992; Otten, 2002, Smith, & Henry, 1996); and will tend to perceive both the ingroup and the outgroup to be more homogenous (Ellemers & van Knippenberg, 1997; Haslam, Oakes, Turner, & McGarty, 1995). Self-stereotyping is an expression of differentiation from outgroups, therefore it seems reasonable to draw a parallel here with research on behavioral contrast to outgroups.

*Behavioral contrast to outgroup primes*

Social comparison is ubiquitous (Mussweiler, 2003a; 2003b) it even occurs following subliminal exposure to potential comparison standards (Mussweiler et al, 2004; Stapel & Blanton, 2004) and such supraliminal comparison targets have been shown to influence not only attitudes as described above, but also perceivers' subsequent behavior. The selective accessibility model (Mussweiler, 2003a; 2003b) suggests that assimilative responses are observed when stimuli are perceived to be similar to a target and that contrastive responses are observed when stimuli are perceived to be different from a target. This implies that ingroup targets may be expected to lead to assimilation as they are likely to be perceived as more similar to the perceiver and outgroup

targets are more likely to lead to contrastive responses as they are perceived to be more dissimilar to the perceiver. This prediction has received some empirical support: Ingroups have been shown to lead to *assimilation* of self-evaluations and behavior (Gordijn & Stapel, 2006; Mussweiler & Bodenhausen, 2002) and, outgroups have been shown to lead to *contrast* of self-evaluations and behaviour (Gordijn & Stapel, 2006; Mussweiler & Bodenhausen, 2002, Schubert & Häfner, 2003; Spears, Gordijn, Dijksterhuis, & Stapel, 2004). However, other research that has investigated perceivers' behavioral responses to stereotypic primes does not support the idea that ingroup primes lead to behavioral assimilation and outgroup primes lead to behavioral contrast. Young university students have been shown to assimilate their behavior to the stereotype of the elderly by walking more slowly (Bargh, Chen, & Burrows, 1996) and to the stereotype of "Professors" by performing better on a general knowledge task (Dijksterhuis et al., 1998). These findings are surprising; as other scholars have noted the perceivers in these experiments had essentially been primed with an outgroup categorization, so contrastive behavioral responses would have been predicted (Schubert & Häfner, 2003; Spears, Gordijn, Dijksterhuis, & Stapel, 2004).

Why in Bargh and Dijksterhuis' studies did outgroup primes not lead to contrast? Schubert & Häfner, (2003) provide some insight. They suggested that although priming an outgroup can automatically activate the complementary ingroup (Wilder & Shapiro, 1984), this may *only* occur if the ingroup-outgroup dichotomy is salient. They argued that unless the perceiver interprets the prime as an *outgroup* stereotype rather than just a stereotype then contrastive responses may not be expected. These predictions were supported empirically; increasing the salience of the outgroup designation of the target group led to a contrastive behavioral responses (Gordijn & Stapel, 2006; Schubert & Häfner, 2003). Furthermore, Spears and colleagues (2004) have demonstrated that outgroup assimilation can be turned into outgroup contrast by making the intergroup context salient to perceivers. In sum, outgroup primes will

lead to behavioral contrast, but only if an intergroup comparative context is salient; that is, only if they are thought about as outgroups by perceivers.

*Ingroup identification as a moderator*

It has been demonstrated that the salience of the intergroup context predicts whether assimilative or contrastive responses follow outgroup primes (Brewer and Weber, 1994; Gordijn & Stapel, 2006; Schubert & Häfner, 2003; Spears et al., 2004), however all of these studies demonstrate that contextual manipulations of the salience of the intergroup context influence responses to outgroup primes. In the current research, we suggest that there may be a person-centered variable that may predict whether the intergroup context is spontaneously salient to perceivers. We argue that the perceiver's level of commitment to their ingroup will predict the tendency to contrast from an outgroup prime. This is because ingroup identification can be thought of as the extent to which the perceiver has an automatic tendency to self-define as an ingroup member. Empirically, the notion that commitment to ingroups is an important element in group perception and behavior is well supported. Highly identified perceivers are more likely to conform to group norms (Fielding & Hogg, 2000; Hogg, Turner, & Davison, 1990; Jetten et al., 1997; Jetten, Postmes, & McAuliffe, 2002; McAuliffe, Jetten, Hornsey, & Hogg, 2003; Schofield, Pattison, Hill, & Borland, 2003; Smith & Terry, 2003, Study 2; Terry, Hogg, & McKimmie, 2000), perceive the ingroup to be more homogenous (Castano & Yzerbyt, 1998 Study 2; DeCremer, 2001, 2003; Doosje, Ellemers, & Spears, 1995; Ellemers, Spears, & Doosje, 1997; Lorenzi-Cioldi, Deaux, & Dafflon 1998; Jetten, Branscombe, Spears, & McKimmie, 2003 Study 1; Pickett & Brewer, 2001; Weenig, van der Salm, & Wilke, 2004) and show more overlap in the traits they assigned to the self and the ingroup than they did in traits assigned to the outgroup (Riketta, 2005, see also Hogg & Hains, 1996). In sum, higher identifiers are more likely to self-stereotype (Jetten et al., 2002).

If the ingroup category is central to a higher identifier's self-conception (Henderson-King, Henderson-King, et al., 1997; Jetten, et al., 1998) and level of commitment to the ingroup

predicts how the perceiver responds to group based information, it follows that higher levels of ingroup identification may increase the probability of a perceiver encoding information in intergroup terms. Self-categorization theory argues that the level at which the perceiver self-categorizes depends on the accessibility of the self-category (Bruner 1957 as cited in Turner et al., 1987); “the degree of internalization of or identification with an ingroup-outgroup membership, the centrality and evaluative importance of a group membership in self-definition, is a major determinant of accessibility...” (Turner, 1987, p. 55). We would therefore argue that perceivers who strongly identify with a particular ingroup category will be more sensitive to perceiving possible intergroup comparisons, and will differentiate themselves from the outgroup by contrasting (self-stereotyping) responses accordingly. Building on the reasoning of Schubert and Häfner, (2003) and Spears and colleagues we hypothesize that outgroup contrast will be more likely to occur for higher identifiers because such perceivers are *more likely* to spontaneously perceive the situation in intergroup terms compared to lower identifiers. Put another way, higher identifying individuals will be people who are more likely (than lower identifiers) to perceive a group prime as an *outgroup* prime.

What about ingroup primes? Although previous research has demonstrated comparisons with ingroup standards leads to assimilative responses and outgroup targets lead to contrastive responses (Mussweiler & Bodenhausen, 2002), we do not expect that ingroup identification will moderate responses to ingroup primes. Thinking about ingroups does not imply an intergroup comparison, rather, it provides an inter-individual comparative context (Turner, Hogg, Oakes, Reicher & Wetherall, 1987). Therefore, while higher identifiers are expected to be more attuned to an intergroup context we do not expect them to assimilate more to an ingroup prime because there is nothing to suggest or invoke an ingroup-outgroup comparison.

### Experiment 1

The aim of Experiment 1 was to provide an initial test of the hypothesis that ingroup identification will predict responses to outgroup but not ingroup primes. The intergroup context

used was ingroup (young) versus outgroup (elderly). The experimental paradigm used was based on that employed by Bargh, Chen, and Burrows (1996). Participants were primed using a scrambled sentence task and subsequently their behavior was assessed. In this experiment, the behavior of interest was memory, because one of the features of the elderly stereotype is poor memory. It was expected that participants' primed with the outgroup would recall more words than those primed with the ingroup (see also Dijksterhuis, et al., 2000). This tendency to contrast from an outgroup stereotype (i.e., the elderly as forgetful) was expected to be amplified for higher versus lower identifiers. As a subsidiary measure participants were also asked to list as many nightclubs as they could in the local city centre within a set time limit. It was expected that participants' primed with the outgroup would list more clubs than those primed with the ingroup with this tendency being amplified for higher identifiers.

## Method

### *Participants and design*

Thirty-seven participants with a mean age of 19 years were randomly allocated to an ingroup (young) vs. outgroup (elderly) prime condition in a between-participants design. Ingroup identification was measured prior to the manipulation and treated as a continuous variable.

### *Procedure*

Participants were informed that they would complete a number of tasks, and that the first of these was "a measure that we were attempting to validate for future use". The first measure was actually a four item measure of ingroup identification (adapted from Branscombe, Wann, Noel, & Coleman, 1993; Luhtanen & Crocker, 1992). Participants were asked to rate their agreement with the following items: "I identify strongly with other young people", "Being a young person is an important part of who I am", "I feel strong ties with other young people", and "I feel a sense of solidarity with other young people", on a scale anchored at 1 (*Not at all*) to 9 (*Very much so*). The four items formed a reliable scale (Cronbachs  $\alpha = .61$ )<sup>1</sup> so were collapsed into a single measure by summing the scores.

All participants were then asked to complete “a language comprehension task”. This was a version of the Bargh, Chen and Burrows’ (1996) sentence scrambling task. The elderly priming stimuli were taken directly from Bargh et al with one exception. The sentence that unscrambled to “Oranges are from Florida” was removed as this was intended to prime elderly but we did not believe our sample from the UK would associate Florida with elderly. In the young condition we used the same sentences that were the filler items in the elderly priming task and created the same number of new sentences to prime young as were used to prime elderly. The words used were; noisy, inconsiderate, loud music, impulsively, open-minded, carefree, nightclub, youth, independent, drinking, untidy, energetic, irresponsibly, rowdy, moody, ungrateful, lively, trendy, immature. All words were pre-tested with 20 participants and were found to be significantly more typical of young from the midpoint (5) of a 1 (*Typical of young*) to 9 (*Typical of elderly*) scale at  $p < .001$  with the exception of *independent* where  $t(19) = -2.77$ ,  $p = .012$ . Participants then completed the dependent measures as described below, then were thanked and debriefed.

#### *Dependent Measures*

Participants completed a lexical decision which consisted of 10 words; bulb, wood, essential, calendar, clock, ring, handle, picture, hotel and news and 10 non-words; twot, dode, koybeed, confarance, chiar, pust, filser, cotfer, ledhar, and raed. On completion of this task participants were asked to recall as many of the stimuli that were presented as they could. This was to ascertain whether the prime had affected the participants’ memory as elderly people are on average more forgetful than younger people (Hess, 1994; Howard, 1996). Previous research has used a recall task to assess the effects of the elderly stereotype on automatic behavior (Dijksterhuis, Aarts, Bargh, & van Knippenberg, 2000).

Participants were also asked to list all the bars and clubs that they could think of in the city centre as a second measure of the accessibility of ingroup-related (self-stereotypic) thoughts as a subsidiary measure. On this measure we expected participants in the outgroup prime

condition to remember more bars and clubs. Participants were given two minutes to complete this task.

## Results and Discussion

### Recall task

A moderated regression analysis revealed a main effect of prime,  $\beta = -2.95$ ,  $t = -3.04$ ,  $p = .005$ ; overall participants assimilated to the outgroup prime more than the ingroup prime<sup>2</sup>. There was no main effect of ingroup identification,  $\beta = 0.10$ ,  $t = 0.61$ ,  $p = .55$ . The main effect of prime was qualified, however, by the predicted interaction between ingroup identification and prime condition,  $\beta = 2.90$ ,  $t = 3.00$ ,  $p = .005$ , see Figure 1.

--- Insert Figure 1 about here ---

In the ingroup prime (young) condition simple slopes analysis revealed no significant relationship between ingroup identification and the number of words,  $\beta = -0.40$ ,  $t = -1.87$ ,  $p = .08$  (although we note the trend towards higher identification predicting recall of fewer words). In the outgroup priming condition (elderly), the number of words recalled significantly increased as identification increased,  $\beta = 0.51$ ,  $t = 2.32$ ,  $p = .035$ . This supports the hypothesis that an outgroup prime would lead higher identifiers to show a larger contrastive effect than lower identifiers.

### Listing task

Moderated regression on the number of clubs generated revealed a significant main effect of prime,  $\beta = -2.96$ ,  $t = -3.39$ ,  $p = .002$ . Those perceivers exposed to an outgroup prime (elderly) showed a contrast effect by listing (remembering) more clubs than those primed with the ingroup category (young). There was also a main effect of ingroup identification,  $\beta = 0.40$ ,  $t = 2.81$ ,  $p = .008$ , with the number of ingroup words listed increasing as ingroup identification increased. These effects were qualified by the predicted interaction between identification and prime  $\beta = 3.08$ ,  $t = 3.53$ ,  $p = .001$ , see Figure 2.

--- Insert Figure 2 about here ---

In line with predictions simple slope analysis on the ingroup condition revealed that ingroup identification did not predict the number of clubs generated in the ingroup (young) condition,  $\beta = -0.12$ ,  $t = -0.52$ ,  $p = .61$ . Simple slope analysis on the outgroup (elderly) condition revealed that, in line with predictions, as ingroup identification increased the tendency to contrast also increased with more clubs being listed  $\beta = 0.76$ ,  $t = 4.46$ ,  $p < .001$ .

The findings from this experiment suggest that ingroup identification can predict responses to outgroup primes, with higher identifiers tending to contrast more than lower identifiers. In line with predictions ingroup identification did not predict responses to ingroup primes.<sup>3</sup>

In Experiment 1 higher identifiers were more likely to have better memory when primed with the outgroup than lower identifiers. We argue that this represents behavioral contrast, but there is an alternative possibility. Perhaps higher identifiers are simply more *alert* in intergroup contexts. Put another way, if higher identifiers are particularly concerned with intergroup comparisons, then it stands to reason that when thinking about outgroups then they will pay more attention to the situation at hand, especially if it seems relevant to the comparison. It is possible that the higher identifiers were not showing better memory because they were behaviorally contrasting from the poor memory elderly stereotype, but perhaps they were simply paying more attention to the task, induced to do so by the intergroup comparison, and subsequently showed better memory. To rule out the possibility that it is simply the case that higher identifiers pay more attention and devote more cognitive resources to tasks at hand when aware of an intergroup comparative context we need a task that would indicate behavioral contrast from an outgroup but *not* increased attention. In other words, we needed a task on which higher identifiers would have to do *worse* than lower identifiers to indicate behavioral contrast. In Experiment 2 we tested our hypotheses with such a measure: Math performance in a gender comparative context.

## Experiment 2

In this experiment we focused on gender primes and math performance. Stereotypically females are expected to under perform on math tests compared to males (e.g., Nosek, Banaji, & Greenwald, 2002). This immediately brings to mind the literature on *stereotype threat* (Steele & Aronson, 1995) which has examined the impact of negative stereotypic expectancies on task performance. When a person's social identity (e.g., female) is attached to a negative stereotype, that person will tend to under perform in a manner consistent with the stereotype (poor at math) particularly when they are aware that they will be compared with an outgroup (male) who stereotypically perform well on the test dimension (see Aronson et al., 1999; for similar findings with ethnicity and math performance). Recent findings have also shown that the stereotype threat effect may only inhibit women's math performance if gender is an important aspect of their self-definition (Schmader, 2002)<sup>4</sup>.

Our aim here was to test if ingroup identification predicted contrast to outgroups in terms of gender primes and math performance – an effect, if observed, that could be seen as analogous to stereotype threat effects. However, it is important to note that stereotype threat does not require an outgroup comparison. In this literature typically perceivers are told that their responses will be compared to an outgroup who stereotypically perform well on the relevant dimension (Aronson et al., 1999; Schmader & Johns, 2003; Rosenthal & Crisp, 2006, Study 4; Spencer, Steele & Quinn, 1999, Study. 2). However, more subtle manipulations can also lead to the effect, such as having instructions read by a male (outgroup) experimenter (Schmader, 2002), asking people to circle their group memberships on the front of the test book (Steele & Aronson, 1995) and simply telling the perceiver that the test is diagnostic of the ability in question (Steele & Aronson, 1995). Furthermore, Shapiro and Neuberg (2007) have recently argued that stereotype threat may not be a singular concept, but that there may be six core types of threat that fall under this umbrella term, differentiated by the combination of target of the threat (self-or ingroup) and the (perceived) source of the threat (self, ingroup others or outgroup

others). The different manipulations described above could have effects on just one, a subset, or all of these core types of threat, which may or may not involve outgroup comparisons.

The point here is that while the basic conditions necessary for outgroup contrast (priming the outgroup) may also be sufficient conditions for stereotype threat (or may accentuate stereotype threat), they are not *necessary* conditions for stereotype threat (i.e., stereotype threat can occur without priming the outgroup). Thus, our focus on outgroup contrast here should be seen as complementary to, while at the same time distinct from, stereotype threat phenomena.

Based on our theoretical model and the findings from Experiment 1 we therefore predicted that following an outgroup prime higher identifiers would show behavioral contrast in the form of poorer performance on a math task compared to lower identifiers. As before, we did not expect ingroup identification to predict responses to ingroup primes.

## Method

### *Participants and Design*

Fifty-six female participants (mean age = 19 years) were randomly allocated to the ingroup (women) or outgroup (men) priming condition using a between-subjects design. Ingroup identification was measured prior to the priming manipulation.

### *Procedure*

Participants were informed that we were collecting information for a series of pre-tests. The first task participants completed was a measure of ingroup identification as used in Experiment 1. The four items formed a reliable scale (Cronbachs  $\alpha = .82$ ) so were collapsed into a single measure by summing the scores of the four items for each participant.

All participants then completed a priming manipulation adapted from Macrae, Milne, & Stangor, (1994 see Dijksterhuis et al., 1998; Haddock, Macrae, & Fleck, 2002). Participants were asked to spend five minutes writing a paragraph thinking about the typical behaviors, lifestyle and appearance attributes associated with the ingroup (women) or the outgroup (men)

dependent on condition. Participants then completed the dependant measures as described below before being thanked and dismissed.

#### *Dependant measures*

Given that men are stereotypically expected to perform better on mathematics tests than women, we used a mathematics test as a behavioral measure of whether assimilation or contrast had occurred. There were two versions of the mathematics test used, both adapted from Bache (2005). The tests consisted of ten questions all at GCSE level (Secondary school examinations taken at age 16 in the UK). Examples include, “How many 6 ½ ounce glasses can be filled from a 32-ounce container of orange juice?” and “If \$1 = £1.60, then \$40 =?” Participants were given ten minutes to complete the as many of the question as they could.

#### Results and Discussion

Results were analyzed in terms of math accuracy. Tests of mathematics ability in the stereotype threat literature are often considered in terms of accuracy because it gives a better impression of participants' behavior when participants are unable to answer all questions in the time allowed (Inzlicht & Ben-Zeev, 2000; Johns, Schmader, & Martens, 2005; Schmader & Johns, 2003; Schmader, Johns, & Barquissau, 2004; Steele & Aronson, 1995). This was similarly the case with our participants; very few were able to complete all ten questions. An accuracy measure takes into account the number of questions attempted so in this context is arguably a more suitable measure.<sup>5</sup>

Accuracy was calculated for each participant by summing number correct and dividing it by number attempted (and then multiplying by 100 to create a percentage). Moderated regression analysis on math accuracy revealed a main effect of prime,  $\beta = 2.41$ ,  $t = 2.59$ ,  $p = .012$ , women primed with the outgroup (men) performed worse on the math task than women primed with the ingroup (women), a typical outgroup contrast effect. This effect was qualified, however, by the predicted significant interaction between prime and ingroup identification,  $\beta = -2.44$ ,  $t = -2.65$ ,  $p = .011$ , see Figure 3. Simple slope analysis revealed that ingroup identification did not

predict math performance following an ingroup prime  $\beta = .26$ ,  $t = 1.38$ ,  $p = .181$ . Ingroup identification did however predict math performance following an outgroup prime  $\beta = -.39$ ,  $t = -2.18$ ,  $p = .039$ . Higher identifiers contrasted their responses by performing less accurately on the math task than lower identifiers.

--- Insert Figure 3 about here ---

These results provide further support for our predictions. Ingroup identification did not predict math performance in response to an ingroup prime but did in response to an outgroup prime. Higher identifiers showed an increased tendency to contrast their responses from outgroups. This later finding is in keeping with the stereotype threat literature, which has shown that women who know they are being compared with men perform worse on math tests. Recently research by Schmader (2002) has demonstrated that the tendency for women to perform worse on math tests following a threatening comparison may be predicted by ingroup identification. The current results echo Schmader's findings where a subtle activation of the outgroup (the presence of a male experimenter) led higher identifiers to perform worse on a math test (contrast).

The findings from this experiment support the hypothesis that higher identifiers will show contrastive responses and self-stereotype more when they have been exposed to an outgroup prime. The effect was observed regardless of the fact that contrast leads to poorer performance, ruling out the possibility that the effect is due simply to higher identifiers paying more attention in salient intergroup contexts. These findings suggest that the apparent desire for higher identifying participants to differentiate themselves from outgroups was so strong as to make these negative implications irrelevant in this context.

#### General Discussion

The experiments reported suggest that thinking about an outgroup may invoke comparison and contrast processes for those social perceivers who are highly identified with their ingroup, but not lower identifiers. It was predicted that the combination of higher ingroup

identification and an outgroup prime would produce contrastive behavioral responses because such perceivers are attuned to the salience of the intergroup context and would want to define themselves as ingroup members by self-stereotyping. These two experiments provide consistent evidence that contrastive responses to outgroup primes can be predicted by perceivers' a priori level of commitment to the ingroup. This effect was replicated on different behavioral measures, in different intergroup settings, using different priming methodologies, suggesting that these findings are robust and generalizable. Importantly we also showed that the contrast effect was observed even when this would have negative implications for self-esteem (i.e., poorer performance). This removes the possibility that the observed effects are due to increased attention to relevant tasks in salient intergroup contexts, and supports the idea that behavioral contrast represent an identity motive to differentiate self-conceptually important ingroups from outgroups. There is however a limitation of the findings of the current experiments, which should be acknowledged before theoretical implications are discussed. In the current studies it is only possible to conclude that higher identifiers are contrasting more from an outgroup prime than lower identifiers, but one cannot dissociate whether the lower identifiers are assimilating more or contrasting less. This issue of relatively of findings is common in studies that investigate the effects of ingroup vs. outgroup primes. Future research would benefit from ingroups and outgroups being judged relative to a control condition to allow for a clearer specification of perceivers responses.

#### *Theoretical implications*

The research presented here is consistent with, and extends, previous work showing that when an outgroup is salient to perceivers contrast effects are likely to be observed (Mussweiler & Bodenhausen, 2002; Schubert & Häfner, 2002; Spears et al., 2004). The current investigation refines these previous findings by demonstrating that highly identified ingroup members appear attuned to recognizing an outgroup as an outgroup. These studies provide clear evidence that

perceivers' underlying commitment and desire to self-define as an ingroup member influences their responses to outgroup primes.

There is considerable evidence that the extent to which the social perceiver identifies with their ingroup influences their responses to group-relevant stimuli. In this article we have argued that the perceiver's level of commitment to their ingroup predicts the tendency to contrast from outgroups. We suggest that the reason that higher identifiers self-stereotype or contrast more than lower identifiers is two fold. First, higher identifiers are more attuned to potential category comparisons (Ellemers & Haaker, 1995). In the experimental paradigms used the intergroup context is not explicitly salient and for higher, but not lower, identifiers we observe effects consistent with an interpretation of a category as a comparative outgroup. Second, higher identifiers, when aware of an intergroup comparison, will think and behave in terms of their ingroup identity, that is, self-stereotype and define themselves in terms of the ingroup norm (in comparison to lower identifiers).

More generally, the current investigation draws on research from the social identity perspective and the social comparison perspective. As Guimond (2006, p. 3) notes these "two major traditions of research both dealing with the social psychology of comparison, albeit each in distinctive ways, have ignored each other". The approach taken here has attempted to address both research domains and has provided insights for both research areas. First, for social comparison research, the findings suggest that individual differences and underlying motivations can influence our automatic behavior to social comparison information. Although the current research only addressed ingroup identification as an underlying drive to self-define as a group member, other researchers have also begun to consider individual differences (e.g. liking of the targets group, see Cesario, Higgins, & Plaks, 2006) and motivational moderators (e.g. self-protective motivations, see Stapel & Johnson, 2007; Stapel & Schwinghammer, 2004) of responses to social comparison information. Second, these studies have provided insight for social identity theory in that they provide evidence that ingroup identification is an important

moderator of implicit responses to group stimuli. This is a finding currently echoed in the literature on reducing prejudice and intergroup conflict where high ingroup identification has been shown to inhibit the effectiveness of attempts at bias reduction, even at an implicit level (Crisp, Stone, & Hall, 2006; Crisp, Hall & Suen, 2007). Together these implications support the idea that considering social comparison and social identity approaches alongside one another can be a fruitful endeavor.

### *Conclusions*

The research reported in this article demonstrates that perceivers' underlying commitment to the groups to which they belong may not only alter their strategic responses but also more implicit responses. Higher ingroup identification is associated with an increased tendency to contrast from an outgroup prime. We suggest that this tendency stems from an increased tendency to self-categorize as an ingroup member and define the self in ingroup terms. More broadly, these findings suggest that while perceivers' behavior may be shaped by stimuli they are unaware of, this influence may be moderated by their own motivations. The findings we report suggest that the link between perception and automatic behavior is not a simple one, and that unconscious desires and motivations may intervene between perception and action.

## References

- Aronson, J., Lustina, M. J., Good, C., Keough, K., & Steele, C. M. (1999). When white men can't do math: Necessary and sufficient factors in stereotype threat. *Journal of Experimental Social Psychology, 35*(1), 29-46.
- Bargh, J. A., Chen, M., & Burrows, L. (1996). Automaticity of social behavior: Direct effects of trait construct and stereotype activation on action. *Journal of Personality and Social Psychology, 71*(2), 230-244.
- Branscombe, N. R., Wann, D. L., Noel, J. G., & Coleman, J. (1993). In-group or out-group extremity: Importance of the threatened social identity. *Personality and Social Psychology Bulletin, 19*, 381-388.
- Brewer, M. B., & Weber, J. G. (1994). Self-evaluation effects of interpersonal versus intergroup social comparison. *Journal of Personality and Social Psychology, 66*, 268-275.
- Brown, R. (2000). Social Identity Theory: Past achievements, current problems and future challenges. *European Journal of Social Psychology, 30*, 745-778.
- Cadinu, M. R., & Rothbart, M. (1996). Self-anchoring and differentiation processes in the minimal group setting. *Journal of Personality and Social Psychology, 70*(661), 677.
- Castano, E., & Yzerbyt, V. Y. (1998). The highs and lows of group homogeneity. *Behavioural Processes, 42*(2-3), 219-238.
- Clement, R. W., & Krueger, J. (2000). The primacy of self-referent information in perceptions of social consensus. *British Journal of Social Psychology, 39*, 279-299.
- Clement, R. W., & Krueger, J. (2002). Social categorization moderates social projection. *Journal of Experimental Social Psychology, 38*, 219-231.
- Crisp, R. J., Stone, C. H., & Hall, N. R. (2006). Recategorization and subgroup identification: Predicting and preventing threats from common ingroups. *Personality and Social Psychology Bulletin, 32*(2), 230-243.

- Crisp, R.J. & Hall, N. R. & Suen, M.-W. (2007). *Reducing implicit prejudice by blurring intergroup boundaries*. Manuscript submitted for publication.
- De Cremer, D. (2001). Perceptions of group homogeneity as a function of social comparison: The mediating role of group identity. *Current Psychology, 20*(2), 138-146.
- De Cremer, D. (2003). The closer we are, the more we are alike: The effect of self- other merging on depersonalized self-perception. *Current Psychology, 22*(4), 316-325.
- Dijksterhuis, A., Aarts, H., Bargh, J. A., & van Knippenberg, A. (2000). On the relation between associative strength and automatic behavior. *Journal of Experimental Social Psychology, 36*(5), 531-544.
- Dijksterhuis, A., Spears, R., Postmes, T., Stapel, D., Koomen, W., van Knippenberg, A., et al. (1998). Seeing one thing and doing another: Contrast effects in automatic behaviour. *Journal of Personality and Social Psychology, 75* (4), 862-871.
- Doosje, B., Ellemers, N., & Spears, R. (1995). Perceived intragroup variability as a function of group status and identification. *Journal of Experimental Social Psychology, 31*(5), 410-436.
- Ellemers, N., & Haaker, M. (1995). Feedback and self-esteem: Individual and group level manipulations and responses.
- Ellemers, N. & van Knippenberg, A. (1997). Stereotyping in social context. In R. Spears & P. J. Oakes (Eds.), *The social psychology of stereotyping and group life*. (pp. 208-235). Oxford: Blackwell.
- Ellemers, N., Spears, R., & Doosje, B. (1997). Sticking together or falling apart: Ingroup identification as a psychological determinant of group commitment versus individual mobility. *Journal of Personality and Social Psychology, 72* 617-626.
- Gibbons, F. X., & Buunk, B. P. (1999). Individual differences in social comparison: Development of a scale of Social Comparison Orientation. *Journal of Personality and Social Psychology, 76*(1), 129-142.

- Gordjin, E. H., & Stapel, D. A. (2006). Behavioural effects of interpersonal versus intergroup social comparison. *British Journal of Social Psychology*, *45*(4), 717-731.
- Gramzow, R. H., Gaertner, L., & Sedikides, C. (2001). Memory for in-group and out-group information in a minimal group context: The self as an informational base. *Journal of Personality and Social Psychology*, *80*(2), 188-205.
- Guimond, S. (2006) Introduction: Social comparison processes and levels of analysis. In S. Guimond (ed.) *Social comparison processes and social psychology: Understanding cognition, intergroup relations and culture*. Cambridge: Cambridge University Press.
- Haddock, G., Macrae, C. N., & Fleck, S. (2002). Syrian science and smart supermodels: On the when and how of perception-behaviour effects. *Social Cognition*, *20* (6), 461-481.
- Haslam, S. A., Oakes, P. J., Turner, J. C., & McGarty, C. (1995). Social categorization and group homogeneity - Changes in the perceived applicability of stereotype content as a function of comparative context and trait favorableness. *British Journal of Social Psychology*, *34*, 139-160.
- Henderson-King, E., Henderson-King, D., Zhermer, N., Posokhova, S., & Chiker, V. (1997). Ingroup favouritism and perceived similarity: A look at Russian's perceptions in a post-Soviet era. *Personality and Social Psychology Bulletin*, *23* 1013-1021.
- Hogg, M. A., & Abrams, D. (1988). *Social identifications: A social psychology of intergroup relations and group processes*. London: Routledge.
- Hogg, M. A., & Hains, S. C. (1996). Intergroup relations and group solidarity: Effects of group identification and social beliefs on depersonalized attraction. *Journal of Personality and Social Psychology*, *70*, 295-309.
- Hogg, M. A., Turner, J. C., & Davidson, B. (1990). Polarized norms and social frames of reference: A test of self-categorization theory of group polarization. *Basic and Applied Social Psychology*, *11*, 77-100.

- Inzlicht, M. & Ben Zeev, T. (2000). A threatening intellectual environment: Why females are susceptible to experiencing problem-solving deficits in the presence of males. *Psychological Science, 11*, 365-371.
- Jetten, J., Branscombe, N. R., Spears, R., & McKimmie, B. M. (2003). Predicting the paths of peripherals: The interaction of identification and future possibilities. *Personality and Social Psychology Bulletin, 29*(1), 130-140.
- Jetten, J., Postmes, T., & McAuliffe, B. J. (2002). 'We're all individuals': group norms of individualism and collectivism, levels of identification and identity threat. *European Journal of Social Psychology, 32*(2), 189-207.
- Jetten, J., Spears, R., & Manstead, A. S. R. (1997). Strength of identification and intergroup differentiation: The influence of group norms. *European Journal of Social Psychology, 27*, 603-609.
- Jetten, J., Spears, R., & Manstead, A. S. R. (1998). Intergroup similarity and group variability: The effects of group distinctiveness on the expression of ingroup bias. *Journal of Personality and Social Psychology, 74*, 1481-1492.
- Johns, M., Schmader, T., & Martens, A. (2005). Knowing is half the battle - Teaching stereotype threat as a means of improving women's math performance. *Psychological Science, 16*, 175-179.
- Lorenzi-Cioldi, F., Deaux, K., & Dafflon, A. C. (1998). Group homogeneity as a function of relative social status. *Swiss Journal of Psychology, 57*(4), 257-273.
- Luhtanen, R., & Crocker, J. (1992). A collective self-esteem scale: Self-evaluation of one's social identity. *Personality and Social Psychology Bulletin, 18*, 302-318.
- McAuliffe, B. J., Jetten, J., Hornsey, M. J., & Hogg, M. A. (2003). Individualist and collectivist norms: when it's ok to go your own way. *European Journal of Social Psychology, 33*(1), 57-70.
- Messick, D. M., & Mackie, D. (1989). Intergroup relations. *Annual Review of Psychology, 40*, 45-81.

- Mullen, B., Brown, R., & Smith, C. (1992). Ingroup bias as a function of salience, relevance, and status - An integration. *European Journal of Social Psychology, 22*(2), 103-122.
- Mullen, B., Midgale, M. J., & Hewstone, M. (2001). Crossed categorization versus simple categorization and intergroup evaluations: A meta-analysis. *European Journal of Social Psychology, 31*, 721-736.
- Mussweiler, T. (2003a). Comparison processes in social judgment: mechanisms and consequences. *Psychological Review, 110* (3), 472-489.
- Mussweiler, T. (2003b). 'Everything is relative': Comparison processes in social judgments. The 2002 Jaspers Lecture. *European Journal of Social Psychology, 33*, 719-733.
- Mussweiler, T., & Bodenhausen, G. V. (2002). I know you are, but what am I? Self evaluative consequences of judging the in-group and out-group members. *Journal of Personality and Social Psychology, 82* (1), 19-32.
- Mussweiler, T., Rüter, K., & Epstude, K. (2004). The ups and downs of social comparison: mechanisms of assimilation and contrast. *Journal of Personality and Social Psychology, 87* (6), 832-844.
- Noel, J. G., Wann, D. L., & Branscombe, N. R. (1995). peripheral ingroup membership status and public negativity towards outgroups. *Journal of Personality and Social Psychology, 68*(1), 127-137.
- Otten, S. (2002). "Me" and "us" or "us" and "them"? -- The self as heuristic for defining novel ingroups. *European Review of Social Psychology, 13*, 1-33.
- Pickett, C. L., & Brewer, M. B. (2001). Assimilation and differentiation needs as motivational determinants of perceived in-group and out-group homogeneity. *Journal of Experimental Social Psychology, 37*(4), 341-348.
- Riketta, M. (2005). Cognitive differentiation between self, ingroup, and outgroup: The roles of identification and perceived intergroup conflict. *European Journal of Social Psychology, 35* (1), 97-106.

- Rosenthal, H. E. S., & Crisp, R. J. (2006). Reducing stereotype threat by blurring intergroup boundaries. *Personality and Social Psychology Bulletin*, *32*, 501-511.
- Schubert, T. W., & Häfner, M. (2003). Contrast from social stereotypes in automatic behaviour. *Journal of Experimental Social Psychology*, *39*, 577-584.
- Schmader, T. (2002). Gender identification moderates stereotype threat effects on women's math performance. *Journal of Experimental Social Psychology*, *38*, 194-201.
- Schmader, T. & Johns, M. (2003). Converging evidence that stereotype threat reduces working memory capacity. *Journal of Personality and Social Psychology*, *85*, 440-452.
- Schmader, T., Johns, M., & Barquissau, M. (2004). The costs of accepting gender differences: The role of stereotype endorsement in women's experience in the math domain. *Sex Roles*, *50*, 835-850.
- Shapiro, J. R., & Neuberg, S. L. (2007). From stereotype threat to stereotype threats: Implications of a multi-threat framework for causes, moderators, mediators, consequences and interventions. *Personality and Social Psychology Review*, *11*(2), 107-131.
- Simon, B., Glassnerbayer, B., & Stratenwerth, I. (1991). Stereotyping and Self-Stereotyping in A Natural Intergroup Context - the Case of Heterosexual and Homosexual Men. *Social Psychology Quarterly*, *54*(3), 252-266.
- Simon, B., & Hamilton, D. L. (1994). Self-Stereotyping and Social-Context - the Effects of Relative In-Group Size and In-Group Status. *Journal of Personality and Social Psychology*, *66*(4), 699-711.
- Smith, E. R., Fazio, R. H., & Cejka, M. A. (1996). Accessible attitudes influence categorization of multiply categorizable objects. *Journal of Personality and Social Psychology*, *71*(5), 888-898.
- Smith, J. R., & Terry, D. J. (2003). Attitude-behaviour consistency: the role of group norms, attitude accessibility, and mode of behavioural decision-making. *European Journal of Social Psychology*, *33*(5), 591-608.

- Spears, R., Doosje, B., & Ellemers, N. (1997). Self-stereotyping in the face of threats to group status and distinctiveness: The role of group identification. *Personality and Social Psychology Bulletin, 28*, 538-553.
- Spears, R., Gordijn, E., Dijksterhuis, A., & Stapel, D. A. (2004). Reaction in action: Intergroup contrast in automatic behavior. *Personality and Social Psychology Bulletin, 30* (5), 605-616.
- Spencer, S. J., Steele, C. M., & Quinn, D. M. (1999). Stereotype threat and women's math performance. *Journal of Experimental Social Psychology, 35*(1), 4-28.
- Stapel, D. A., & Blanton, H. (2004). From seeing to being: Subliminal social comparisons affect implicit and explicit self-evaluations. *Journal of Personality and Social Psychology, 87* (4), 468-481.
- Stapel, D. A. & Johnson, C. (2007) When nothing compares to me: How defensive motivations and similarity shape social comparison effects. *Journal of Experimental Social Psychology*, in press.
- Stapel, D. A., & Schwinghammer, S. A. (2004). Defensive social comparisons and the constraints of reality. *Social Cognition, 22* (1), 147-167.
- Steele, C. M., & Aronson, J. (1995). Stereotype threat and the intellectual test performance of African-Americans. *Journal of Personality and Social Psychology, 69*, 797-811.
- Tajfel, H., & Turner, J. C. (1979). An integrative theory of intergroup conflict. In S. Worchel & W. G. Austin (Eds.).
- Terry, D. J., Hogg, M. A., & McKimmie, B. M. (2000). Attitude-behaviour relations: The role of in-group norms and mode of behavioural decision-making. *British Journal of Social Psychology, 39*, 337-361.
- Turner, J. C. (1987). A self-categorization theory. In *Rediscovering the social group: A self-categorisation theory* (pp. 42-67). Oxford and New York: Blackwell.
- Turner, J. C., Hogg, M. A., Oakes, P. J., Reicher, S. D., & Wetherall, M. S. (1987). *Rediscovering the social group: A self-categorisation theory*. Oxford and New York: Blackwell.

Weenig, M. W. H., van der Salm, C. A., & Wilke, H. A. M. (2004). The relationship between perceived in-group variability, number of contacts, and identification. *Journal of Applied Social Psychology, 34*(4), 872-886.

Wilder, D. A., & Shapiro, P. N. (1984). Role of out-group cues in determining social identity. *Journal of Personality and Social Psychology, 47* (2), 342-348.

## Figure Captions

Figure 1- Word recall as a function of priming condition and ingroup identification (Exp 1).

Figure 2- Clubs listed as a function of priming condition and ingroup identification (Exp 1).

Figure 3- Math accuracy as a function of priming condition and ingroup identification (Exp 2).

Figure 1.

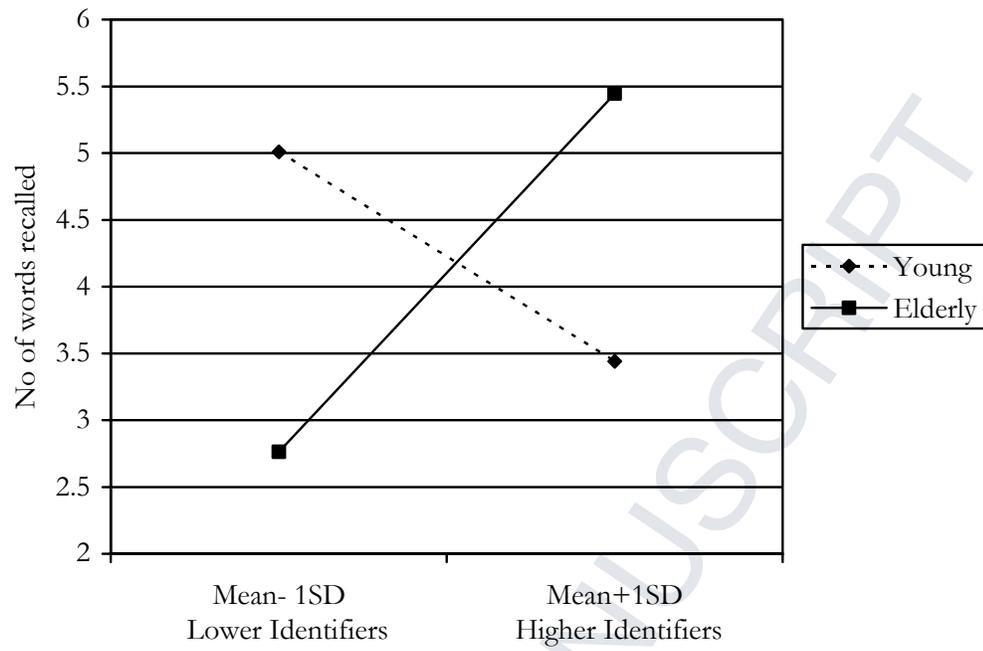


Figure 2.

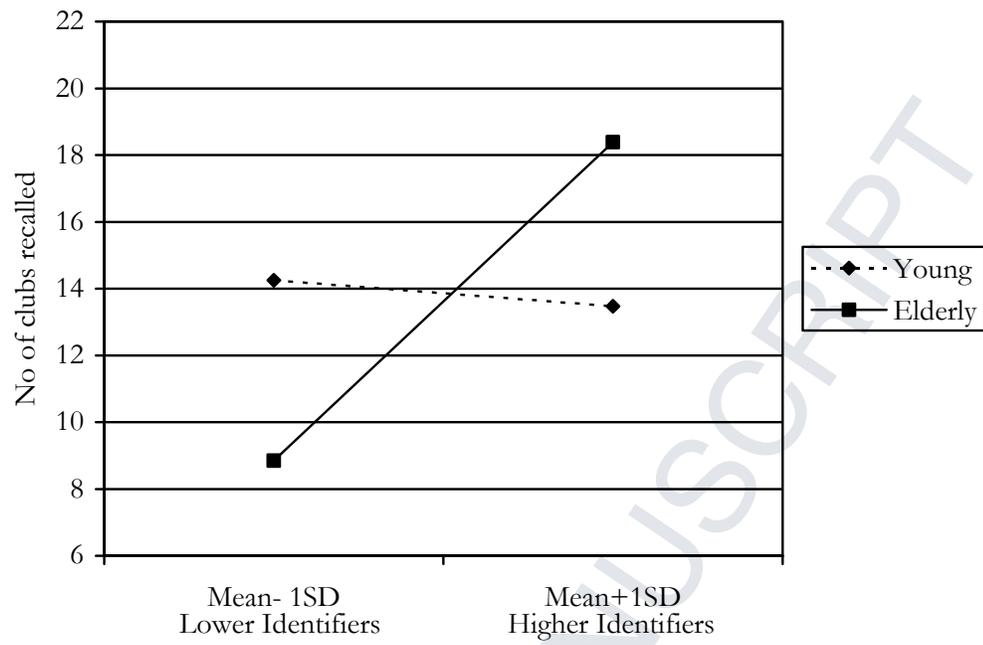
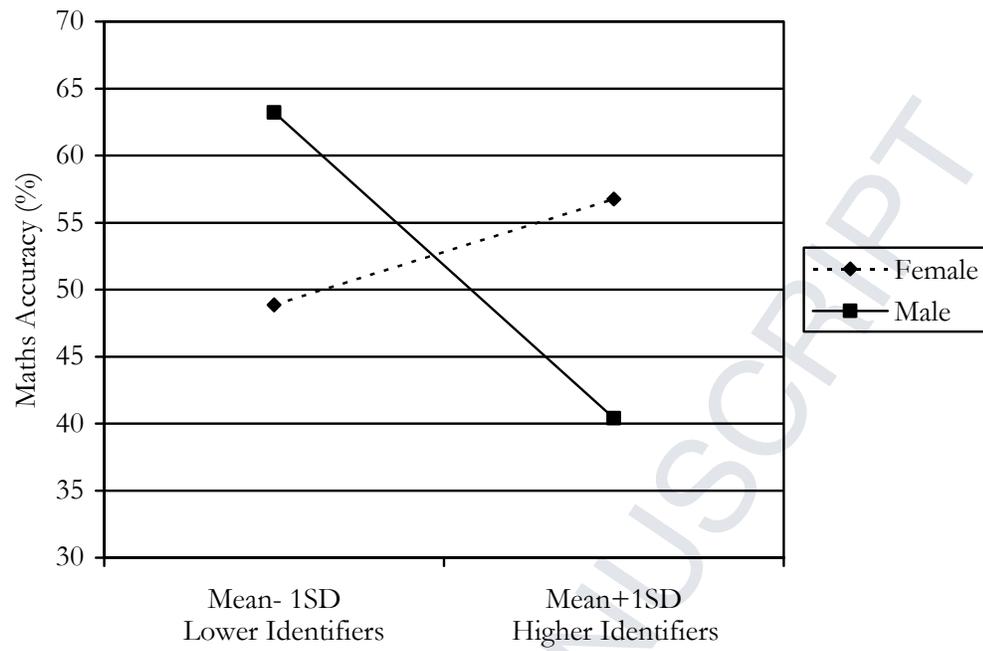


Figure 3.



## Footnotes

<sup>1</sup> A higher Cronbachs  $\alpha$  ( $\alpha = .691$ ) was achieved when the second item, “being a young person is an important part of who I am” was removed from the four item scale. An analysis of the three item scale showed the same pattern of results as the four-item measure for both recall and the listing task, consequently for continuity and clarity we present the four-item measure as it was also used in Experiment 2.

<sup>2</sup> There was a significant outgroup assimilation effect of prime on the recall task. Examining the interaction it seems that this main effect is driven by lower identifiers remembering fewer words, i.e., assimilation towards the outgroup stereotype (elderly). This is generally consistent with our theoretical model: We argue that higher identifiers will show a more pronounced contrast from outgroups and therefore by implication lower identifiers will be more likely to assimilate.

<sup>3</sup> In Experiment 1 ingroup identification was measured directly before the group priming manipulation. As such it is possible that it was the short interval between the identity measure and the prime that was responsible for these effects. A pilot study was conducted to address this issue by measuring perceivers’ ingroup identification 24 hours before the priming task and the behavioral measure. The results revealed the same pattern of responses as observed in Experiment 1. A moderated regression analysis on time taken to complete the task revealed a significant main effect of priming condition,  $\beta = 1.90$ ,  $t = 2.14$ ,  $p = .043$  such that those primed with the outgroup contrasted to the outgroup prime. Those perceivers exposed to an outgroup prime (elderly) took less time than those primed with a neutral prime: An outgroup contrast effect. The predicted interaction between priming condition and ingroup identification was significant,  $\beta = -2.07$ ,  $t = -2.34$ ,  $p = .027$ .

<sup>4</sup> This experiment is different to Schmader’s (2002) study in several ways. She used a different threat manipulation and compared higher identifying males (who may exhibit stereotype lift, an increase in performance due to the association of the perceiver’s group with a positive stereotype

in the test domain) with higher identifying females. Here we compare higher identifying females simply primed with the outgroup to those primed with the ingroup.

<sup>5</sup> Although we advocate math accuracy as our performance measure we also analyzed the total number of questions answered correctly and note that the same pattern of results was obtained (prime x ingroup identification interaction,  $\beta = -1.86$ ,  $t = -1.98$ ,  $p = .05$ ).