

Easier Done than Undone... by Some of the People, Some of the Time:

The Role of Elaboration in Explicit and Implicit Group Preferences

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Evidence suggests that while explicit evaluations of others are easily formed and equally easily changed, implicit evaluations are more intransigent. The present research investigated the role of individual and situational differences in determining whether explicit and implicit evaluations are changed in light of new information. In three studies, participants formed implicit and explicit evaluations of two groups before learning new information that objectively contradicted those evaluations. In Experiment 1, individuals characterized by a greater Personal Need for Structure (PNS) formed more extreme explicit evaluations but were also more likely to reverse them later. In contrast, whilst higher PNS individuals also formed more extreme implicit preferences, they were less likely to change them in response to new information. In Experiments 2a and 2b, the opportunity to re-assess the same evidence on which initial impressions were formed was essential to revising implicit evaluations, but was less important for changing explicit evaluations. These results confirm that differences in motivation and opportunity to engage in elaborative processing moderate the revision of implicit, but not explicit, group preferences.

Keywords: implicit vs. explicit preferences, elaboration, personal need for structure

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The Role of Elaboration in Explicit and Implicit Group Preferences

*You can't teach an old dog new tricks. A leopard never changes its spots. He's just a wolf in sheep's clothing.* Our language is replete with clichés that suggest that human nature is fixed, and that we should be sceptical of anyone who tries to convince us that their true character has really changed. Empirically, it seems that we take these clichés to heart – at least at an implicit level. Although social perceivers may be willing to acknowledge in their explicit reports that people can change, they may have difficulty overcoming mental associations with such people that tell them that no change has taken place. For example, Mary might learn about Jack, a violent gang member who spent 10 years in prison and came out a new and rehabilitated man. Mary might profess a belief that Jack is now harmless and not involved in crime, but may still feel immediately afraid and clutch her purse when she encounters Jack in a dark alley at night.

Why don't our implicit evaluations always change in line with our explicit preferences? Numerous theories have been proposed to account for discrepancies between implicit and explicit evaluations. Research and theory over the past 30 years has promoted the idea that cognitive processing can be classified into at least two types: relatively automatic processes that draw on associative networks, versus relatively controlled processes that draw on explicit knowledge. Such dual process models are currently prevalent in social psychology (see Petty, Tormala, Brinol, & Jarvis, 2006; Smith & DeCoster, 2000; Strack & Deutsch, 2004; Wilson, Lindsey, & Schooler, 2000) and have given rise to a great deal of research. For example, Gawronski and Bodenhausen (2006) have proposed an Associative-Propositional Evaluation (APE) model that integrates much of this work. In it, they distinguish between *associative* and *propositional* processes.

*Associative processes* are characterised by the spontaneous activation of evaluations or

beliefs in response to a stimulus (e.g., fear upon seeing a spider). Importantly, such activation does not rely upon one's conscious endorsement of the belief (e.g., one may 'know' that most spiders are harmless). *Propositional processes*, on the other hand, do rely on one's conscious beliefs. According to the APE model, these processes give rise to judgements that are based on deliberative or explicit knowledge and, as such, rely on one's assessment of correctness of that knowledge. Thus, one who associates 'danger' with spiders, but explicitly believes that spiders are harmless should, upon encountering a spider, react quite differently depending on which process has the greatest influence (i.e., one should flee if driven by associative processes, but remain calm if driven by propositional processes).

While Gawronski and Bodenhausen's (2006) APE model focuses on distinctions between dual processes, Petty, Brinol, and DeMarree's (2007) Meta-Cognitive Model of Attitudes (see also Petty et al's (2006) PAST model) focuses on the role of *memory strength* and *validity* in describing the co-representation of conflicting attitudes (as may occur when one learns new information that contradicts an initial attitude). According to this model, initial attitudes are not over-ridden by revised attitudes. Rather, both attitudes co-exist in memory, and it is their relative strength that determines which will be expressed. Because initial attitudes have a longer history of activation, they will tend to be stronger. In order for initial attitudes to be suppressed in favor of new, revised attitudes, it must be both deemed invalid and subject to extensive elaboration. Thus in situations where the original attitude is very strong or has not been effectively invalidated, or where strong associations have yet to form relating to the revised attitude, implicit measures are likely to reflect initial attitudes even when new attitudes are explicitly endorsed (see also Petty & Brinol, 2010). Indeed, Boucher and Rydell (2012) reported that when participants' ability to engage in extensive processing of new, counter-attitudinal information was compromised, they failed to update their implicit attitudes to match newly change explicit evaluations.

In support of such theories, the social cognition literature now hosts a number of studies which indicate that explicit evaluations and impressions are readily updated in response to new information that contradicts them, while implicit assessments – once formed – are likely to persist even in the face of contradictory evidence (e.g., Gregg, Seibt, & Banaji, 2006; Rydell, McConnell, Mackie, & Strain, 2006; Rydell & McConnell, 2006; Rydell, McConnell, Strain, Claypool, & Hugenberg, 2007; Wilson, Lindsay & Schooler, 2000).

For example, Gregg et al (2006) described a series of experiments in which participants learned about two groups based on an elaborate narrative that depicted one group as aggressors and the other group as victims. As expected, participants not only expressed more negative evaluations of the aggressors than of the victims on a series of explicit rating scales, but they also demonstrated implicitly negative associations with the aggressors (as measured using an implicit association task or IAT; Greenwald, McGhee, & Schwartz, 1998). Once participants had formed these evaluations, Gregg et al proceeded to employ a number of methods that aimed to reverse them. These methods ranged from simple statements (e.g., that the descriptions were inadvertently and erroneously switched or that the groups had undergone a change in their natures) to elaborate narrative descriptions (e.g., outlining a complex sequence of events that supported a change in the characteristics of the two groups, resulting in the once-victims becoming aggressors and the once-aggressors becoming victims).

Participants happily reported that they had changed their views of the two groups in response to any of these manipulations; yet their implicit preferences remained consistent with their original beliefs about the groups. Regardless of what participants reported about their feelings towards the two groups on overt rating scales, their responses on the IAT suggested that their implicit preferences did not reflect the same views. Rather, participants

continued to respond to the IAT as if the now-aggressors were more favourably evaluated than the now-victims.

Similar findings have now been reported by other researchers. For example, Rydell et al (2006) compared propositional and associative processes in the formation and change of person impressions. In their research, participants read descriptions of a target individual, who was described in a positive or negative manner. As they read the descriptions, they were also subliminally primed with positive or negative words. The valence of the descriptions and of the subliminal primes was varied systematically such that their evaluative implications were consistently opposed to each other. Moreover, the valence of both descriptions and primes changed over the course of the experiment such that positive primes/descriptions were gradually replaced by negative primes/descriptions, and vice versa. Assessment of participants' impressions of the target confirmed that participants' explicit evaluations of the target corresponded to the verbal descriptions they had read – for example, as the descriptions moved from positive to negative, so did explicit evaluations of the target. In contrast, participants' implicit evaluations (assessed using an IAT) were determined by the subliminal primes – for example, as the primes move from negative to positive, so did participants' implicit attitudes towards the target. Such findings, among others (see Gawronski & Sritharan, 2010 for a review) suggest that implicit evaluations are relatively resistant to verbal communications and may require other methods – focused directly on forming new associations – in order to change.

Previous work by Wyer (2010) suggests that subliminal priming may not be the only way to form new associations, however. In that research, participants learned about an individual who was initially identified as either a skinhead or a cancer patient before being described by a number of ambiguous behaviors that were interpretable in terms of the stereotype of either group. Participants in the 'skinhead' condition subsequently learned that

the initial information they had received was inaccurate, and that the target was actually a cancer patient. While participants' explicit impressions of the target were quickly updated to reflect the new information, their implicit attitudes reflected persistent negative associations with the target. Only when participants were able to re-visit the original behavioral descriptions and re-evaluate it in light of the new category label were they successful in updating their implicit evaluations. Thus, re-elaborating on what one knows about another person may be an alternative route to forming new associations.

Recent research by Mann and Ferguson (2015) supports this hypothesis. In a series of studies, participants formed initial (implicit and explicit) evaluations of a target based on a series of descriptions, and then learned counter-attitudinal information that either did or did not suggest an alternative interpretation of the original material. As in the Wyer (2010) research described above, participants successfully revised their implicit evaluations of the target *only* if they were encouraged to re-interpret the information on which they had based their initial impressions. Crucially, Mann and Ferguson reported additional evidence that indicated that revision of implicit evaluations following re-interpretation was driven by the extent to which participants re-elaborated on the original information.

The general consensus from this line of research is that changing implicit attitudes or impressions is difficult and may only occur under conditions that directly focus on building new associations between a target and its evaluation (through classical conditioning, e.g., Rydell et al, 2010; building new counter-attitudinal associations, e.g., Petty & Brinol, 2010; or through re-evaluating existing information, e.g., Mann & Ferguson, 2015; Wyer, 2010). What, then, is the likelihood that associations will be revised under more typical conditions (i.e., conditions in which we likely find ourselves on a day-to-day basis)? The aforementioned research by Wyer (2010) suggests that changing implicit attitudes may not be as unlikely as one might imagine given the bulk of evidence reviewed above. However,

effectively updating our implicit assessment of a target requires that we review – and re-elaborate upon – that evidence that led to our initial assessment. In that research, participants who learned about someone they thought was a skinhead but who ultimately turned out to be a cancer patient persisted in associating the target with hostility (a trait stereotypic of skinheads but not of cancer patients) *unless* they were given the opportunity to re-read the same evidence that supported their conclusion that the target was hostile in the first place in light of what they now knew. This re-elaboration allowed participants to re-interpret the target's behavior in terms of a new stereotype (e.g., being inattentive might be interpreted as rude when applied to a skinhead, but as evidence of fatigue when applied to a cancer patient).

Thus, according to Wyer (2010), implicit attitudes are subject to change when people are encouraged to elaborate on behavioral evidence. This finding raises important questions about the conditions that might foster elaboration. For example, might there be individual and situational differences in perceivers' motivation and ability to elaborate on the information they receive? If so, might such differences predict whether one spontaneously incorporates newly learned information into their assessments? The existence of chronic or temporary individual differences in elaborative processing is important to determine in order to evaluate the ubiquity of the tendency to preserve implicit evaluations.

#### *Motivation and Opportunity for Re-Elaboration*

The propensity to re-elaborate on new information may be constrained by both one's motivation and one's opportunities. In particular, research into meta-cognitive or epistemic motives suggests a number of potential dimensions on which individuals differ and which may have implications for one's tendency to spontaneously engage in elaborative processing. Chief among these is Personal Need for Structure (PNS; Neuberg & Newsom, 1993; Thompson, Naccarato, Parker, & Moskowitz, 2001), which relates to one's desire to have a simple structure in which to view information. Previous research (e.g., Schaller et al, 1995)



suggests that PNS predicts the tendency to form simplified impressions. In Schaller et al's (1995) research, participants who were high in PNS tended to form simple stereotypes that ignored contextual information, while those low in PNS were more likely to incorporate contextual information into their stereotypes.

Research into individual differences in PNS suggests that individuals with high levels of PNS are quick to draw conclusions based on limited evidence (Thompson, Roman, Moskowitz, Chaiken, & Bargh, 1994), and are unlikely to integrate new information into their beliefs (Kaplan, Wanshula, & Zanna, 1991). In addition, PNS is known to be negatively correlated with Need for Cognition (as reported in Neuberg & Newsom, 1993; Webster & Kruglanski, 1994) which more directly relates to individual differences in the propensity to engage in elaborative processing. By extension, then, participants who have a high need for structure should be less inclined to spontaneously undertake additional cognitive processing. Moreover, PNS constitutes one element of Need for Cognitive Closure (Webster & Kruglanski, 1994), which has been reported to produce lower levels of systematic or elaborative processing (DeDreu, Koole, & Oldersma, 1999; Klein & Webster, 2000)

Driven by a need to reduce uncertainty, high PNS individuals might therefore be expected to form more extreme evaluations of a group based on the first information they learn. These evaluations – being based on only consistent information – should manifest themselves on both explicit and implicit measures (see Gregg et al, 2006). When confronted with new information that contradicts their initial evaluations, individuals high in PNS should again seek to minimize uncertainty by reversing their evaluations. Their success in doing so, however, may differ when it comes to implicit vs. explicit evaluations. Explicit evaluations, which do not require extensive elaboration to form or revise (Gawronski & Bodenhausen, 2006) should be easily reversed. In contrast, implicit evaluations, which are based on evaluative associations with the group, are unlikely to reverse without elaborative or

integrative processing (Wyer, 2010). High PNS individuals are particularly unlikely to engage in such processing (Kaplan et al, 1991), and hence should be less likely to show a reversal in their implicit evaluations.

Experiment 1 in the present research investigated the moderating role of individual differences in PNS in shaping both the formation and revision of explicit and implicit group preferences. The study adopted the paradigm employed by Gregg et al (2006) by providing participants with extensive information about two novel groups, on the basis of which one group was likely to be far preferred to the other. After this initial learning stage, participants' implicit and explicit assessments were measured using an IAT and a series of rating scales, respectively. Participants then learned additional information that detailed how the two groups' characters changed over time, after which implicit and explicit evaluations were re-assessed.

In light of the preceding discussion, participants who were high in PNS were expected to form more extreme explicit and implicit evaluations of the two groups compared to those low in PNS, because of their inclination to form evaluations quickly and on the basis of little information (Thompson et al, 1994). PNS should also have implications for the likelihood that participants change their implicit and explicit preferences. Because participants who are high in PNS should be less likely to integrate new information into their evaluations (Kaplan et al, 1991), their implicit evaluations of the groups were not expected to change (in comparison to low PNS participants). Conversely, explicit ratings – because they are likely to reflect objective beliefs (i.e., the 'truth') about the groups and because they do not depend on the same level of elaborative processing (Gawronski & Bodenhausen, 2006, 2011) – should reflect newly learned information regardless of PNS.

Experiments 2a and 2b further explore the role of opportunity for re-elaboration. In these studies, participants were led to believe that the initial information they had learned had

been erroneous, and that the two groups' characters were actually opposite to how they had originally been described. Participants' evaluations of the groups were then either immediately re-assessed, or were assessed again only after they had re-visited the original information with the 'corrected' group identifications. It was expected that, like being low in PNS, being given the opportunity to re-evaluate the evidence would allow participants to revise their impressions, and that the role of elaboration would be particularly important when it came to implicit (relative to explicit) evaluations.

### Experiment 1

Experiment 1 was essentially an exact replication of Gregg et al (2006) Study 4, in which participants learned information about two novel groups whose characters were described in a preliminary text as relatively benevolent or maleficent. After the initial text, participants completed both explicit and implicit measures of their evaluations of both groups. Next, participants received new information about the two groups that suggested that, due to historical events, the characters of the groups had reversed such that the previously benevolent group was now maleficent, and vice versa. Following the new information, participants again completed the explicit and implicit measures.

### *Method*

#### *Participants*

Participants were 82 undergraduate students at the University of Plymouth (67 females,  $M_{age} = 20.2$ ) who completed the study as part of a course requirement. As the principal hypothesis was correlational in nature, power analysis (using GPower) was based on a moderate correlation ( $r = .30$ ) and a target 80% power. This indicated a required sample size of 84.

#### *Design and Procedure*

As noted above, the study followed the procedures of Gregg et al (2006) Study 4. Participants read a detailed narrative describing two social groups, the *Niffites* and the *Luupites*, who were engaged in a long-standing conflict. One of the groups was depicted as being dominating and aggressive, while the other was depicted as being peaceful and falling victim to the aggressors. The group labels allocated to the ‘aggressor’ and ‘victim’ groups were counterbalanced across participants. After reading the initial narrative, participants completed a manipulation check which entailed identifying which group had been the aggressors and which had been the victims. They then completed both explicit and implicit measures of their preference between the two groups, the order of which was counterbalanced. The explicit measure required participants to rate each group on three dimensions: pleasant-unpleasant, nice-nasty, and good-bad. All ratings were made on 1-7 scales. The implicit measure involved an Implicit Association Test (IAT, Greenwald, McGhee, & Schwartz, 1998) consisting of two blocks (see Table 1 for stimuli) used to derive an implicit preference (IAT) score. The two critical blocks, consisting of 48 trials each, paired the two group names (Niffites and Luupites) with two valence categories (Good and Bad). The order of Block 1 and Block 2 was counterbalanced across participants.

After completing both measures, participants read an additional narrative of approximately equal length as the original. The additional narrative described historical events that led to the two groups reversing their characters, such that the group that had been aggressors became victims, and the group that had been victims became aggressors. After reading the narrative, participants completed a second manipulation check based on the new information, and then completed the explicit and implicit preference measures for a second time.

Thus, the study involved a within-participants design in which time of measurement (pre-change vs. post-change) varied. Following the main part of the study, participants

completed the 12-item Personal Need for Structure scale (Neuberg & Newsom, 1993; Thompson et al, 2001). Responses for each item were recorded on a 1-9 (strongly disagree to strongly agree) rating scale. Half of the participants completed the PNS scale prior to the main study; the other half completed it immediately afterwards. Scale reliability was satisfactory (Cronbach's  $\alpha = .75$ ). Task order had no effect on any measure and hence is not discussed further.

## Results

### *Data Screening*

After each narrative, a manipulation check was carried out which required participants to indicate which group (Nuffites or Luupites) was the aggressors in the passage they had just read, and which were the victims. Six participants were excluded from the data set because they responded incorrectly to one of the manipulation checks (three at time 1, three at time 2). Thus, the final data set included 76 participants.

### *Calculation of Explicit and Implicit Preferences*

Explicit and implicit preference scores were computed for responses given at Time 1 and at Time 2. Explicit preferences were calculated as follows. First, ratings of each group at each time point were subjected to reliability analyses, all of which showed satisfactory reliability (Cronbach's  $\alpha$  from .92 to .96), and were then averaged. Preference scores for both time points were then computed as the average rating for the initially positive group *minus* the average rating for the initially negative group.

Implicit preferences were computed following the procedures detailed in Gregg et al. In summary, the average response time to blocks pairing the initially positive group with 'good' and the initially negative group with 'bad' were calculated after removing outliers, and the difference between them was computed such that higher (more positive) scores reflected stronger associations between the initially positive group and 'good' and between

the initially negative group and ‘bad’ (i.e., an implicit preference for the group that was initially described as the victims). The task demonstrated satisfactory reliability, Cronbach’s  $\alpha$ ’s from .79 to .89 in each block.

#### *Formation and Revision of Explicit and Implicit Evaluations*

The first step was to determine whether the results reported by Gregg et al were replicated in this experiment. Explicit evaluations at time 1 and time 2 were entered as repeated measures in an Analysis of Covariance (ANCOVA) with mean-deviated PNS scores as a covariate.

Consistent with Gregg et al’s findings, participants in this study dramatically changed their explicit impressions of the two groups from the first measurement point to the second, as indicated by a significant main effect of Time,  $F(1, 73) = 462.476, p < .001, \eta_p^2 = .86$ . At time 1, participants showed a strong preference for the initially positive group ( $M = 3.67, SE = 0.20$ ). At time 2, however, participants reversed this preference ( $M = -2.54, SE = 0.17$ ).<sup>1</sup>

Parallel analyses were carried out for implicit evaluations scores based on IATs completed at time 1 and time 2. In contrast to Gregg et al’s findings, participants also altered their implicit preferences (though they did not reverse them), as indicated by a significant main effect of Time,  $F(1, 73) = 8.973, p = .004, \eta_p^2 = .11$ . While participants showed a strong implicit preference for the initially positive group ( $M = 129.79ms, SE = 22.29$ ), this preference decreased substantially at time 2 ( $M = 57.80ms, SE = 17.42$ , though it remained significantly above zero, single-sample  $t(74) = 3.24, p = .002$ ).

#### *Individual Differences in Formation and Revision of Explicit Evaluations*

The primary aim of this experiment was to examine the role of individual differences in the formation and revision of evaluations. To assess this, the effects of PNS and its

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<sup>1</sup> The magnitude of explicit attitude change did not depend on the valence of the initial attitude,  $F(1, 73) = 2.09, p = .15, \eta_p^2 = .04$ , nor did this vary as a function of PNS ( $F(1, 73) < 1$ ).

interactions with Time on explicit evaluations were examined. The Time X PNS interaction,  $F(1, 73) = 5.04, p = .028, \eta_p^2 = .07$  was decomposed using linear regression analyses. These analyses revealed that there was a positive but non-significant association at time 1 between PNS and the formation of explicit preferences,  $\beta = .20, t(73) = 1.74, p = .087$ . At time 2, there was a negative but non-significant association between PNS and the maintenance of initial preferences,  $\beta = -.20, t(73) = 1.71, p = .092$ . These results suggest that individuals who scored higher on the PNS scale tended to form more extreme preferences on the basis of recently learned information (see Figure 1), but also tended to change them in response to new information.

#### *Individual Differences in Formation and Revision of Implicit Evaluations*

Next the effects of PNS and its interaction with Time on implicit preferences were assessed. There was a significant main effect of PNS on implicit evaluations,  $F(1, 73) = 7.02, p = .01, \eta_p^2 = .09$ , which was not moderated by Time,  $F(1, 73) < 1$ . The nature of the main effect can be appreciated by examining the association between PNS and implicit preferences at each time point. At time 1, there was a significantly positive association between PNS and the formation of implicit preferences,  $\beta = .25, t(73) = 2.16, p = .034$ , and this was scarcely diminished at time 2,  $\beta = .24, t(73) = 2.17, p = .038$ . Thus, to the extent that participants expressed high personal need for structure, they were more likely to form (and maintain) strong implicit preferences for the group initially described in a favourable manner (see Figure 1).

#### *Discussion*

Although the proposition that explicit preferences change more readily than implicit preferences received general support in Experiment 1, there were also important individual differences both in participants' readiness to form explicit and implicit preferences, and in their reluctance to change them in light of new information. In particular, participants with a

higher personal need for structure formed more extreme preferences between the two groups, as indicated on both implicit and explicit measures. In other words, Experiment 1 replicated the original results reported by Gregg et al (2006), but also demonstrated that higher levels of PNS (associated with less elaborative processing) magnified the original pattern of results whilst lower PNS (associated with higher levels of elaboration) weakened it.

This is consistent with the reasoning that perceivers with this orientation towards information processing would be more likely to form relatively categorically black-or-white impressions, and also supports earlier work by Schaller and colleagues (1995) indicating that high PNS individuals form less contextualised, more simplistic impressions. When new information about the groups was encountered, high PNS participants also showed the strongest response, at least when it came to the explicit preferences. Participants higher in PNS were more likely to completely reverse their explicit evaluations of the groups, reflecting the information they had most recently learned. In contrast, they were no more likely to alter their implicit evaluations and, given that these evaluations were more extreme to begin with, they maintained an implicit preference for the group they had originally viewed in a positive manner (despite the new information suggesting that the group was no longer so positive after all). In contrast, lower PNS participants, who formed more moderate implicit preferences at time 1, revealed no preference at all at time 2. Thus, for individuals without a strong personal need for structure, implicit evaluations are not so readily formed, and appear to be quite susceptible to change.

In summary, the results of Experiment 1 provide evidence that a failure to engage in elaborative processing (associated with higher levels of PNS; see Klein & Webster, 2000) gives rise to more extreme implicit and explicit preferences. This greater extremity is consistent with previous research showing that high PNS individuals form more simplified – and less nuanced – stereotypes of novel social groups (Schaller et al, 1995). The same failure



to elaborate is associated with an increased readiness to reverse explicit preferences whilst at the same time maintaining implicit ones.

### Experiments 2a and 2b

Experiment 1 provided evidence that individual differences in motivation to elaborate moderated both the extremity of initial implicit and explicit group preferences, as well as their susceptibility to change in response to new information. These results are broadly consistent with those reported by Wyer (2010), in that elaboration appears to facilitate changes to implicit impressions (or preferences). There are, however, some notable differences between the studies in Wyer (2010) and Experiment 1. In particular, in the Experiment 1, those participants who were more likely to engage in elaborative processing formed more moderate implicit and explicit preferences. In contrast, Wyer (2010) reported that greater elaboration was associated with more polarized impressions. Two explanations for these divergent findings present themselves. First, the conditions associated with less elaboration in Wyer (2010) presented participants with very limited information about the target – thus their impressions were likely not well-formed (and hence were neither firmly moderate nor extreme). Second, the studies reported in Wyer (2010) were focused on impressions of an individual, rather than of a group as was the case in Experiment 1 of the present paper. A number of previous experiments have demonstrated differences in how impressions of individuals and groups are formed and how easy they are to change (see Hamilton & Sherman, 1996 for a review). In particular, impressions of individuals are likely to be more extreme than those of groups because individuals are expected to display a greater level of consistency (and hence it is easier to generalise from single positive or negative behaviors).

The two studies reported in Experiment 2 thus explore these differences by manipulating opportunities for elaborative processing within the context of forming group

preferences. Experiments 2a and 2b were modelled on Gregg et al's (2006) Study 3 in which participants read an initial narrative describing two social groups, one depicted as the 'victims' and the other depicted as the 'aggressors'. After reading the narrative, participants completed the same measures of their implicit and explicit evaluations as described in Experiment 1. In contrast to Experiment 1 (and following Gregg et al Study 3), participants were then informed that they had been misled by the original narrative and that the group initially depicted as the victims were, in fact, the aggressors, and vice versa. Participants in the 'no elaboration' condition then immediately completed a second measure of their implicit and explicit evaluations. Participants in the 'elaboration' condition also completed another set of implicit and explicit measures, but were first invited to re-read the narrative in light of the new, corrected, information they had received.

The principal aim of Experiments 2a and 2b was therefore to provide a direct comparison between the effects of opportunity to elaborate when forming group impressions (using conditions based on Wyer, 2010) and the influence of individual differences in elaboration (as shown in Experiment 1). A secondary, but still important, objective of these experiments was to provide further evidence for the role of re-elaboration in revising implicit and explicit impressions. Whilst Wyer (2010) provided initial evidence in this regard, it is notable that both experiments in that paper were likely under-powered ( $n = 20$  in Experiment 1,  $n = 17$  in Experiment 2). By carrying out two replications (one in the laboratory, one online) of the same experiment – both with ample power – a more definitive assessment should be possible.

### *Method*

#### *Participants*

Experiments 2a and 2b were identical in design and procedures. Experiment 2a was carried out in a laboratory using 120 undergraduate students (96 female,  $M_{\text{age}} = 20.3$  years)

who participated in the study in partial completion of a course requirement. Experiment 2b was carried out on-line using 203 ‘workers’ from the crowd sourcing site ‘Crowdfunder’ (including 111 females and ranging in age from 18-79,  $M_{\text{age}} = 39.9$ ,  $SD = 12.0$ ). Based on the interaction effect size Wyer (2010) Experiment 2 (Cohen’s  $f = .25$ ), GPower estimated a required sample of  $n = 34$  per experiment to achieve 80% power. With the sample sizes used, greater than 99% power was achieved in both experiments.

### *Design and Procedures*

The experiments employed a 2 x 2 mixed design in which Time of measurement (time 1: after the initial information vs. time 2: after the misinformation manipulation) was a repeated-measures variable and elaboration (no elaboration vs. re-elaboration) was manipulated between-participants.

The first part of the experiment was identical to Experiment 1. Participants read a narrative describing two groups, the Luupites and the Niffites, one of whom was depicted as aggressors and the other of whom was depicted as victims. After reading the narrative, participants completed a manipulation check followed by implicit and explicit preference measures (order counterbalanced). After completing the initial set of measures, participants were exposed to the misinformation manipulation. They were told that the study was concerned with the effects of misinformation, and thus the information they had learned previous was actually false. In fact, the actual descriptions of the two groups were switched such that the group described as victims were actually aggressors, and the group described as aggressors were actually victims.

Following the misinformation manipulation, participants in the ‘no elaboration’ condition immediately completed the manipulation check and implicit and explicit preference measures a second time. Participants in the ‘re-elaboration’ condition were presented with the original narrative again (this time with the group labels reversed to coincide with the

‘accurate’ group-description pairings) before completing the manipulation check and implicit and explicit preference measures.

## *Results*

### *Data Screening*

As in Experiment 1, participants’ responses to manipulation checks collected after the initial narrative and again after the misinformation manipulation were examined.

*Experiment 2a.* Data from 10 participants who recorded incorrect responses on the manipulation checks (three at time 1, seven at time 2) were excluded from subsequent analyses. Data from two additional participants were excluded because they responded incorrectly on more than 30% of IAT trials. The resulting data set included 108 participants.

*Experiment 2b.* Data from four participants who responded incorrectly to the manipulation check (one at time 1, and three at time 2) and a further 5 participants who committed more than 30% errors on the IAT were excluded.

### *Calculation of Explicit and Implicit Preferences*

Explicit preferences were calculated as in Experiment 1. Ratings of each group at each time point showed satisfactory reliability (Cronbach’s  $\alpha$  from .94 to .99), and were therefore averaged. Preference scores for both time points were computed as the average rating for the initially positive group *minus* the average rating for the initially negative group.

Implicit preferences were again computed following the procedures detailed in Gregg et al. As in Experiment 1, the difference between the two critical blocks was computed such that higher (more positive) scores reflected stronger associations between the initially positive group and ‘good’ and between the initially negative group and ‘bad’ (i.e., an implicit preference for the group that was initially described as the victims). The task demonstrated satisfactory reliability, Cronbach’s  $\alpha$  from .80-.83 in each block.

### *Formation and Revision of Explicit Evaluations*

As in Experiment 1, initial tests were carried out to determine whether the results from this study replicated those of Gregg et al (2006, Study 3). For each experiment, a two-way mixed-model ANOVA was conducted, in which time was a repeated-measures factor and elaboration condition was a between-participants factor.

*Experiment 2a.* Like Gregg et al, participants in this study changed their explicit preferences dramatically after the misinformation manipulation, evidenced by a significant main effect of time,  $F(1, 106) = 622.21, p < .001, \eta_p^2 = .85$ . This effect was moderated by a significant interaction with elaboration condition,  $F(1, 106) = 4.80, p = .031, \eta_p^2 = .04$ . The simple main effect of time was significant in the no elaboration condition,  $F(1, 106) = 263.77, p < .001, \eta_p^2 = .71$  ( $M_{\text{time1}} = 3.23, SE = 0.20; M_{\text{time2}} = -3.15, SE = 0.21$ ) but amplified in the re-elaboration condition,  $F(1, 106) = 361.43, p < .001, \eta_p^2 = .77$  ( $M_{\text{time1}} = 3.81, SE = 0.21; M_{\text{time2}} = -3.80, SE = 0.22$ ).<sup>2</sup>

*Experiment 2b.* Similarly, the on-line version of the experiment yielded a significant main effect of time (pre- vs. post-misinformation manipulation),  $F(1, 192) = 419.73, p < .001, \eta_p^2 = .69$ , indicating that participants changed their impressions of the group from time 1 ( $M = 3.56, SE = 0.19$ ) to time 2 ( $M = -3.14, SE = .22$ ). However, for this sample the interaction with elaboration did not reach significance,  $F(1, 192) = 3.51, p = .063, \eta_p^2 = .02$ . Simple effects analyses confirmed that the effect of time was substantial in both the no elaboration,  $F(1, 192) = 244.93, p < .001, \eta_p^2 = .56$ , and re-elaboration conditions,  $F(1, 192)$

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<sup>2</sup>The magnitude of explicit attitude change varied somewhat depending on the valence of the initial attitude,  $F(1, 106) = 3.60, p = .06, \eta_p^2 = .03$ , such that the absolute value of changes from positive to negative evaluations ( $M = 3.42, SE = .15$ ) was smaller than that of changes from negative to positive evaluations ( $M = 3.57, SE = .14$ ). This did not vary as a function of elaboration condition,  $F(1, 106) < 1$ .

= 176.90,  $p < .001$ ,  $\eta_p^2 = .48$ . The main effect of elaboration was not significant,  $F(1, 192) < 1$ ,  $\eta_p^2 = 0$ .<sup>3</sup>

### *Formation and Revision of Implicit Evaluations*

*Experiment 2a.* The same analytic strategy was followed to investigate implicit group preferences. Unlike Gregg et al (2006, Study 3) but consistent with Experiment 1, there was a significant main effect of time on participants' implicit preferences,  $F(1, 106) = 50.57$ ,  $p < .001$ ,  $\eta_p^2 = .32$ , which was again moderated by a significant interaction with elaboration condition,  $F(1, 106) = 4.55$ ,  $p = .035$ ,  $\eta_p^2 = .04$ . The simple main effect of time within each elaboration condition revealed that implicit preferences were significantly altered in the no elaboration condition,  $F(1, 106) = 12.62$ ,  $p = .001$ ,  $\eta_p^2 = .11$  ( $M_{\text{time1}} = 135.02$ ,  $SE = 22.99$ ;  $M_{\text{time2}} = 40.10$ ,  $SE = 18.29$ ) but again this effect was magnified in the re-elaboration condition,  $F(1, 106) = 41.96$ ,  $p < .001$ ,  $\eta_p^2 = .28$  ( $M_{\text{time1}} = 146.31$ ,  $SE = 23.42$ ;  $M_{\text{time2}} = -29.98$ ,  $SE = 18.63$ ). Notably, participants in the no elaboration condition maintained a significant implicit preference for the initially-favored group (single-sample  $t(54) = 2.21$ ,  $p = .031$ ), whilst this was eliminated (but not significantly reversed) among those in the re-elaboration condition (single-sample  $t(52) = 1.60$ ,  $p = .116$ ).

*Experiment 2b.* Similarly, the on-line version of the experiment yielded a significant main effect of time,  $F(1, 192) = 23.782$ ,  $p < .001$ ,  $\eta_p^2 = .11$ , suggesting that participants effectively revised their implicit preferences ( $M_{\text{time1}} = 46.92$ ,  $SE = 11.41$ ;  $M_{\text{time2}} = -15.89$ ,  $SE = 8.57$ ). This effect was qualified by a significant interaction with elaboration,  $F(1, 192) = 4.48$ ,  $p = .036$ ,  $\eta_p^2 = .02$ . Simple effects analyses confirmed that the main effect of time was weak in the no elaboration condition,  $F(1, 192) = 3.73$ ,  $p = .055$ ,  $\eta_p^2 = .02$  ( $M_{\text{time1}} = 51.16$ ,  $SE = 16.29$ ;  $M_{\text{time2}} = 15.60$ ,  $SE = 12.24$ ) but substantial in the re-elaboration condition,  $F(1, 192)$

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<sup>3</sup> The magnitude of explicit attitude change was unaffected by the valence of the initial attitude,  $F(1, 192) < 1$ , which did not vary as a function of elaboration condition,  $F(1, 192) < 1$ .

= 24.962,  $p < .001$ ,  $\eta_p^2 = .12$  ( $M_{\text{time1}} = 42.68$ ,  $SE = 15.96$ ;  $M_{\text{time2}} = -47.38$ ,  $SE = 11.99$ ).

Notably, in this experiment, implicit preferences for the initially-favored group were eliminated among participants in the no elaboration condition (single-sample  $t(94) = 1.319$ ,  $p = .19$ ) and significantly reversed among those in the re-elaboration condition (single-sample  $t(98) = 3.83$ ,  $p < .001$ ).

## Discussion

Experiments 2a and 2b provided mainly consistent results: the opportunity to re-elaborate on information originally used in forming preferences allowed participants to incorporate new information into their implicit preferences: those who lacked the same opportunity were less successful in aligning their implicit evaluations with their newly revised explicit beliefs (which were effectively changed even when elaboration was not possible). These results mirror those reported in Wyer (2010) and also converge with the results of Experiment 1 to suggest that differences in elaboration (driven by variation in personal motivation or by differences in opportunity) correspond to varying changes in implicit evaluations (such that they do or do not become more consistent with explicit beliefs).

## General Discussion

The experiments reported here produced results that were generally consistent with those of Gregg et al (2006), insofar as participants' explicit preferences were much more responsive to newly learned information than were their implicit preferences. At the same time, the results of the two studies reported here suggest that implicit preference were somewhat amenable to being modified (if not reversed). These findings do not so much refute those reported by Gregg and colleagues, but rather highlight the variability that exists in people's readiness to adjust both explicit and implicit evaluations. While many people in

both experiments did maintain implicit preferences that seemingly contradicted what they explicitly knew to be true, others appeared to eliminate those initial preferences altogether.

The factors responsible for such variability were the focus of the present work. In these three studies, individual differences in Personal Need for Structure and situational differences in the opportunity for elaboration, were established as important influences on both the formation and revision of both explicit and implicit group preferences. First, participants high in PNS showed the prototypic dissociation between implicit and explicit preferences: while their explicit preferences completely reversed when they learned that there was reason to change them, their implicit evaluations resisted change – particularly when ‘change’ meant taking new and more complex information into account. In contrast, participants lower in PNS formed less extreme explicit evaluations in the first place, and when they learned new information that called those evaluations into question, their new (reversed) explicit preferences were of roughly the same level of extremity. At the same time, they were also capable of relinquishing their implicit preferences – those who learned that the groups’ characters had shifted (in Experiment 1) evidenced virtually no preference between the two groups at all. Of course, multiple interpretations of such a non-preference are possible – it may reflect a neutral or weak attitude, or it may indicate attitudinal ambivalence. This last possibility would be consistent with Petty et al’s (2006) proposal that the co-existence of old and new attitudes creates ambivalence (which manifests itself as relative ‘neutrality’ on tasks such as the IAT). If old and new evaluations are independently stored in memory, they may exert a competing influence when it comes to responding to attitude measures.

#### *Implications for Theories of Attitude Change*

Thus the role of PNS may be to modulate the relative strength of initial and revised evaluations. Higher PNS individuals are likely to have strong initial attitudes, and while those attitudes may be revised, the ‘new’ attitudes may not be equally strong. Hence, whereas



people high in PNS may be able to express their new attitudes on explicit tasks, when it comes to the race between old and new attitudes on an implicit task, the stronger – older – attitude is likely to win out. Lower PNS individuals, on the other hand, may form weaker initial attitudes, resulting in a more evenly matched competition between old and new when it comes to implicit attitude measures.

Experiments 2a and 2b added complementary evidence for the importance of elaboration in revising implicit evaluations. Like individuals high in PNS, those who were not afforded the opportunity to re-visit the evidence on which they had initially based their group preferences showed the familiar discrepancy between explicit and implicit preferences – whilst their explicit preferences were readily amended to take into account what they had just learned, their implicit preferences lagged behind. In contrast, like individuals low in PNS, participants who were allowed to review the evidence were able to align their implicit preferences more closely with their explicit evaluations. These results both provide an important conceptual replication of prior work (Wyer, 2010; see also Mann & Ferguson, 2015) and add new evidence in support of elaboration as a mechanism through which associative knowledge structures can be effectively changed.

These findings have implications for both the MCM/PAST (Petty et al, 2006, 2007) and APE (Gawronski & Bodenhausen, 2006) models, both of which identify associative processing (such as occurs during elaboration) as central to the development of implicit attitudes. The MCM model (Petty et al, 2007), on the other hand, speaks particularly to the revision or updating of implicit attitudes, and suggests that elaborative processing is essential to preventing the activation of an original attitude when its validity has been undermined. Thus, in the absence of extensive elaboration regarding the invalidity of an initial attitude, those attitudes are likely to manifest themselves on measures of implicit evaluations. Indeed, Brinol, Horcajo, Becerrea, and Falces (2002) reported that individual differences in Need for

Cognition (and hence propensity for elaborative processing) predicted the extent to which participants' implicit attitudes were changed by strong versus weak arguments. This finding is wholly consistent with the results of the present Experiment 1, where another individual difference variable related to elaborative processing moderated the likelihood of revising implicit preferences.

The results are more equivocal with respect to the APE model, which posits that implicit evaluations are the product of associative processing. Thus, the strength of one's initial implicit evaluations will be dependent upon the extent to which one has engaged in associative processing (including elaboration) of the original material. The results of Experiment 1 appear to be inconsistent with contention, as participants assumed to engage in greater elaborative processing (i.e., those low in PNS) formed *less* extreme (i.e., weaker) implicit preferences based on the initial information they received. The extent to which participants in all experiments revised their implicit attitudes is more consistent with the APE model, which contends that implicit evaluations can be successfully updated and replaced with new attitudes given sufficient elaboration on newly learned information in support of the new attitude. Both participants low in PNS and those given an opportunity to re-visit the original information in light of new 'corrected' information were more likely to successfully eliminate or even reverse their implicit preferences. Thus, whilst the role of elaboration in revising implicit evaluations in light of new information received support in the current studies, it is less clear how and when elaboration will influence the strength of initial attitudes. When it comes to chronic differences in the tendency to engage in elaborative processing, stronger implicit attitudes appear to emerge from *less* elaboration rather than more elaboration.

### *Conclusions*

In summary, these results provide further support for the argument that elaborative processing (Petty & Cacioppo, 1986; Wyer, 2010) is a major factor in determining whether implicit evaluations can be ‘undone’ or even reversed. Although other methods (e.g., subliminal conditioning; Rydell et al, 2006) have also proven effective at re-building implicit associations, these are perhaps less likely to operate outside of a laboratory context. In contrast, a variety of factors may prompt social perceivers to engage in elaborative processing, and even to mentally re-visit the evidence on which they formed initial evaluations. Individual differences, such as Personal Need for Structure, appear to contribute to such elaborative processing. Yet other factors (the need to be accurate due to accountability or a personal investment in knowing the truth) may also prompt people to re-consider what they’ve previously believed in light of new evidence (e.g., Maheswaran & Chaiken, 1991; Tetlock, 1983).

Although the present studies address the general question of how elaboration moderates the formation and revision of implicit and explicit evaluations, it should be noted that the findings may have specific implications for the revision of implicit and explicit prejudices. Numerous strategies have been proposed for reducing implicit prejudices (e.g., intergroup contact (Turner & Crisp, 2010), counter-stereotypic imagery (Blair, Ma, & Lenton, 2001), exposure to counter-stereotypic exemplars (Dasgupta & Greenwald, 2001)). Each of these strategies, to the extent it is successful, likely involves cognitive elaboration of counter-attitudinal or counter-stereotypic information. For example, intergroup contact – under conditions when it is most successful – involves generalising a positive interaction with an individual out-group member to the group in general (Davies, Wright, Aron, & Comeau, 2013). This generalisation requires reconciliation (and thus elaborative processing) of a positive experience with a negative out-group attitude. Likewise, imagery (Blair et al, 2001) and consideration of counter-stereotypic exemplars (Dasgupta & Greenwald, 2001) both

explicitly require individuals to elaborate upon counter-stereotypic information. Hence, encouraging elaborative processing (particularly among those who are not naturally disposed to it) may have added benefits when it comes to effectively reducing implicit prejudice.

To conclude, the findings presented here add significantly to the knowledge base regarding how implicit and explicit evaluations differ. The past 30 years has seen a wealth of theory and research targeted at understanding how people can believe one thing and act as if they believe another. The possibility of multiple representations or evaluations of the same person, group, object or event begins to resolve this question. Yet much is left to be understood about how such multiple representations are built, let alone how they might be changed or eliminated. The current studies add a new piece to the puzzle: not only does it provide further confirmation that elaborative processing is key, but also begins to delineate the conditions (and personal characteristics) that make such processing more likely.

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Table 1

*Stimuli used in IAT (from Gregg et al., 2006).*

Niffite	Luupite	Good	Bad
Callanif, Eskkanif, Lebbunif, Zllunif, Kassenif, Rissonif	Maasolup, Needolup, Omeelup, Wenaalup, Gabeelup, Ineelup	Good, Honest, Honourable, Benevolent, Peaceful, Principled, Cultured, Law- abiding, Respectable, Trustworthy, Likeable, Friendly	Treachorous, Evil, Vicious, Sadistic, Bloodthirsty, Murderous, Savage, Barbaric, Vindictive, Depraved, Sickening, Malicious

## Figure Captions

*Figure 1.* Experiment 1: Explicit (top panel) and implicit (bottom panel) preferences at time 1 and time 2, estimated at the mean and at 1 standard deviation below (low) and above (high) the mean on the Personal Need for Structure Scale.

*Figure 2.* Experiments 2a and 2b: Explicit (top panel) and implicit (bottom panel) preferences at time 1 and time 2, as a function of Elaboration condition (means with standard errors).



