Uncertainty Reduction, Self-Enhancement, and Ingroup Identification

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*Two experiments tested the prediction that uncertainty reduction and self-enhancement motivations have an interactive effect on ingroup identification. In Experiment 1 (*N = *64), uncertainty and group status were manipulated, and the effect on ingroup identification was measured. As predicted, low-uncertainty participants identified more strongly with a high- than low-status group, whereas high-uncertainty participants showed no preference; and low-status group members identified more strongly under high than low uncertainty, whereas high-status group members showed no preference. Experiment 2 (*N = *210) replicated Experiment 1, but with a third independent variable that manipulated how prototypical participants were of their group. As predicted, the effects obtained in Experiment 1 only emerged where participants were highly prototypical. Low prototypicality depressed identification with a low-status group under high uncertainty. The implications of these results for intergroup relations and the role of prototypicality in social identity processes are discussed.*

Keywords: *social identity; self-enhancement; uncertainty reduction; intergroup; motivation*

Intergroup relations are influenced by a complex interaction of social forces, social beliefs, interindividual and group dynamics, and individual cognitive and motivational processes. At the heart of intergroup relations are groups that people feel they belong to and that help define and evaluate who they are (their collective self-concept, their social identity). An important set of questions is what motivates people to join or identify with groups and to engage in specific forms of intergroup behavior. The social psychology literature identifies a large number of different motivations that may play a role, for example, self-affirmation (Steele, 1988), optimal distinctiveness (Brewer, 1991), belonging (Baumeister & Leary, 1995), and terror management (Solomon, Greenberg, & Pyszczynski, 1991).

In this article, however, we focus on only two motivations—uncertainty reduction (an epistemic motive that reflects a need for meaning, knowledge, and understanding of self and the social world) (Hogg, 2000) and self-enhancement (a motive to maintain or increase the positivity, or decrease the negativity, of the self) (Tajfel & Turner, 1979). We focus on these motivations because the social identity perspective (Tajfel & Turner, 1979; Turner, 1987; for recent overviews see Hogg, 2003; Turner, 1999), which is now a widely employed social psychological analysis of intergroup relations, has proposed them as the two core individual-level motivations underlying social identity processes, and thus, group and intergroup behavior.

The issue at stake is that social identity researchers have not yet examined how these two motivations relate to one another in influencing ingroup identification—where identification can be defined as a feeling of belonging coupled with self-definition and evaluation in group terms and a belief that the group is an important aspect of one's identity (e.g., Tajfel & Turner, 1979; cf. Cameron, 2004). Are the two motivations independent, each separately influencing identification, or do they interact so that one operates only if the other is not present? In this article, we present two laboratory experiments to address this question.

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Self-Enhancement and Ingroup Identification

Social identity theory (e.g., Tajfel & Turner, 1979) was originally developed to explain intergroup conflict and social change. Groups compete with one another to be distinctive and evaluatively superior—the form of the competition being shaped by people's beliefs about the nature of intergroup relations, and the likelihood of various behaviors achieving positive ingroup distinctiveness (e.g., Tajfel, 1979; also see Ellemers, 1993). In group contexts, group evaluation saturates self-evaluation, and so individuals strive to protect or enhance self-evaluation via social identity. The motivational role of self-enhancement, and associated self-esteem, is captured by Tajfel's (1979) statement that "the notion of social identity is based on the simple motivational assumption that individuals prefer a positive to a negative self-image" (p. 185) and Tajfel and Turner's (1979) assumption that "individuals strive to maintain or enhance their self-esteem" (p. 40).

Research provides some support for this core idea. For example, people tend to identify more strongly with high- than low-status groups (e.g., Ellemers, van Kippenberg, De Vries, & Wilke, 1988), and they display symbols of identification when their group fares well (e.g., Cialdini et al., 1976).

However, Abrams and Hogg (1988; Hogg & Abrams, 1990) note that the self-enhancement/self-esteem assumption in social identity theory is problematic. Specifically, the notion that people strive to enhance their self-esteem via a positive self-concept could be taken to mean (a) successful ingroup identification, and associated intergroup discrimination, will enhance social identity, and hence self-esteem, or (b) low or threatened self-esteem will promote ingroup identification, and associated intergroup discrimination, because of the "need" for positive self-esteem. In a review of relevant literature, Rubin and Hewstone (1998) found 58% support for the former and 20% support for the latter. These authors also note that the link between self-esteem and group behavior is largely contingent on measurement. Tests of the self-enhancement assumption should employ measures that are specific to the group; these should be on a social rather than individual level and be time specific.

The self-esteem hypothesis and the relationship between self-enhancement motivation and social identity processes remains a topic of debate among social identity researchers (e.g., Crocker & Luhtanen, 1990; Long & Spears, 1997; Rubin & Hewstone, 1998). In recent years, the issue has become further complicated by the suggestion of a number of other fundamental motives for social identity processes. Among these is the uncertainty reduction motive (e.g., Hogg, 2000; Hogg & Abrams, 1993; Hogg & Mullin, 1999).

Uncertainty Reduction and Ingroup Identification

Self-categorization theory (e.g., Turner, 1987) is the aspect of the social identity approach that elaborates the social cognitive process that underpins identification (for review, see Hogg, 2001b). People represent social categories in terms of prototypes. Prototypes are fuzzy sets of attributes (perceptions, attitudes, feelings, and behaviors) that make groups distinctive—they maximize the ratio of intergroup differences to ingroup similarities. When a particular social categorization fits and makes sense of the way people are behaving, it becomes psychologically salient, and people categorize themselves in terms of the category they belong to—the ingroup. The consequence is that self-conception and behavior is governed by descriptive and prescriptive properties of the ingroup prototype. Self-categorization cognitively underpins ingroup identification and group and intergroup phenomena.

Hogg and colleagues have suggested that uncertainty reduction plays a key motivational role in self-categorization and ingroup identification (Hogg, 2000; also see Hogg, 2001a; Hogg & Abrams, 1993; Hogg & Mullin, 1999). Based on the premise that subjective uncertainty, particularly about one's self-concept and identity, is aversive, they argue that people strive to reduce uncertainty. Self-categorization is particularly effective at reducing uncertainty because self is governed by a prototype that describes and prescribes who one is, how one should act, and what one should expect from others. Unambiguous, prescriptive prototypes that are highly consensual across the ingroup are clearly going to be better at resolving uncertainty than fuzzy, nonprescriptive, and dissensual prototypes. The former type of prototype is more likely to be associated with groups that have sharp boundaries and are distinctive, well structured, and relatively homogeneous—that is, groups that have high entitativity (Hogg, 2004; cf. Hamilton & Sherman, 1996). Overall, uncertainty should motivate ingroup identification, and the strength of this relationship should depend on the extent to which the relevant category can reduce uncertainty.

Research on the uncertainty-reduction hypothesis has mainly used the minimal-group paradigm. This research has shown that categorization produces identification and ingroup bias only when participants are subjectively uncertain (Grieve & Hogg, 1999). The effect occurs across a range of different methods of inducing subjective uncertainty, for example simply being uncertain about the experimental situation or being uncertain

about one's judgements in a task (Mullin & Hogg, 1998). The motivational impact of uncertainty is more pronounced when people feel that what they are uncertain about is important rather than trivial (Mullin & Hogg, 1999) and when normative properties of the group seem relevant to reducing uncertainty (Hogg & Mullin, 2000). There is also evidence that people who are highly uncertain are more likely to identify with more homogeneous (thus more entitative) groups (Jetten, Hogg, & Mullin, 2000).

An Interactional Model

There is evidence that self-enhancement and uncertainty reduction both motivate ingroup identification and group behavior. The self-enhancement motive captures the evaluative aspect of identification and the way that groups jostle for status advantage. It provides an account of the dynamics of social change. However, it less convincingly accounts for identification with low status groups. Instead, identification with a low status group is redefined as identification with a group whose identity problems have been resolved in socially creative ways—for example, by making intergroup comparisons on alternative, ingroup-favoring dimension by transforming the polarity of existing dimension to evaluate the unfavorable pole favorably, or by avoiding upward intergroup comparisons in favor of lateral or downward comparisons (Tajfel & Turner, 1979; also see Ellemers, 1993). The self-enhancement motive does not explain why people would identify with unsatisfactory low status groups in the first place; it only explains what happens for people who already identify with their group when they encounter a status or group valence threat.

Similarly, the uncertainty-reduction model is not without theoretical complications. First, the uncertainty-reduction motive captures the epistemic aspect of self-conception and group life and may help explain people's reluctance to change social systems and to disidentify with groups (also see Jost & Hunyadi, 2002). But, of course, this strength is in turn a weakness because the uncertainty-reduction motive has more difficulty in explaining social change. Taken to an extreme, the motive may promote a static social system in which people strive to retain certainties, even when associated with a negative self-image. Second, the model predicts that high, not low, uncertainty motivates identification. This is difficult to reconcile with the idea that identification also occurs for people who are low in uncertainty, and thus very certain.

Empirical evidence and conceptual considerations, therefore, suggest that both self-enhancement and uncertainty reduction motivate social identity processes. The key question, then, is how do the two motivations relate to one another in affecting ingroup identification? One possibility is that the motivations operate independently—they each have separate and additive main effects on identification. One way in which the two motives may relate additively to one another is that situations that affect self-evaluation may also affect uncertainty, and vice versa. For example, threatened self-esteem may also cause one to feel self-conceptually uncertain, and uncertainty may also make one feel less positive about oneself (cf. Baumgardner, 1990; Campbell, 1990). (See the Discussion section of this article.)

The other possibility, the one that we propose here, is that the motives have an interactive relationship with one another in influencing identification. The influence of one is contingent on whether the other is present. Under conditions where uncertainty is high, clarity of self-definition is crucial and uncertainty reduction takes precedence; we need to know who we are before we can judge how good we are. Here, the intervening process is that described by the uncertainty-reduction model. When uncertain, people identify with groups they feel are meaningful and relevant to reducing their uncertainty, and they do so without regard to the valence of their group. When uncertainty is low, however, uncertainty reduction no longer has psychological significance, and attention may be turned to group valence and evaluation of the self-image (e.g., collective self-esteem). Under these conditions, self-enhancement through positive distinctiveness directly motivates identification. In this case, the intervening mechanism is self-enhancement. When uncertainty reduction is not a pressing need, people will only identify with groups that provide evaluatively favorable identity.

This process is dynamic. Once identification has resolved uncertainty, attention can be refocused on self-enhancement. So, for example, under high uncertainty, people will identify with any group that is able to reduce uncertainty (e.g., a distinctive group), regardless of the valence of the group (e.g., its social status or prestige). Having identified with the group and thus resolved uncertainty, attention can then be directed toward group valence, building a positive image of the group and thus elevating collective self-esteem.

The model proposed here extends earlier social identity treatments of social identity motivation (e.g., Hogg, 2000; Tajfel & Turner, 1979) in at least two ways. Focusing only on uncertainty and self-enhancement, it explicitly maintains that (a) both self-enhancement *and* uncertainty reduction motivate identification, and (b) the motives have an interactive, not additive, impact on social identification. This overcomes problems associated with perspectives that only invoke self-enhancement or only invoke uncertainty reduction as motivations for identification. Under conditions of high uncertainty, people are motivated to identify with groups that serve to

clarify self-definition, irrespective of group valence. This helps account for social stasis and identification with low-status groups, which is problematic for social identity theory. Under conditions of low uncertainty, people are more strongly motivated to identify with evaluatively positive than negative groups, thus accounting for the pursuit of positive social identity that underpins social change. Thus, people who are certain of who they are also categorize and engage in group behavior, but they do so while motivated by self-enhancement.

To test the model proposed here, we conducted a computer-mediated minimal group experiment in which we orthogonally manipulated participants' state of uncertainty (high or low) and the status of their group (high or low) and measured self-reported identification with the group. We predicted that uncertainty and status would have an interactive effect on identification. This produces two specific hypotheses about the form of this interaction.

Hypothesis 1: Under low uncertainty, participants will identify more strongly with high- than low-status groups; because uncertainty is low, self-evaluation concerns drive identification (based on the perception that the group is satisfactory). In contrast, high-uncertainty participants will identify with low- and high-status groups equally.

Hypothesis 2: Participants in low-status groups will identify with their group more strongly when they are high than low in uncertainty; because low-status groups do not mediate self-enhancement, uncertainty reduction (based on a perception that the group is relevant to uncertainty reduction) drives identification. In contrast, participants in high-status groups will identify equally under low- and high-uncertainty conditions.

EXPERIMENT 1

Method

PARTICIPANTS AND DESIGN

Forty female and 24 male introductory psychology students participated in the experiment as part of a course requirement ($N = 64$). They were randomly allocated to conditions formed by a 2(uncertainty: low/high) × 2(group status: low/high) between-groups factorial design. There were checks on the independent variables and a single, multi-item, dependent variable measuring ingroup identification.

PROCEDURE AND MEASURES

On arrival at the experiment, participants occupied computer-equipped individual cubicles (there were eight in the room), were told that the experiment would take under an hour, and that all information would be supplied via the computers. After beginning the computer program, participants were informed that the experiment concerned the relationship between fundamental perceptual processes and thinking style. It was explained that fundamental perceptual processes are important because they underpin learning and intelligence, and hence academic and social success, but that these processes are affected by individual differences in information interpretation or "thinking style" (Doosje, Spears, & Koomen, 1995). Some people have inductive and others deductive thinking styles, and these styles are characterized by "differences in the structure and functioning of conceptual associations. People generally make use of one thinking style or the other, but not both."

Participants anticipated four parts to the experiment: (a) a measure of thinking style (later used as a basis for social categorization), followed by (b) a measure of "numerical perceptual attention" (our uncertainty manipulation), (c) some questions about the experiment (the dependent measures and some checks), and (d) a group discussion of the experiment. In reality, the experiment concluded after the third stage. The fourth stage was foreshadowed to enhance the sense of psychological continuity of the groups.

For their first task, participants completed 12 textual and 12 numeric associations. On each trial, they chose one of four associates for a target stimulus. For example, they were presented with the word *tree* and asked whether they associated this most closely with *leaf*, *trunk*, *forest*, or *environment*. This test ostensibly measured thinking style and would be used to categorize participants as inductive or deductive thinkers (see Doosje et al., 1995). Feedback was delayed until completion of the second part of the experiment (i.e., after the uncertainty manipulation), on the pretext that the computation would be done once all participants had completed the task.

MANIPULATING AND MEASURING UNCERTAINTY

Participants now performed a quantity estimation task—our manipulation of subjective uncertainty (Schuit & Hogg, 1999). For each of 10 trials, an array of different pictorial representations was presented for 0.5 seconds. They were told that different objects (e.g., cars, people, symbols) would be presented within each trial and that at the conclusion of the 10 trials they would be asked which class of object they thought, on average, most attracted their attention while making estimates. There were four object classifications: inanimate objects (e.g., cars, motorbikes), animate objects (e.g., people, animals), symbolic objects (e.g., @, !), and colored objects. In the high-uncertainty condition, 12 to 20 objects were presented ($M = 15.60$) in each trial; in the low-uncertainty condition, 7 to 10 objects were presented ($M = 8.10$). The sequence of trials was the same in each

condition; only the number of objects per trial was varied. After each trial, participants estimated the total number of objects and indicated how *confident* and how *certain* they were of their estimation (1 = *not very much*, 9 = *very much*). This 20-item scale formed our manipulation check on uncertainty ($\alpha = .97$).

At the conclusion of the estimation task, we asked participants what class of object (inanimate, animate, symbolic, or colored) they felt had drawn their attention most. We also asked participants a single question: "How much *effort* did you put into being correct?" (1 = *not very much*, 9 = *very much*). We included this item, as a potential covariate in our focal analyses, to control for a possible alternative explanation. Perhaps participants in some conditions worked harder on the uncertainty task, and this greater expenditure of effort was associated with more commitment to, and identification with, the group (cf. Turner, Hogg, Turner, & Smith, 1984).

DESCRIBING THE GROUPS

Participants now received feedback on their thinking style—catered so that the group they were in was relevant to the dimension of uncertainty that had most attracted their attention. All participants were categorized as inductive thinkers and were supplied with the following information (the italicized text was catered to each participant):

> In the task on counting the number of objects, research shows that the attention of inductive thinkers is most commonly drawn by *inanimate* objects. The level of certainty experienced when making estimates of quantities (as in the last task) is influenced by *inanimate* objects for inductive thinkers. This influence often occurs without conscious recognition. This is the case for inductive thinkers because they form mental associations that are influenced by *inanimate* objects more so than other object categories. For deductive thinkers, the process is similar, but attention is drawn by different objects.

Next, to manipulate group status participants were informed that inductive and deductive thinkers would be compared as groups (i.e., not at as individuals) on the quantity estimation task. Data for inductive thinkers would ostensibly be stored in one computer file and data for the deductive thinkers in another file. Two reasons for considering group differences were given. First, differences between inductive and deductive thinkers are large and similarities among people who share the same thinking style are striking, and second, it was only scientifically meaningful to look for group differences at this stage of the research. After a countdown, the computer provided participants with information about the percentage accuracy of their group as a whole. In the *high-status condition*, the "overall percentage accuracy" of inductive thinkers on the last task was announced as 81.53%, whereas that of deductive thinkers was 65.28%. In the *low-status condition*, these percentages were reversed. To ensure that the scores were indeed perceived to be high and low status, participants were told that the global average on this task was 74% accuracy.

CHECKS AND DEPENDENT MEASURES

In anticipation of the upcoming group discussion phase, participants were now asked a number of questions about their group and about the experiment. The first set of questions measured *ingroup identification*, our key dependent variable. There were nine items, adapted from Hogg and Hains (1996; Hogg, Hains, & Mason, 1998). For example, participants indicated how much they would like to get to know their group, how similar they felt to their group, to what extent they felt a sense of belonging to their group, how much they identified with their group, to what extent they felt strong ties with their group, how important their group was to them, how much they felt they might like other members of their group, and how well they felt they fitted into their group (1 = *not very much*, 9 = *very much*). These items formed a reliable Ingroup Identification Scale ($\alpha = .87$).

The second set of questions was designed to check on the group status manipulation in three different ways. First, participants were asked to indicate how satisfied (1 = *not at all*, 9 = *very much*) they were with the performance of their group, the inductive thinkers. Second, they compared inductive thinkers (ingroup) with deductive thinkers (outgroup) on two dimensions (intelligence and decisiveness) directly related to our manipulation of status. In introducing the study, we had said that the perceptual processes we would use to form groups were related to intelligence and academic success. For example, participants were asked, "Compared to deductive thinkers, how intelligent are inductive thinkers?" (1 = *less intelligent*, 9 = *more intelligent*). The two items formed a marginally reliable scale ($\alpha = .58$). Finally, participants were asked, "How well did your group perform on the perceptual task relative to the other group?" (1 = *worse than other group*, 5 = *same*, 9 = *better than other group*).

After completing these measures, the experiment was concluded and participants fully debriefed.

Results

There were two orthogonally manipulated independent variables: uncertainty (low or high) and group status (low or high). Uncertainty was checked by a single 20-item scale, and status was checked by three scales (two single items, and one two-item scale). Our focal dependent measure was a 9-item Ingroup Identification Scale.

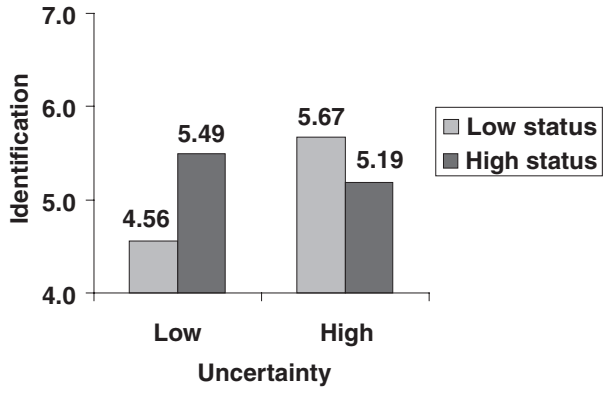

Figure 1 Experiment 1: Uncertainty by group status interaction on ingroup identification, controlling for effort on the uncertainty task (adjusted means displayed), $F(1, 59) = 6.73$, $p = .012$.

We also measured effort expended on the uncertainty task as a potential covariate for the analysis of effects on identification.

MANIPULATION CHECKS

Two-way ANOVA on the uncertainty manipulation check revealed only a significant main effect for uncertainty, $F(1, 60) = 21.84$, $p < .001$. Participants were more uncertain in the high-uncertainty condition ($M = 5.88$) than the low-uncertainty condition ($M = 4.28$).

A two-way MANOVA was performed on the three status manipulation checks, (a) relative group performance, (b) the measure of satisfaction with group performance, and (c) the evaluation of the group. The only significant multivariate effect was the group status main effect, $F(3, 58) = 150.04$, $p < .001$. This main effect was also significant, by univariate ANOVA, on all three constituent variables. Participants in the low-status condition felt their group had performed worse than did participants in the high-status condition (Ms = 2.94 and 7.72), $F(1, 60) = 453.41$, $p < .001$, were less satisfied with group performance than participants in the high-status condition (Ms = 4.50 and 6.81), $F(1, 60) = 38.96$, $p < .001$, and evaluated the ingroup lower in intelligence and decisiveness than participants in the high-status condition (Ms = 4.80 and 5.72), $F(1, 60) = 15.23$, $p < .001$.

Thus, checks revealed that both manipulations were clean and effective.

INGROUP IDENTIFICATION

The regression of ingroup identification onto the effort participants reported expending on the uncertainty task was significant, $R^2 = .071$, $R = .056$, $F(1, 62) = 4.70$, $p = .034$. Because there was a significant association between effort and indentification, effort was retained as a covariate.

Two-way ANCOVA, with effort as the covariate, on ingroup identification revealed, as predicted, only one significant effect—for the uncertainty by group status interaction, $F(1, 59) = 7.30$, $p = .009$ (see Figure 1). (The effect remained significant but was weaker when effort was not included as a covariate, $F(1, 60) = 4.21$, $p = .045$. Examination of all four simple main effects confirmed both hypotheses. Confirming Hypothesis 1, under low uncertainty participants identified more strongly with the high- ($M = 5.49$) than low- ($M = 4.56$) status group, $F(1, 59) = 6.73$, $p = .012$, whereas there was no significant preference among high-uncertainty participants. Confirming Hypothesis 2, where the group was low status, participants identified more strongly under high ($M = 5.67$) than low uncertainty ($M = 4.56$), $F(1, 59) = 8.30$, $p = .006$. Where the group had high status there was no significant effect of uncertainty.

Discussion

Experiment 1 cleanly and effectively manipulated uncertainty and group status to provide support for both hypotheses derived from our interactional model. Participants identified more strongly with a high- than low-status ingroup under low uncertainty but not under high uncertainty (Hypothesis 1), and participants identified more strongly with a low-status ingroup when they were high, not low, in uncertainty (Hypothesis 2). This finding, under Hypothesis 2, is particularly striking in light of the fact that the participants were dissatisfied with their low-status group, recognized its lower status relative to the outgroup, and evaluated their group as possessing lower intelligence.

The uncertainty manipulation did affect the amount of effort participants exerted on the uncertainty task. However, the predicted interaction of uncertainty and group status on identification not only remained significant but was more significant when effort was covaried out ($p = .045$ dropped to $p = .009$). Effort-contingent ingroup identification, the idea that the harder you work for the group the more you will identify with the group (cf. Aronson & Mills, 1959; Turner et al., 1984) does not provide an alternative explanation for our results.

Experiment 1 was specifically designed to maximize the group's relevance to self-conception (the group was defined in terms of dimensions that were subjectively important to participants), so that participants would feel that they fitted the group rather well and that it was a contextually self-relevant social category. This raises the question of whether our predictions for the effects of uncertainty and group status on ingroup identification

would hold for groups that people feel they fit less well in terms of their attributes or membership credentials. This engages with the wider question of how uncertainty and self-enhancement motives may differentially affect people who are highly prototypical (central) or less highly prototypical (peripheral) group members.

EXPERIMENT 2

We would argue that in Experiment 1 all participants were relatively prototypical members of their group. The group was defined in terms of the category of object that participants felt drew their attention during the uncertainty task. Participants would perceive a relatively good fit between self and group and would consider themselves to match the group prototype reasonably well. The extent to which one is prototypically marginal or central to the group has been shown to significantly affect how one is treated by the group and how one responds to the group (Hogg, in press). For example, central members tend to be trusted as loyal members and are endorsed as leaders, whereas marginal members are less trusted and less influential (e.g., Hogg & van Knippenberg, 2003). Prototypically marginal members are often treated as "black sheep" (Marques & Páez , 1994) or are more generally marginalized and excluded by the group (e.g., Marques, Abrams, Páez, & Hogg, 2001).

Ingroup identification is clearly a more problematic process for marginal than central members—raising the question of how prototypicality affects the interactive effect of uncertainty and group status on identification. Because low prototypicality implies a relatively poor fit between self and group, we would expect (a) that the group's status has less motivational impact on self, and (b) that the group provides a less self-relevant resolution of subjective uncertainty. Overall, then, changes in uncertainty and group status will have a less marked impact on self-enhancement and uncertainty-reduction motivation for people who are low in prototypicality than high in prototypicality. The interactive effect for uncertainty and status on identification, which we predicted and found in Experiment 1, would probably disappear for participants who were not very prototypical of the group.

To test this idea, we modified the methodology of Experiment 1 to include a third independent variable that manipulated participants' fit with the group prototype (group member prototypicality, low or high). As before, our key dependent variable was ingroup identification. However, to measure this construct, in addition to the nine-item scale from Experiment 1 we also measured the extent to which participants self-stereotyped in terms of the focal ingroup attribute. Self-stereotyping is an integral part of context-dependent ingroup identification—when one identifies with a group one assigns the group's prototypical attributes to oneself, a process called *depersonalization* (e.g., Oakes, Haslam & Turner, 1994; Turner, 1987). We expected the two scales to correlate moderately and significantly, as they both measure aspects of ingroup identification.

We predicted a three-way interaction of uncertainty, group status, and member prototypicality on the measures of ingroup identification. This produces three specific hypotheses.

Hypothesis 1: Under low uncertainty, participants will identify more strongly with high- than low-status groups. High-uncertainty participants will identify with low- and high-status groups equally.

Hypothesis 2: Participants in low-status groups will identify with their group more strongly when they are high than low in uncertainty. Participants in high-status groups will identify equally under low- and high-uncertainty conditions.

Hypothesis 3: The effects under Hypotheses 1 and 2 will emerge only for highly group prototypical participants. Low prototypical participants' ingroup identification will be unaffected by uncertainty and group status.

Method

PARTICIPANTS AND DESIGN

Fifty-seven male and 153 female introductory psychology students participated in the experiment as part of a course requirement ($N = 210$). They were randomly allocated to conditions formed by a 2(uncertainty: low or high) × 2(group member prototypicality: low or high) × 2(group status: low or high) between-groups factorial design. There were checks on the independent variables and two measures (a multi-item scale and a single item) of the dependent variable of ingroup identification.

Because Experiment 2 is procedurally very similar to Experiment 1, we provide a less detailed description, focusing more on those aspects that are different.

PROCEDURE AND MEASURES

Manipulating and measuring uncertainty. Uncertainty was manipulated using the quantity estimation task from Experiment 1. To further strengthen the uncertainty manipulation, we reduced the number of objects presented per trial in the low-uncertainty condition to 5 to 7 ($M = 6.00$). The high-uncertainty condition remained as before; there were 12 to 20 objects ($M = 15.60$) per trial. Uncertainty was checked as in Experiment 1. After each trial, participants estimated the total number of objects and indicated how confident and how certain they were of their estimation (1 = *not very much*, 9 = *very much*). This produced a reliable 20-item scale ($\alpha = .99$). As a potential covariate, we again, as in Experiment 1, measured effort exerted on the uncertainty task (1 = *not very much*, 9 = *very much*).

Manipulating and measuring prototypicality. Prior to the uncertainty manipulation, participants were told that different categories of object would be presented and that having made their estimations, they would be asked to indicate what category of object drew their attention. Having done this, participants received feedback about their thinking style (italicized text was catered to individual participants, as in Experiment 1):

> Inductive thinkers reason from known facts to general cases. In the context of the estimation task, inductive thinkers typically count a subset of the objects and use the relative proportion of the area taken up by those objects to estimate the total. In doing this task, however, the attention of inductive thinkers is typically drawn to a subset of figures composed of *inanimate objects*. If you found that your attention was drawn by *inanimate objects*, you are a very typical inductive thinker. While it may not have been apparent to you while completing this task, heightened attention to *inanimate objects* influences perceptions of subjective uncertainty experienced in making estimates. For deductive thinkers the process is similar, but attention is drawn by different objects.

In the *high prototypicality* condition, the category of objects identified by participants was matched in italicized type in the description of their group. In the *low prototypicality* condition there was a mismatch—if participants felt that inanimate objects drew their attention, they were informed that the attention of the typical inductive thinker is drawn by animate objects (in the remaining three categories, participants were told that the attention of the typical inductive thinker is drawn by inanimate objects). The prototypicality manipulation was checked by a single item: "Having read the information about the approach of the 'typical' inductive thinker to the counting task, how typical do you see your approach?" (1 = *not very typical*, 9 = *very typical*).

Manipulating group status. As in Experiment 1, participants were then told they were about to perform an unrelated task that involved reaction time judgments (participants did not actually do the task). Previous research was said to have established that inductive and deductive thinkers differ in their accuracy on this task. In the low-status condition, inductive thinkers from several other experiments were said to be 65.28% accurate, whereas deductive thinkers were 81.53% accurate. These percentages were reversed in the high-status condition. The global average was said to be 74%. Participants were told that we expected them to perform as previous participants had, and that this experiment was testing an explanation for the difference. Our dependent measures followed this information.

Checks and dependent measures. Ingroup identification was measured as in Experiment 1 with Hogg and Hains's (1996) nine-item scale ($\alpha = .91$). However, we also measured it with a single self-stereotyping measure: "How similar are you to other inductive thinkers in terms of accuracy?" (cf. Quattrone & Jones, 1980). As expected, the self-stereotyping item and the identification scale were moderately correlated, $r = .41$, $p < .001$, and formed a reliable composite scale ($\alpha = .90$).

Group status was checked, very similarly to Experiment 1, in three different ways. First, there were two items measuring satisfaction with their group: "How satisfied are you with the performance of the inductive thinkers?" and "How satisfied are you with the group of inductive thinkers?" (1 = *not at all*, 9 = *very much*; $\alpha = .91$). Second, they rated their group relative to the deductive thinkers (outgroup) on intelligence and decisiveness (e.g., 1 = *less intelligent*, 9 = *more intelligent*; $\alpha = .77$). Third, they were asked, "How well did your group perform on the perceptual task relative to the other group?" (1 = *worse than other group*, 5 = *same*, 9 = *better than other group*).

Results

There were three orthogonally manipulated independent variables: uncertainty (low or high), group status (low or high), and member prototypicality (low or high). Uncertainty was checked by a single 20-item scale, status by three measures (one single item and two two-item scales), and prototypicality by a single item. Our dependent variable was ingroup identification, which was measured in two ways, a nine-item identification scale and a single self-stereotyping item. We also measured effort expended on the uncertainty task as a potential covariate for the analysis of effects on identification.

MANIPULATION CHECKS

Three-way ANOVA on the uncertainty check revealed only a significant main effect for uncertainty, $F(1, 202) = 260.17$, $p < .001$. Participants were more uncertain in the high-uncertainty condition ($M = 6.04$) than the low-uncertainty condition ($M = 2.83$).

Three-way ANOVA on the prototypicality check revealed only a significant main effect for prototypicality, $F(1, 202) = 44.24$, $p < .001$. Participants in the high-prototypicality condition rated their approach to the uncertainty task as more typical ($M = 6.73$) than participants in the low-prototypicality condition ($M = 5.20$).

Three-way MANOVA was performed on the three status manipulation checks: (a) relative group performance, (b) the measure of satisfaction with group performance, and (c) the evaluation of the group. The only significant multivariate effect was the group status main effect, $F(3, 200) = 219.97$, $p < .001$. This main effect was also significant, by univariate ANOVA, on all three con-

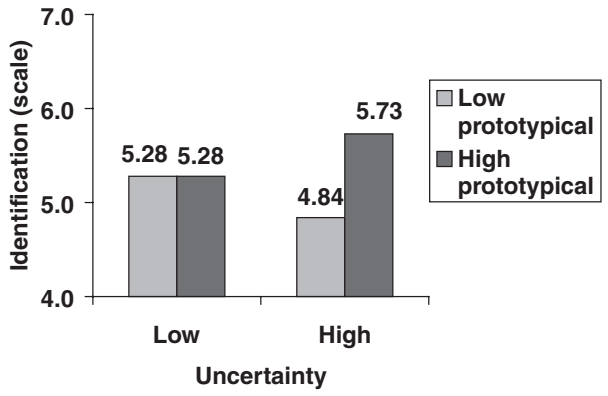

Figure 2 Experiment 2: Uncertainty by member prototypicality on the ingroup identification scale, $F(1, 202) = 5.81$, $p = .017$.

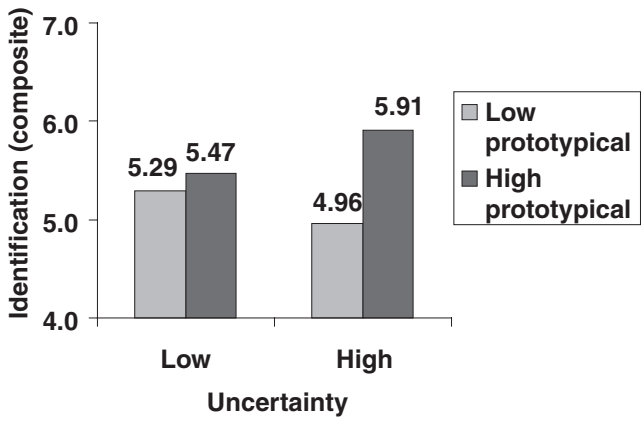

Figure 3 Uncertainty by member prototypicality on the composite ingroup identification measure, $F(1, 202) = 5.95$, $p = .016$.

stituent variables. Participants in the low-status condition felt their group had performed worse than did participants in the high-status condition (*M*s = 2.68 and 7.90), $F(1, 202) = 570.14$, $p < .001$, were less satisfied with group performance than participants in the high-status condition (*M*s = 4.71 and 6.26), $F(1, 202) = 64.47$, $p < .001$, and evaluated the ingroup lower in intelligence and decisiveness than participants in the high-status condition (*M*s = 3.72 and 6.99), $F(1, 202) = 289.59$, $p < .001$.

Thus, checks revealed that all three manipulations were clean, effective, and strong.

INGROUP IDENTIFICATION

Regression of the two identification measures onto the amount of effort participants reported expending on the uncertainty task was not significant, $R^2 = .023$, $R = .013$, $F(2, 207) = 2.39$, $p = .094$—for identification, $\beta = .018$, $t(210) = 0.24$, $p = .810$, and for self-stereotyping, $\beta = .142$, $t(210) = 1.88$, $p = .061$. Because there was no significant association between effort and the measures of identification, effort was not employed as a covariate.

MAIN EFFECTS

Three-way ANOVAs were performed on each of the two measures of identification and on the composite scale. There was a significant main effect of status on all three measures. Participants identified, $F(1, 202) = 8.35$, $p = .004$, and self-stereotyped, $F(1, 202) = 4.56$, $p = .034$, more when in high- (*M*s = 5.54 and 5.47) than low-status groups (*M*s = 5.02 and 5.04). On the composite measure, identification was also stronger for high- than low-status groups (*M*s = 5.65 and 5.17), $F(1, 202) = 9.12$, $p = .003$.

There was also a significant main effect for member prototypicality on all three measures. Participants identified, $F(1, 202) = 6.45$, $p = .012$, and self-stereotyped, $F(1, 202) = 10.76$, $p = .001$, more when they were high (*M*s = 5.51 and 5.87) than low in prototypicality (*M*s = 5.05 and 5.20). On the composite measure, identification was also stronger when participants were high than low in prototypicality (*M*s = 5.69 and 5.13), $F(1, 202) = 12.68$, $p < .000$.

TWO-WAY INTERACTIONS

Prototypicality and uncertainty interacted significantly on identification, $F(1, 202) = 5.81$, $p = .017$, and on the composite measure, $F(1, 202) = 5.95$, $p = .016$. On the identification measure (see Figure 2), group members who were uncertain identified more strongly when they were more than less group prototypical, $F(1, 202) = 10.91$, $p = .001$, and there was a tendency for prototypical members to identify more strongly when they were more than less uncertain, $F(1, 202) = 3.46$, $p = .065$. On the composite identification measure (see Figure 3), the results were the same only stronger. High-uncertainty participants identified more strongly when they were more than less group prototypical, $F(1, 202) = 16.03$, $p < .001$, and prototypical members identified more strongly when they were more than less uncertain, $F(1, 202) = 4.35$, $p = .038$.

These results are consistent with the uncertainty-reduction model in showing that high prototypicality facilitates and strengthens ingroup identification under uncertainty, and that low prototypicality attenuates identification under uncertainty, but they do not address the impact of group status and self-enhancement motivation.

THE THREE-WAY INTERACTION

Of most immediate relevance to our hypotheses is the three-way interaction. This was significant on the self-stereotyping measure, $F(1, 202) = 3.95$, $p = .049$, but not

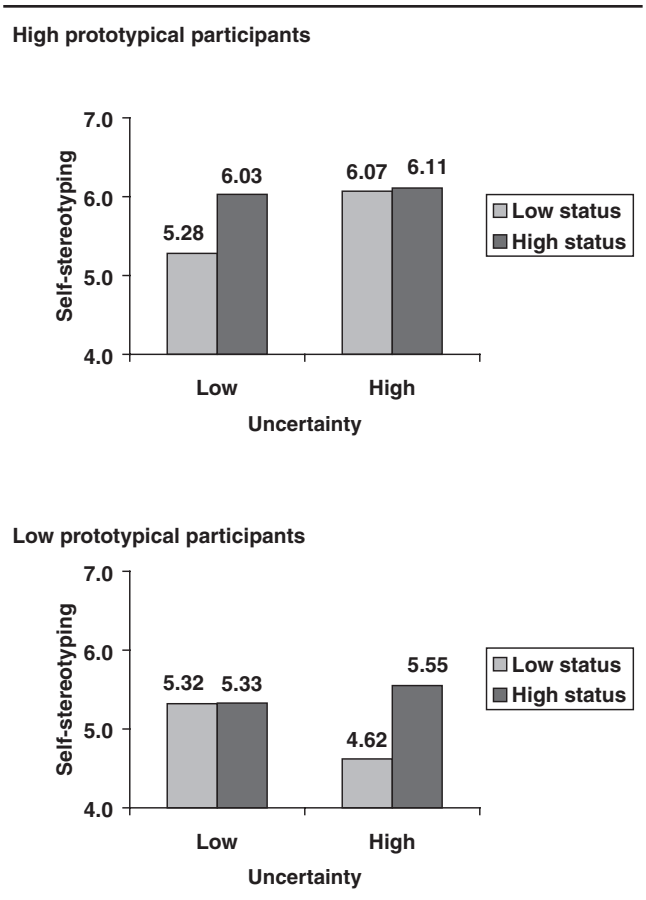

Figure 4 Experiment 2: Uncertainty by group status by member prototypicality interaction on self-stereotyping, $F(1, 202) = 3.95$, $p = .049$.

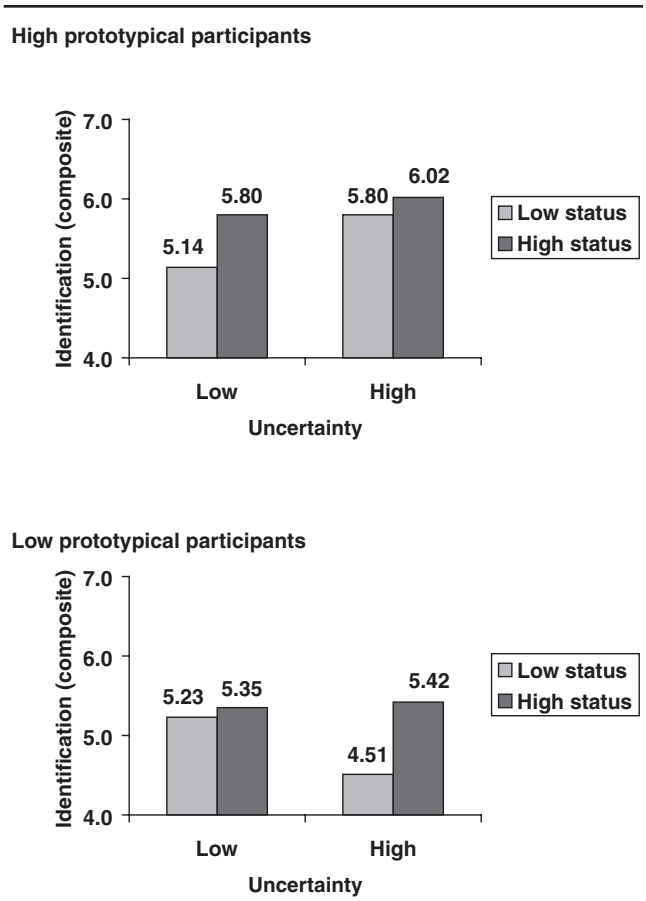

Figure 5 Experiment 2: Uncertainty by group status by member prototypicality interaction on the composite measure of ingroup identification, $F(1, 202) = 3.77$, $p = .053$.

the identification measure, $F(1, 202) = 1.36$, $p = .245$. However, it was borderline significant on the composite measure, $F(1, 202) = 3.77$, $p = .053$, and so we will report relevant simple effects. The pattern of means was strikingly similar across all three measures.

Taking the self-stereotyping measure (see Figure 4), prototypical group members (top panel of Figure 4) who were low in uncertainty self-stereotyped more strongly in high- than low-status groups, $F(1, 202) = 4.19$, $p = .042$, whereas high-uncertainty members showed no status-based preference. This supports Hypothesis 1. In support of Hypothesis 2, prototypical group members in low-status groups self-stereotyped more strongly when they were high than low in uncertainty, $F(1, 202) = 4.55$, $p = .034$, whereas members of high status groups were unaffected by uncertainty.

Hypothesis 3 was also supported, because the effects predicted under Hypotheses 1 and 2 did not emerge for low-prototypical participants (bottom panel of Figure 4). Under Hypothesis 3, we had predicted no effects for uncertainty and status in the low-prototypical condition. However, what we found was that high-uncertainty members self-stereotyped less in low- than high-status groups, $F(1, 202) = 4.35$, $p = .038$. We also tested the simple effects of member prototypicality in each of the uncertainty by status cells. High-uncertainty participants in low-status groups self-stereotyped more strongly if they were highly prototypical of those groups, $F(1, 202) = 12.33$, $p = .001$.

Taking the composite identification measure (see Figure 5), prototypical members (top panel) who were low in uncertainty identified more strongly with a high- than low-status group, $F(1, 202) = 5.34$, $p = .022$, whereas high-uncertainty members showed no status-based preference. Prototypical members in low-status groups identified more strongly when they were high than low in uncertainty, $F(1, 202) = 5.40$, $p = .021$, whereas members of high-status groups were unaffected by uncertainty. These results support Hypotheses 1 and 2.

Hypothesis 3 was supported, in that the results under Hypotheses 1 and 2 did not emerge for low-prototypical participants (bottom panel of Figure 5). However, as on the self-stereotyping measure, we found that high-

uncertainty members identified less in low- than high-status groups, $F(1, 202) = 6.47$, $p = .009$. We also found that members of low-status groups identified less when they were more uncertain, $F(1, 202) = 4.40$, $p = .037$. In comparing low- and high-prototypical participants we found, as on the self-stereotyping measure, that high-uncertainty participants in low-status groups identified more strongly if they were highly prototypical of those groups, $F(1, 202) = 16.45$, $p = .000$.

Discussion

Experiment 2 cleanly and effectively manipulated uncertainty, group status, and member prototypicality to provide support for all three hypotheses. Participants identified more strongly with a high- than low-status ingroup under low uncertainty but not under high uncertainty (Hypothesis 1), and they identified more strongly with a low-status ingroup when they were high, not low, in uncertainty (Hypothesis 2), and these effects only emerged among participants who were high-prototypical group members (Hypothesis 3).

The three-way interaction described by these three hypotheses was not as strong as we would have liked. It was significant on the self-stereotyping measure of identification but not on the identification scale that we also used in Experiment 1. However, it was borderline significant ($p = .053$) on the composite measure of ingroup identification (identification and self-stereotyping formed a reliable scale), and, furthermore, the hypothesized simple effects within the high prototypicality condition were significant and were trends ($p < .10$) on the identification scale. Thus, the results for high-prototypicality participants replicated Experiment 1.

Developing on Experiment 1, Experiment 2 manipulated member prototypicality. Because low-prototypical participants had poorer self-group fit, we expected the status and uncertainty manipulations to have little motivational impact—we expected no differences between cells. Unexpectedly, we did find differences—specifically, high-uncertainty participants in low-status groups identified less than their high-status counterparts and their low-uncertainty counterparts. Low prototypicality seemed to prevent uncertain participants from identifying with a low-status group—indeed, identification was significantly elevated when uncertain participants in low-status groups were highly prototypical of those groups.

The prototypicality manipulation also produced an interaction with uncertainty: Irrespective of group status, people identified significantly more with groups if they were both uncertain and prototypical of such groups. Although we did not formulate a hypothesis to predict this effect, it is entirely consistent with the uncertainty-reduction hypothesis (e.g., Hogg, 2000); specifically, under uncertainty people are more likely to identify with a group that is self-conceptually more relevant (i.e., there is good self-group fit) than self-conceptually less relevant (i.e., there is poor self-group fit). The interaction of uncertainty and prototypicality provides support for this analysis. If we speculate further that being highly prototypical of a group elevates its perceived entitativity (if we fit a group well, we think it is more of a distinct and bounded entity), then this interaction also provides support for the argument that under uncertainty people prefer to identify with high-entitativity groups (Hogg, 2004).

GENERAL DISCUSSION

Framed by the social identity perspective (see Hogg, 2003) and the uncertainty-reduction model of social identity motivation (e.g, Hogg, 2000), we conducted two very similar, minimal-group-style experiments to investigate how subjective uncertainty reduction and self-enhancement motivate ingroup identification. In both experiments, we manipulated uncertainty and group status and measured their effect on ingroup identification. If uncertainty motivated identification, participants would identify more under high uncertainty. If self-enhancement motivated identification, participants would identify more with a high-status group.

The two motives might operate independently, in an additive fashion. However, we predicted an interaction—the operation of each motive being conditional on whether the other was satisfied. When people are high in uncertainty, they are motivated to reduce uncertainty, irrespective of the self-evaluative consequences of the group's status. When uncertainty is low, people are motivated by self-enhancement and therefore identify more strongly with a high- than low-status group. These formed Hypothesis 1. Framed differently, people identify more strongly with low-status groups when they are uncertain, but uncertainty has little impact when group status is high—Hypothesis 2. Experiment 1 cleanly supported both these hypotheses.

Experiment 2 went one step further. Presumably (see Hogg, 2001b, 2004, in press; Turner, 1987), if people do not fit the group's defining properties (its prototype) very closely, then group status would have little impact on self-evaluation and thus self-enhancement motivation, and the group would not be an effective way to reduce uncertainty. We manipulated, as a third independent variable, the group prototypicality of participants and predicted (Hypothesis 3) that Hypotheses 1 and 2 would only hold for the high-prototypical condition—there would be no effects of uncertainty and group status in the low-prototypicality condition.

Experiment 2 supported all three hypotheses. However, the level of support was not as strong as it could be. There were three indices of ingroup identification: (a) an identification scale adapted from Hogg and Hains (1996), used in Experiment 1, (b) a measure of self-stereotyping (and thus depersonalization), and (c) a composite scale (the identification and self-stereotyping measures both monitor ingroup identification, and they formed a reliable scale). The three-way interaction was reliable on the self-stereotyping measure, borderline on the composite measure ($p = .053$), but not reliable on the identification scale. However, all hypothesized simple effects were significant on self-stereotyping and the composite measure and nonsignificant trends ($p < .10$) on the identification measure.

In Experiment 2, prototypicality had unpredicted effects. First, as expected, uncertainty increased identification only among participants who were highly prototypical of their group, and this increase was restricted to low-status groups. Surprisingly, among low-prototypical participants, uncertainty actually decreased identification with low-status groups. Second, as expected, status had no effect on identification under uncertainty for highly prototypical participants. However, unexpectedly, low-prototypical participants identified less with low- than high-status groups under uncertainty. These effects can be attributed to the finding that identification with low-status groups under uncertainty was significantly less strong among low- than high-prototypical participants: Being a poor fit to the group (low prototypical) dramatically reduced the extent to which uncertain participants identified with a low-status group.

Taken together, the two experiments reported in this article show that where *uncertainty is low*, people identify more strongly with high- than low-status groups, but only if they are prototypical of such groups. Where *uncertainty is high*, they identify with low- and high-status groups equally, unless they are not very prototypical of the group, in which case they show depressed identification with low-status groups. Members of *low-status groups* identify more when they are uncertain, but only when they are prototypical of them; when they are not prototypical, uncertainty suppresses identification to produce a preference for high-status groups. Identification with *high-status groups* is unaffected by uncertainty or prototypicality.

There are two possible alternative explanations for our findings. The first is that the uncertainty task, and perhaps other aspects of the study, caused participants to exert differential effort on behalf of the group and that effort exertion may have increased subsequent group commitment and identification (e.g., Aronson & Mills, 1959; Turner et al., 1984). To control for this, we measured self-reported effort. In Experiment 1, identification was significantly associated with effort, so identification was analyzed with effort covaried out. In Experiment 2, effort was not significantly associated with identification. Thus, the results of the two experiments cannot be explained in terms of effort.

The second alternative explanation is that the uncertainty manipulation also affected self-esteem. Therefore, we may have actually manipulated self-enhancement in two different ways—directly, via status, and indirectly, via the uncertainty task. To investigate this possibility, we conducted a third experiment in which we replicated Experiment 1, except that participants completed Heatherton and Polivy's (1991) State Performance Self-Esteem Scale immediately after the uncertainty manipulation (the experiment was then concluded). One-way (low or high uncertainty) ANOVA on the uncertainty manipulation check confirmed the effectiveness of the manipulation, $F(1, 53) = 24.39$, $p = .000$, $\eta^2 = .32$. One-way ANOVA on self-esteem revealed no significant effect of the manipulation on self-esteem, $F(1, 53) = 2.25$, $p = .150$, $\eta^2 = .03$. Thus, the results of the two experiments cannot be explained in terms of uncertainty being confounded with self-esteem.

More broadly, the relationship between uncertainty and self-esteem, as regards identification, is not unambiguous. First, it is not clear whether a high uncertainty task would depress self-esteem because it was difficult or raise self-esteem because it was a challenge. For example, Hogg and Svensson (2003) found that uncertainty did lower self-esteem in an experiment in which uncertainty was manipulated via a difficult or easy recall task. However, McGregor, Zanna, Holmes, and Spencer (2001) found no effect of self-uncertainty manipulations on self-esteem. Second, social identity research on the self-esteem hypothesis finds little evidence for depressed self-esteem motivating ingroup identification (see review by Rubin & Hewstone, 1998)—self-esteem is more a monitor of successful social connectedness (Baumeister & Leary, 1995; Leary, Tambor, Terdal, & Downs, 1995). Third, Hogg and Svensson (2003) conducted two experiments to explicitly test whether the effects of uncertainty (easy/difficult recall task) on identification were mediated by self-enhancement. They found that the effects of uncertainty on identification remained when any effects of uncertainty on self-esteem were covaried out. They also found that high-uncertainty participants who then self-affirmed (Steele, 1988) still subsequently identified strongly with their group.

The research reported here makes two new contributions to our understanding of social identity motivation. First, it confirms our prediction that uncertainty reduction and self-enhancement have an interactive rather than additive effect on ingroup identification. Second, it shows that this interaction is moderated by how proto-

typical of the group people are. The role of member prototypicality in social identity processes has recently become a significant focus of research (e.g., Hogg, in press), for example, into leadership (Hogg & van Knippenberg, 2003) and deviance and marginal membership (Marques et al., 2001; Marques & Páez, 1994).

The present research shows, as expected, that people identify more with a group under uncertainty if they are prototypical of the group—good self-group fit increases the ability of the group to reduce uncertainty because the group's prototype is more self-relevant, and good self-group fit probably enhances perceived group entitativity (e.g., Hogg, 2004). The effect of group status is intriguing: Identification with a low-status group is significantly depressed if people are both uncertain and are not prototypical of the group. Put differently, if you fit a low-status group, uncertainty increases identification, but if you do not fit, uncertainty depresses identification. This effect can, however, be explained in terms of our interactive model of uncertainty reduction and ingroup identification. Because fit (being prototypical) is critical for identification-contingent uncertainty reduction, there is little point in identifying with a group which you do not fit. If that group is also low status, self-enhancement prevails and this sponsors low identification to avoid the self-evaluative consequences of low-status group membership.

The uncertainty-reduction hypothesis provides an explanation of why low-status groups often choose not to challenge the status quo—although social change may improve status, it also increases uncertainty. In support of this, members of low-status groups in the present research did identify more strongly as uncertainty increased—but only if they were highly prototypical. Unlike low-prototypical members, they would find it difficult to deny membership and pursue the psychological exit strategy of disidentification. It is, however, not clear whether such increased identification would be associated with the pursuit of social change through social competition (Ellemers, 1993; Tajfel & Turner, 1979) or the construction of or adherence to an ideology that legitimizes and justifies the social system and one's place within it (e.g., Jost & Hunyadi, 2002; Major, Quinton, & McCoy, 2002; also see Jost & Major, 2001). One could speculate that key moderators would be the group's ideological environment and the degree of uncertainty posed by social competition. Social competition would be more probable if group membership was clearly defined in terms of an ideology that specified unambiguous cognitive alternatives to the status quo and a program of action that would deliver change with minimum risk (cf. Ng & Reid, 2000).

In closing, we should once again note that uncertainty reduction and self-enhancement are only two motives that affect social identity and group membership—other important motives include optimal distinctiveness (Brewer, 1991), belonging (Baumeister & Leary, 1995), and terror management (Solomon et al., 1991). The aim of this article has been to study only uncertainty reduction, self-enhancement, and ingroup identification and is therefore not a competitive test of other motivations.

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