Easing in: Fluent processing brings others into the ingroup

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Abstract

Four experiments demonstrated that perceptual fluency can facilitate categorization of others as ingroup members. In Experiment 1 (replications A, B, and C), White participants were first exposed to a group of White target individuals and later judged whether fluent (repeated) and disfluent (novel) targets were members of a particular ingroup or not. In each replication, fluent targets were categorized as ingroup members more readily than were disfluent ones. Experiment 2 replicated and extended this finding by showing that both White (racial ingroup) and Black (racial outgroup) targets were more frequently perceived as school ingroup members when fluent (repeated). In Experiments 3 and 4, fluency was manipulated via visual clarity and, again, fluency engendered more ingroup categorizations than did disfluency, for both racial ingroup and outgroup targets. Moreover, findings from Experiment 4 suggested that liking fully mediated the fluency–ingroup categorization relation. Implications of these findings for the literatures on fluency and intergroup relations are discussed.

Keywords

fluency, categorization, prejudice

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The human mind is exceptionally good at categorizing objects. With great ease, we can determine whether an animal is a dog or a cat, a piece of furniture is a chair or a couch, a piece of fabric is a towel or a tablecloth. This ability serves many useful functions (Kunda, 1999); most notably, once an object is placed in a category, we can infer its attributes and plot an appropriate course of action for dealing with it. Absent such categorization processes, our minds would become easily confused and overwhelmed (Macrae & Bodenhausen, 2000).

Unfortunately, though, some categorizations produce outcomes that are not so uniformly positive. Namely, the social-categorical distinction between "us" and "them" effortlessly gives rise to prejudicial feelings and discriminatory behavior (e.g., Hamilton & Trolier, 1986; Turner,

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Hogg, Oakes, Reicher, & Wetherell, 1987). Those categorized as ingroup members elicit much more favorable feelings, perceptions, and treatment than do outgroup members. For example, in the classic work of Tajfel and colleagues (e.g., Tajfel, Billig, Bundy, & Flament, 1971), those who were perceived as ingroup members on a trivial dimension were allocated more resources than were outgroup members. More recently, Levine et al. found that ingroup members were more likely recipients of help in emergency situations (Levine, Cassidy, Brazier, & Reicher, 2002). Ingroup members are even perceived as more apt to experience "uniquely human emotions," like guilt, shame, amazement, and hope, than are outgroup members, who are instead subjected to emotional "infrahumanization" (e.g., Paladino et al., 2002, p. 105). In fact, so ingrained is the preference for ingroup members that even ingroup-relevant pronouns like "we" can trigger feelings of positive affect (Perdue, Dovidio, Gurtman, & Tyler, 1990), familiarity (Housley, Claypool, Garcia-Marques, & Mackie, 2010), and similarity (Brewer & Gardner, 1996).

Noting the importance of ingroup–outgroup categorizations in the formation of prejudice and discrimination, many scholars have argued that the categorization process itself may be key to undermining or reversing group-based inequalities. One such approach is examined in crossed-categorization models (Deschamps & Doise, 1978; see Crisp & Hewstone, 1999, for a review). According to these approaches, social targets need not be considered ingroup or outgroup members solely on a single dimension, like gender (male/female). Rather, two (or more) dimensions can be made salient, such that a target is considered in one cell of a crossed-category matrix. If considering the categories of gender and age, for instance, a target could be seen as a young female, an old female, a young male, or an old male. If a perceiver is a young male, other young males are "double ingroup" members (i.e., in the ingroup on both relevant dimensions), old females are "double outgroup" members (i.e., in the outgroup on both dimensions), and young females and old males are "partial" ingroup members (i.e., in the ingroup on just one dimension; e.g., Crisp & Hewstone, 1999, p. 309). Numerous studies have shown that double ingroup members are viewed most favorably, double outgroup members are viewed least favorably, and partial ingroup members fall in the middle (see Crisp & Hewstone, 1999; Migdal, Hewstone, & Mullen, 1998; Urban & Miller, 1998, for narrative and meta-analytic evidence). Thus, from this perspective, any factor that makes a target seem more like an ingroup member should improve views of him or her.

Another approach that touts the benefits of utilizing categorization processes for the betterment of intergroup relations is the common ingroup identity model (see Gaertner & Dovidio, 2005, for a review). At its core, this approach suggests that recategorization could be an effective strategy for quelling intergroup bias. In recategorization, a perceiver alters his or her perception of a social target by moving a group boundary to be more inclusive. Though initially seen as "outside" the group periphery, once a new group boundary is established that encompasses the self and this other person, the target is now part of the ingroup. Thus, the establishment of this common, shared group identity moves the former outgroup member closer to the self, which should improve attitudes toward this individual.

In one study showing this possibility, two groups worked separately and with no knowledge of one another on a decision-making task in a lab (Gaertner, Mann, Murrell, & Dovidio, 1989). During this task, each established a group name and engaged in other identity-building practices. After completion, each group learned that they would carry out the decision-making task a second time with members of another group. At this point, those in the "one-group" (recategorization) condition met the members of the other group and, among other manipulations, were asked to establish a new group name and to sit in an intermingled fashion at a table. Those in the "two-groups" (nonrecategorization) condition kept their original group names and were seated separately from each other at a table.

After working on the task, participants reported their impressions of all group members. Results revealed that though ingroup members were liked better than outgroup members, the magnitude of this effect was much smaller in the one-group (recategorization) condition. Also, this effect resulted from changes in perceptions of outgroup members. That is, original ingroup members were evaluated equally in the one- and two-group conditions, but (former) outgroup members were judged more favorably in the one-group condition than in the two-groups condition.[1]

These and similar other findings (e.g., Dovidio, Gaertner, Isen, & Lowrance, 1995) suggest that if we recategorize a social target as being an ingroup member our attitudes toward that person improve substantially and, indeed, he or she may now be afforded all the typical ingroup advantages (Brewer, 1979, 1999). Therefore, factors that encourage us to view outgroup others as ingroup members could ultimately be used to better intergroup relations. In this work, we will investigate one such factor—fluency.

Fluency is the ease with which information can be identified and/or processed (Jacoby & Dallas, 1981; see Alter & Oppenheimer, 2009, for a review). Many factors can augment fluency, including previous exposure, visual clarity, contour priming, high figure–ground contrast, and long presentation durations, among others. These fluency inductions have been shown to elicit consistent positive effects on our evaluations of stimuli on a host of dimensions (see Alter & Oppenheimer, 2009; Bornstein, 1989; Reber, Schwarz, & Winkielman, 2004, for reviews). For example, easily processed stimuli are perceived as more likable (e.g., Reber, Winkielman, & Schwarz, 1998), valid (e.g., Arkes, Hackett, & Boehm, 1989; Reber & Schwarz, 1999), famous (Jacoby, Kelley, Brown, & Jasechko, 1989), attractive (e.g., Moreland & Zajonc, 1982; Reber et al., 1998; Rhodes, Proffitt, Grady, & Sumich, 1998), happy (Claypool, Hugenberg, Housley, & Mackie, 2007), and approachable (Jones, Young & Claypool, 2011) than their less easily processed counterparts.

Moreover, fluency induced via repeated exposure has been shown to increase perceptions of similarity (Moreland & Beach, 1992; Moreland & Zajonc, 1982). For example, in one study (Moreland & Zajonc, 1982, Experiment 1), perceivers judged a target's interests as more similar to the perceiver's own interests as repetition frequency increased. In another study (Moreland & Beach, 1992), participants rated female confederates, who were posing as their classmates, as more similar to the self (e.g., in terms of personality traits and future plans) as the number of classes they attended increased.

Ingroup members are similar to the self on at least one dimension (shared group membership) and are viewed quite favorably. Because fluency has been shown to increase both perceptions of similarity and positivity, it stands to reason that it might also increase perceptions that another is an ingroup member. Thus, on the basis of these findings, we hypothesized that fluently processed targets should more readily be viewed as ingroup members than would disfluently processed ones. That is, fluency should "ease" others into the ingroup.

Of course in some cases, visual cues to ingroup membership are obvious, making categorization simple and likely unaffected by factors like fluency. However, many instances of social categorization are not so straightforward. Some very meaningful social categories can be masked, or are at least not readily observable from visual cues (sexual orientation, nationality, school, and political affiliation, etc.). Moreover, some visually discernible categories, like race, are sometimes unclear, because characteristics such as skin tone are not always diagnostic indicators (Hugenberg & Bodenhausen, 2004). In such ambiguous categorization cases, we hypothesized that fluency can direct who is labeled as "one of us" and who is not.

Overview and hypotheses

In four experiments we attempted to show that fluency facilitates ingroup categorizations. We first used repetition-induced fluency in

Experiment 1 to see if it could encourage ingroup inclusion among otherwise-similar stimuli—racial ingroup members. Then, in Experiment 2, we pushed the boundaries of this finding to see if repetition-induced fluency facilitates ingroup perceptions even in the face of another obvious category distinction—racial outgroup membership. Finally, because repeated interaction might be a proxy for ingroup membership, we sought to confirm the role of fluency in our effects by manipulating it in another way, visual clarity, in Experiments 3 and 4. In each case, we hypothesized that fluently processed targets would be categorized as ingroup members more frequently than would disfluently processed ones. We were especially hopeful that these effects would occur even for racial outgroup members. Because of the profound and long-standing history of race-based discrimination in the United States and its unfortunate present-day continuation, we focused on the optimistic possibility that fluency might make racial others seem more "like us."

Experiment 1

The objective of Experiment 1 was to examine whether repetition-induced fluency (e.g., Jacoby & Dallas, 1981) could guide ingroup categorization decisions. In each of three replications, we exposed Miami University students to a series of faces which varied in repetition-induced fluency and asked them to make decisions about the targets' school group membership. We began by examining targets that were already fairly similar (visually) to the perceivers. Because Miami University's undergraduate population is overwhelmingly White and of traditional college age, the targets were as well. Our hypothesis was that the fluent (repeated) targets would be categorized as fellow Miami students (ingroup members) more frequently than would the disfluent (novel) targets.

In each replication, we used roughly the same procedures, but did make slight methodological changes to bolster confidence in the effect, rule out alternative explanations, and generalize the effect across measurement and stimulus contexts. For brevity, we present a single method and results section.

Participants

Fifty-seven (38 female; Replication A), 76 (36 female; Replication B), and 41 (23 female; Replication C) White Miami University introductory psychology students participated in exchange for partial course credit.

Materials

For Replications A and C, materials consisted of 36 color photographs of White, college-aged males, depicted from roughly the chest up, with neutral facial expressions (photos courtesy of Computer Vision Laboratory [CVL] Face Data Base, University of Ljubljana, Slovenia, http://www.lrv.fri.uni-lj.si/facedb.html). For Replication B, the 36 neutral-expression photographs came from the Center for Vital Longevity Face Database (Minear & Park, 2004). In all cases, half (18) of the presented photos were arbitrarily assigned to Set 1 and half (18) to Set 2. The photographs were shown on PC monitors, and each appeared as a 5 × 7 in. (12.7 × 17.78 cm) area centered on the screen.

Procedure

Participants recruited for an experiment on "perceptions of faces" took seats at individual desks and were instructed to keep their eyes fixed on their computer screens to view a series of photographs, an exercise intended to simulate the real-life situation of encountering multiple faces in a crowd. At this point, participants were shown the 18 photos from Set 1 or 2. Photos were displayed one at a time, each for 1 second, and were presented in a different random order for each participant.

After viewing the photos, participants completed an 8–9 minute filler task that involved identifying each of the 50 states on a USA map (in Replications A and C) or reporting the capital

of each USA state (in Replication B). At the conclusion of the filler task, participants were directed to judge whether a set of old (fluent) and new (disfluent) faces were ingroup members. The nature of this task varied across replications (described in what follows), though in all instances, participants responded to 36 photos, half (18) of which had been presented earlier and half (18) of which had not. The set of photos repeated was counterbalanced on a between-subjects basis, such that across participants, each photo had an equal chance of appearing as a fluent (repeated) photo and as a disfluent (novel) photo.

In Replication A, participants were told that they would be viewing a series of faces and that some would be of Miami students. Each target face was accompanied by the question, "Do you think this person is a Miami Student?" Participants responded by clicking a "yes" or a "no" option on screen.

In Replication B, participants were told that some of the photographed individuals were of Miami University students and some were of Marshall University students. Participants were shown faces one at a time and categorized each as either a Miami student or a Marshall student. We felt it prudent to assess ingroup membership in this manner because some researchers have claimed that repetition-induced fluency can increase the frequency with which any plausible judgment is made (Mandler, Nakamura, & van Zandt, 1987). Extrapolating from this reasoning, one might argue that our participants might be likely to overuse whatever categorization we provided in judging the repeated compared to the nonrepeated faces. Asking participants to select between two presented categories eliminates this issue.

In Replication C, participants were instructed that they would be viewing a series of individuals, some of whom were allegedly *incoming* Miami students. Participants were told that none of the photographed individuals currently live near the university, had lived near campus previously, nor had visited the campus, but that some had ostensibly accepted admission to attend Miami University beginning in the next academic year. For each photo, participants responded to the query, "Do you think this person is an incoming Miami Student?" to which they responded with a "yes" or "no" answer. We felt it important to assess ingroup membership in this manner because encountering a previously seen face may trigger a diffuse sense of familiarity, perhaps leading participants to conclude that this person had been seen before in class or walking across campus. Thus, in this context, participants might have believed that a feeling of familiarity was a valid and diagnostic indicator of ingroup status. Though this process itself is quite interesting, we wanted to determine if repetition-induced fluency facilitated ingroup categorization even when any experienced familiarity could not be a logical foundation for such a decision.

In all replications, after rendering their ingroup decisions, participants completed demographic questions, were debriefed, thanked for their participation, and dismissed.

Results and discussion

We hypothesized that fluent, repeated faces would be categorized as ingroup members more often than disfluent, novel ones. We totaled the number of times (out of 18) each participant categorized a photo as a Miami student (i.e., an ingroup member, or an incoming one, in Replication C) and subjected this variable to a 2 (face status: fluent vs. disfluent) × 2 (set repeated: 1 vs. 2) mixed-model ANOVA with repeated measures on the first factor. In each replication, our hypothesis was confirmed; repeated faces were categorized as Miami students more often than were novel faces. Table 1 depicts all descriptive and inferential statistics.[2,3]

We also conducted tests to determine if fluent or disfluent faces were categorized as ingroup members at rates more than would be expected if participants were merely responding randomly. In Replication A ($t(56) = 2.83$, $p = 0.01$), Replication B ($t(75) = 3.87$, $p < .001$), and marginally in Replication C ($t(40) = 1.78$, $p = .08$), the fluent targets were indeed categorized as ingroup members (or incoming ingroup members) at rates above chance.

Table 1. Mean number of old (fluent) and new (disfluent) photos categorized as ingroup members (Replications A, B) or incoming ingroup members (Replication C).

Replication	Old (fluent)	New (disfluent)	Inferential statistics
A	10.12 (2.95)	9.03 (3.03)	$F(1, 55) = 4.71, p = 0.03$
B	9.98 (2.32)	7.98 (2.81)	$F(1, 74) = 18.81, p < 0.001$
C	9.75 (2.72)	8.37 (2.18)	$F(1, 39) = 6.06, p = 0.02$

Note: Standard deviations appear in parentheses. The *F*-values are for the main effects of face status.

These results are impressive given the so-called ingroup overexclusion effect, which shows that perceivers tend to be quite hesitant to label individuals as ingroup members (e.g., Leyens & Yzerbyt, 1992; Yzerbyt, Leyens, & Bellour, 1995). When presented with a set of targets, participants often categorize a majority of them into the *outgroup* (e.g., Castano, Yzerbyt, Bourguignon, & Seron, 2002; Leyens & Yzerbyt, 1992). This tendency to exclude targets from the ingroup is theorized to occur as a way to protect the group's integrity, by not allowing into the ingroup potentially unscrupulous members who might sully its image (e.g., Castano et al., 2002; Leyens & Yzerbyt, 1992). In our results, the effect of fluency was apparently strong enough to counter this tendency.

In the disfluent conditions, participants were noticeably less inclusive, as responses did not differ from chance in Replication A ($p = .99$), and were consistent with the ingroup overexclusion effect (e.g., Leyens & Yzerbyt, 1992), in which the majority of targets were categorized as *outgroup* members in Replications B and C ($t(75) = -3.43$, $p = .001$, $t(40) = -1.87$, $p = .07$, respectively).

Thus, repetition-induced fluency led participants to more readily categorize targets in the ingroup. This effect emerged not only when they made yes/no decisions about ingroup members (Replication A), but also when they made an ingroup/outgroup binary judgment (Replication B). If fluency had an impact on judgments about *any* dimension (see Mandler et al., 1987), we would have expected equal numbers of repeated photos to be categorized as ingroup and outgroup members. Instead, fluency facilitated only ingroup categorizations. Moreover, fluency increased ingroup categorizations even when participants were explicitly told that the faces were of individuals they had never seen before outside of the experimental context (in Replication C), and thus when repetition-induced familiarity could not provide a logical cue to group membership.

Overall, the findings from Experiment 1 clearly established that the fluent processing of a target increases the probability that he or she will be categorized as an ingroup member. This effect replicated across different sets of faces and occurred despite the established tendency of people to exclude others from the ingroup. Given all the privileges afforded to ingroup members, it appears that fluent processing may engender perceivers to confer these benefits on others.

Experiment 2

In Experiment 2, we explored whether the effect occurred even for targets possessing a visually salient and socially important outgroup marker—racial outgroup membership. If repetition-induced fluency can increase the perception that a racial outgroup member is part of one's ingroup on some other dimension, then this would suggest that fluency can produce positive intergroup outcomes. Thus, our aim in Experiment 2 was to investigate the possibility that fluency could increase ingroup categorizations for both same- and other-race targets.

Participants

Thirty-one (23 female) White introductory psychology students at Miami University participated in exchange for partial course credit.

Materials

This study used 24 photos of Black and 24 photos of White college-aged male students, all displaying neutral facial expressions. Each individual was pictured from roughly the neck up against a neutral background. These photos were obtained from websites of men's Division III collegiate football and basketball programs from geographically distant states, which we assumed would depict individuals unfamiliar to our student participants. Photos were resized to make them of uniform dimensions. Half (12) of the White and half (12) of the Black faces were randomly assigned to Set 1, and the other half were assigned to Set 2.

Procedure

Participants were recruited for an experiment on "perceptions of faces" and were seated at individual desks with PCs. At this point, participants were shown the 24 photos (12 White, 12 Black) from either Set 1 or Set 2. Photos were displayed one at a time, each for 1 second, and were presented in a different random order for each participant.

Participants then completed three different filler tasks, each taking roughly 8–9 minutes. The first two tasks asked participants to first identify the 50 U.S. states from a map and then to name all U.S. capitals. The third asked them to unscramble 50 words, each of which was a U.S. state name.

At the conclusion of these filler tasks, participants viewed several pairs of faces. They were told that in each pair, one person was a Miami student, and that their task was to guess which one. Participants were then shown, one at a time, 24 same-race pairs of faces (12 White pairs, 12 Black pairs). In each pair, one face was repeated (i.e., had been shown at the beginning of the experiment) and one was novel. Each pair of faces was accompanied by the question, "Which of these people is the Miami Student?" Participants responded by pressing one key to select the face on the left side of the screen or a different key to select the face on the right. The set of photos that was repeated and the side (left, right) on which the repeated face appeared were both counterbalanced on a between-subjects basis, such that across participants, each photo had an equal chance of appearing as a repeated photo and as a novel photo on either the right or left side of the screen. After rendering their decisions, participants completed demographic questions, were debriefed, thanked for their participation, and dismissed.

Results and discussion

The dependent variable was the proportion of pairs in which the fluent (repeated) photo was selected as the ingroup member. Analyses revealed that the proportion of White pairs and the proportion of Black pairs in which the repeated photo was selected as the ingroup member were the same, 0.57, and that both differed from chance (0.50), $t(30) = 2.58$, $p = .02$ (White pairs) and $t(30) = 2.67$, $p = .01$ (Black pairs). Obviously, the mean proportions of repeated faces selected as ingroup members did not differ for White and Black pairs. Moreover, these proportions were unaffected by the counterbalancing conditions. Thus, replicating the findings from Experiment 1, fluent (repeated) faces were more likely to be categorized as ingroup members than were disfluent (novel) faces and, more importantly, this effect occurred equally strongly when the targets were from the perceivers' own racial group or from a different racial group.

Experiment 3

We have interpreted the findings of Experiments 1 and 2 as indicating that fluency encourages perceptions of ingroup membership. However, all these studies used the same fluency manipulation—repeated exposure. Since repeated exposure also imbues the repeated stimulus with ambient familiarity, it is possible that it is this familiarity, a characteristic logically associated with ingroup membership, that gives rise to our observed effects. Though this itself would be an

interesting effect, our aim was to show that fluency, not familiarity, facilitates ingroup categorization. To better demonstrate that our effects were due to fluency of processing and not repetition-elicited familiarity, we attempted to replicate the facilitation of ingroup categorization when fluency was induced in a way completely unrelated to group membership. Thus in Experiment 3, we exposed participants to images of both Black and White targets, some of which were clear (inducing fluency) and some of which were slightly blurry (inducing disfluency). We again hypothesized that the fluent targets would be categorized as ingroup members more frequently than would the disfluent ones.

In Experiment 3 we also returned to the response format used in Experiment 1, wherein participants made ingroup categorization decisions about targets one at a time. In Experiment 2, participants were faced with same-race pairs of stimuli and were told that one was a Miami student. This method ensured that an equal number of Black and White targets would be classified as ingroup members. Though it was encouraging for our hypothesis that fluency facilitated the selection of targets as ingroup members for both Blacks and Whites, we hoped that fluency would have a similar effect in a context where participants were under no obligation to categorize any racial outgroup members as fellow Miami students. In fact, given that the vast majority of Miami undergraduates are White, we anticipated that more White targets would be categorized as Miami students than would Black targets. However, we nevertheless anticipated that fluency would *increase* the number of Blacks categorized as ingroup members.

Participants

Twenty-one (16 female) White introductory psychology students at Miami University participated in exchange for partial course credit.

Materials

To improve the generalizability of our findings, we used faces of females rather than males in this experiment. Specifically, materials consisted of 20 photographs of college-aged White females and 20 photographs of college-aged Black females, depicted from roughly the chest up, with neutral facial expressions (from the Center for Vital Longevity Face Database; Minear & Park, 2004). Ten of the White and 10 of the Black photos were arbitrarily assigned to Set 1 and the rest to Set 2. There were two versions of each photo, one fluent and one disfluent. The fluent one was the original, unaltered version of the photo from the database, which was clear and in high resolution. The disfluent version was created by using Photoshop software to add a Gaussian blur of 3.5 pixels as well as 3% monochromatic noise to the picture.

Procedure

Participants arrived at the lab for an experiment on face processing and were told that they would be seeing several faces, one at a time, and that some were of Miami students. Their task was simply to categorize each as a Miami student or a non-Miami student. On each trial, a photo of a White or a Black female appeared below the question, "Do you think this person is a Miami Student?" Participants responded by selecting the "yes" or "no" option on screen.

In total, participants completed 40 trials, 10 each with Black-fluent, Black-disfluent, White-fluent, and White-disfluent faces. The order in which the faces appeared was random and different for each participant. The set of photos that was blurred was counterbalanced on a between-subjects basis, such that across participants, each photo had an equal chance of appearing as a clear and as a blurry photo. After rendering all their decisions, participants completed demographic questions, were debriefed, thanked for their participation, and dismissed.

Results and discussion

We subjected the number of times (out of 10) each participant categorized a photo as a Miami student to a 2 (face status: fluent vs. disfluent) × 2 (target race: Black vs. White) × 2 (set blurred: 1

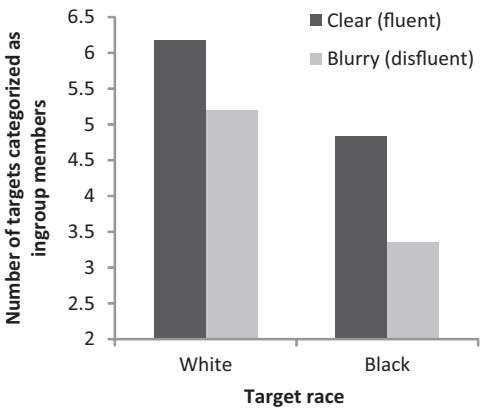

Figure 1. Number of targets categorized as ingroup members as a function of target race and face status.

vs. 2) mixed-model ANOVA. As shown in Figure 1, this analysis yielded two main effects. First, as anticipated, more White targets were categorized as Miami students (M = 5.68, SD = 2.08) than were Black targets (M = 4.10, SD = 1.32), $F(1, 19) = 8.04$, $p = 0.01$. Given that the vast majority of Miami students are White, this effect is not surprising and likely reflects participants' accurate use of base rates. Second, and of more direct relevance to our hypothesis, fluent (clear) faces were categorized as Miami students more often (M = 5.50, SD = 1.62) than were disfluent (blurry) ones (M = 4.28, SD = 1.24), $F(1, 19) = 9.35$, $p = 0.006$. Importantly, this fluency effect was not qualified by target race, $F(1, 19) = 1.12$, $p = 0.30$, illustrating that the ability of fluency to enhance ingroup categorizations was equally strong for both racial ingroup and outgroup targets. Finally, there was an unexpected three-way interaction between fluency, target race, and the set of photos that was made fluent or disfluent, $F(1, 19) = 6.96$, $p = 0.02$. In both target race conditions, fluent faces were categorized as ingroup members more frequently than were disfluent ones, but the magnitude of this effect was stronger for one arbitrarily chosen set of stimulus photos than for the other.

Follow-up tests revealed that White fluent targets were categorized in the ingroup at rates above chance, $t(20) = 2.41$, $p = .03$; whereas, the disfluent White targets were categorized in the ingroup at chance levels, $t(20) = .25$, $p = .80$. For Black targets, a different pattern emerged. Disfluent Black targets were categorized as ingroup members at rates *below* chance, $t(20) = -5.32$, $p < .001$, whereas fluent Black targets were seen as ingroup members at chance levels, $t(20) = -.48$, $p = .64$. Thus, though Black fluent targets were not seen as ingroup members as frequently as White fluent targets, they were seen as more likely ingroup members than were disfluent Black targets. In fact, Black fluent targets were categorized in the ingroup at equal levels to White disfluent targets, $t(20) = -.41$, $p = .68$. Given the small number of Black students in the Miami undergraduate student body, this is an impressive finding.

These findings replicate and extend those of Experiments 1 and 2. Like Experiment 2, these results show that fluency facilitates ingroup categorization judgments for targets of both racial ingroups and outgroups. The fact that fluency increased the likelihood that Blacks were seen as ingroup members, even when participants clearly recognized that being Black made ingroup membership significantly less likely, demonstrates the power of the fluency effect. Importantly, we found fluency to enhance ingroup categorization even when fluency was induced by visual clarity, a manipulation that is irrelevant to group membership. These results thus further bolster our contention that fluency encourages perceptions that others are one of us.

Experiment 4

Across the previously described experiments, we have amassed consistent evidence that fluency facilitates ingroup categorization judgments. In Experiment 4, we wished to examine a possible mechanism responsible for the effect—liking. Numerous studies have illustrated that fluently processed stimuli are judged quite favorably (Reber et al., 2004; Reber et al., 1998), and we reasoned that this liking might encourage ingroup categorization. In Experiment 4, we replicated the methodology used in Experiment 3 and added a measure of liking. We hypothesized that

fluently processed targets would be viewed as both more likable and as more probable ingroup members than their less fluently processed counterparts. We further hypothesized that liking would mediate the fluency–ingroup categorization relation.

Participants

Thirty-four (20 female[4]) White introductory psychology students at Miami University participated in exchange for partial course credit.

Materials

We used the same White and Black female photos from Experiment 3 (Minear & Park, 2004). As in that experiment, there were two versions of each photo, one fluent and one disfluent, which were generated in the same manner previously described.

Procedure

Upon arrival at the lab, participants were informed that the study involved "face processing and judgment." Participants were then shown several photos and, for each one, were asked, "How likeable is this person?" Participants recorded their response on a 1 (*Not at all likeable*) to 7 (*Very likeable*) scale. In total, participants rendered 40 liking judgments, one each in response to 10 White-fluent, 10 White-disfluent, 10 Black-fluent, and 10 Black-disfluent faces. The order in which the faces appeared was random and different for each participant.

Next, participants were presented all 40 photos again (in a new random order). This time, however, participants rendered ingroup categorization judgments. Namely, for each photo, participants were asked, "Do you think this person is a Miami Student?" The set of photos that was blurred (in both the liking-rating and categorization-rendering phases) was counterbalanced, such that across participants, each photo had an equal chance of appearing as a clear and as a blurry photo. After rendering all decisions, participants completed demographic questions, were debriefed, thanked for their participation, and dismissed.

Results and discussion

We first subjected the number of times (out of 10) each participant categorized a photo as a Miami student to a 2 (face status: fluent vs. disfluent) × 2 (target race: Black vs. White) × 2 (set blurred: 1 vs. 2) mixed-model ANOVA. Replicating the findings from Experiment 3, this analysis yielded two main effects. First, more White (M = 5.13, SD = 1.84) than Black (M = 4.05, SD = 1.89) targets were categorized as Miami students, $F(1, 32) = 13.76$, $p = 0.001$. Second, and more importantly, more fluent (M = 5.10, SD = 2.03) than disfluent (M = 4.08, SD = 1.84) faces were categorized as Miami students, $F(1, 32) = 8.72$, $p = 0.006$. As in Experiment 3, this fluency effect was not significantly qualified by target race, $F(1, 32) = 2.45$, $p = 0.13$. For Black targets, more fluent (M = 4.74, SD = 2.43) than disfluent (M = 3.35, SD = 2.11) photos were categorized as ingroup members, $F(1, 32) = 10.99$, $p = 0.002$; for White targets, the same trend was true (fluent: M = 5.45, SD = 2.29; disfluent: M = 4.81, SD = 2.15), though this simple effect was not quite significant, $F(1, 32) = 2.28$, $p = 0.14$.

We next examined fluency's impact on liking. Liking ratings for the targets were averaged and subjected to the same 2 (face status: fluent vs. disfluent) × 2 (target race: Black vs. White) × 2 (set blurred: 1 vs. 2) mixed-model ANOVA. Confirming expectations and replicating previous work (e.g., Reber et al., 1998), fluent targets were judged as more likeable (M = 3.89, SD = 0.84) than were disfluent ones (M = 3.70, SD = .82), $F(1, 32) = 13.43$, $p = 0.001$. Unexpectedly, there was also a three-way interaction involving fluency, target race, and the set of photos that was made fluent or disfluent, $F(1, 32) = 5.73$, $p = 0.02$. In both target race conditions, fluent faces were liked more than disfluent ones, but the magnitude of this effect

was larger for one arbitrarily chosen set of stimulus photos than for the other. No other significant effects emerged.

In a final set of analyses, we examined whether liking mediated the relation between fluency and ingroup categorizations. Because target race did not significantly moderate the impact of fluency on liking or ingroup categorizations, we created composite variables that collapsed across this factor. First, we averaged the number of fluent and the number of disfluent photos (whether Black or White) that were categorized as ingroup members. We similarly created variables representing the average liking ratings for fluent and disfluent targets.

Next, because the independent variable in this experiment was manipulated within-subjects, we followed the guidelines of Judd, Kenny, and McClelland (2001) for conducting mediational analyses with these designs. As recommended, we first demonstrated that the independent variable (fluency) had a significant impact on both the mediator and outcome variables. Fluent targets were categorized as ingroup members more frequently ($M = 5.06$) than were disfluent ones ($M = 4.07$), $t(33) = 2.82$, $p = .008$, and fluent targets were also judged as more likeable ($M = 3.87$) than were disfluent targets ($M = 3.68$), $t(33) = 3.51$, $p = .001$. Second, a difference score between the fluent and disfluent means was created, separately, for the liking and ingroup categorization judgments ($Liking_{Diff} = Liking_{Fluent} - Liking_{Disfluent}$ and $Categorization_{Diff} = Categorization_{Fluent} - Categorization_{Disfluent}$). Per Judd and colleagues' (2001) suggestion, $Categorization_{Diff}$ was then regressed simultaneously on $Liking_{Diff}$ and $Liking_{sum}$ (with the latter centered, and created by adding $Liking_{Fluent}$ and $Liking_{Disfluent}$). Full mediation would be indicated if $Liking_{Diff}$ was a significant predictor, which it was ($\beta = .47$, $p = .005$), and the intercept of the model was nonsignificant, which also was true ($B = .44$, $p = .259$).

Because it seemed plausible that fluency could be driving ingroup categorizations which, in turn, might enhance liking (i.e., we could have reverse mediation), the same regression analysis was performed again, this time regressing $Liking_{Diff}$ simultaneously on $Categorization_{Diff}$ and $Categorization_{Sum}$ (with the latter centered, and created by adding $Categorization_{Fluent}$ and $Categorization_{Disfluent}$). In this regression, $Categorization_{Diff}$ was a significant predictor ($\beta = .46$, $p = .006$), but the intercept of the model was also significant ($B = .13$, $p = .03$). This pattern indicates that ingroup categorization serves as a partial mediator of the fluency–liking relation. Thus, though both mediational models had some support, the evidence was most consistent with the one in which the impact of fluency on ingroup categorizations was mediated by liking.

General discussion

Ingroup membership confers many benefits, and thus identifying the factors that contribute to ingroup categorization decisions is crucial. Consistent with the notion that categorization processes can be influenced by both motivational and cognitive factors (e.g., Hugenberg & Bodenhausen, 2004), the results reported here suggest that fluency can shape who we label as "one of us."

These four experiments provided convergent evidence that fluently processed individuals are categorized as ingroup members more frequently than are disfluently processed ones. This effect was found with both racial ingroup and outgroup members and when fluency was instantiated by repetition or by visual clarity. Fluently processed others were also judged as more likeable than their disfluent counterparts, and analyses suggested that liking may mediate the impact of fluency on ingroup categorization decisions.

These findings connect with and extend related research in the field of fluency. Though no work has examined the ability of fluent processing to influence ingroup categorization decisions, some studies have examined the impact of repeated exposure on reactions to outgroup members (see Bornstein, 1993, for a review). For example, Cantor (1972) found that White children rated previously exposed Black children's faces more favorably than they did novel Black faces. Additionally, exposure to racial outgroup

faces improves attitudes toward previously unseen faces of that same race (Zebrowitz, White, & Wieneke, 2008). Because repeated exposure to a stimulus eases processing of that stimulus or a structurally similar one when encountered later (e.g., Jacoby, Toth, Lindsay, & Debner, 1992; Reber et al., 1998), these findings suggest that fluency may improve intergroup attitudes. Our findings are consistent with this prior work, but are also unique in showing that fluent, easy processing elicits perceptions that others belong in our groups.

Our work also complements that of Rubin, Paolini, and Crisp (2010), who examined the role of fluency in shaping attitudes toward migrants. Participants in one study were asked to imagine two 20-person minimal groups. They further imagined some individuals "migrating" to the other group and some remaining with their original group. Participants later judged the "migrant" and "nonmigrant" groups on a series of valenced traits and reported how easy (vs. difficult) it was to think about them (a subjective index of fluency). Results indicated that "migrants" were perceived more negatively than nonmigrants and that this effect occurred, in part, because "migrants" were more difficult to think about. Our work extends these findings by showing that subtle manipulations of fluency can causally result in more positive intergroup attitudes and categorizations.

Moreover, our work extends research examining fluency's impact on other categorization judgments. For example, Oppenheimer and Frank (2008) exposed participants to several exemplars (e.g., "robin" and "ostrich," for the category "bird") and asked them to rate how "typical" each was of the category. Those printed in an easy-to-read, fluent font were judged as more typical of their category than were those printed in a difficult-to-read, disfluent font. Thus, exemplars known to belong in a nonsocial category seem like better, more typical members if made fluent. Our work extends this by showing that social targets, whose objective membership in a valued ingroup is unknown, are more readily categorized in that group when fluent.

In addition to enriching the fluency literature, this work meaningfully extends the intergroup relations literature. According to the common ingroup identity model, once another person is categorized as part of the ingroup, this person becomes more likely to be viewed positively and is more likely to be afforded all the other benefits of ingroup favoritism (e.g., Gaertner & Dovidio, 2005). Thus, the finding that fluency encourages perceivers to see others as "one of us" may suggest that fluency manipulations could be used as part of intervention efforts to better intergroup interactions. Indeed, future work should replicate our findings and add measures that tap prejudicial feelings and/or discriminatory actions toward the targets to establish whether fluency manipulations can reduce these deleterious outcomes.

Of course, the efficacy of a fluency-based intergroup intervention presupposes that fluency can impact group attitudes and judgments in realistic, dynamic intergroup settings. Our work used stationary targets in a nonthreatening, controlled atmosphere. It remains to be seen whether subtle fluency inductions can positively shape intergroup liking or ingroup categorization decisions in more real-world interactions. Though the literature examining fluency's impact on social perception tends to use methods similar to ours, two studies have examined more ecologically valid social targets, and their findings are encouraging.

Moreland and Beach (1992), whose work was described briefly in the first part of this paper, had female confederates visit a real classroom either 0, 5, 10, or 15 times over the course of the semester. These confederates were trained to avoid talking with other students to create a real-world analogue to a mere-exposure manipulation. Near the end of the term, students in the class rated photos of these confederates. Results showed that, as exposure frequency increased, so too did attitudes on a number of dimensions. In another experiment (Bornstein, Leone, & Galley, 1987, Experiment 3), participants engaged in a multitrial decision-making task with two other "participants" (actually confederates), one of which had been subliminally shown to the participants earlier. On several trials, the two confederates disagreed with each other, forcing the participant to "take a side." Results indicated

participants agreed with the previously exposed confederate more than the novel one. These two experiments suggest mere exposure (itself a fluency induction) can impact real-world perceptions of targets and direct social decision making. These findings give us optimism that fluency manipulations could be effective in shaping intergroup perceptions in ecologically valid settings. Future work should attempt to replicate our findings in nonlaboratory contexts and/or with more dynamic social targets to better identify the boundaries or (optimistically) the reach of these manipulations.

Finally, future work might fruitfully examine the processes that give rise to the fluency–ingroup categorization relation. We found evidence that fluency triggers liking which, in turn, facilitates ingroup categorizations. In this model, liking fully mediated the fluency–categorization relation. An alternative model, wherein fluency elicits ingroup categorizations which subsequently improve liking, also had some support. In this case, however, ingroup categorizations only partially mediated the fluency–liking relation. Thus, we find the former model more compelling. However, discovery of one mediator does not mean that others are not viable. Similarity, for example, is an additional mediational candidate. Moreland and colleagues (Moreland & Beach, 1992; Moreland & Zajonc, 1982) have demonstrated that similarity increases following previous exposure. Because ingroup members are similar to each other in at least one way, it could be that fluency increases perceptions of similarity, which increase perceptions that targets are ingroup members. Follow-up work should investigate this possibility.

Conclusion

This research showed that, under a variety of circumstances, easy, fluent processing facilitated the categorization of others as ingroup members. Moreover, this finding occurred for both racial ingroup and outgroup individuals. Given the positive benefits conferred by ingroup categorization, it is surprising how little work has addressed the factors responsible for why some individuals are categorized as part of the ingroup and others are not. Our work helps address this question and suggests that others can be "eased into" the ingroup.

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Notes

1. There was a decategorization ("separate individuals") condition in this experiment as well, but it is not discussed here for the sake of brevity.
2. Sex of participant was initially included in the full mixed-model ANOVA of Replication A, and results indicated a main effect of sex such that, overall, women labeled fewer targets as ingroup members than did men. Importantly, sex of participant did not interact with status of face (p = .68). Including sex of participant in the analyses in Replications B and C and in Experiments 2 and 3 resulted in no main effects of sex, nor any significant interactions involving this factor.
3. In Replication B, in addition to the main effect of face status, there was an interaction between status and the set-repeated condition, $F(1, 74) = 12.92$, $p = 0.001$, which simply indicated that the effect was larger in one counterbalance condition than the other.
4. Sex of participant was initially included in the full mixed-model ANOVAs of Experiment 4. No sex effects were observed in the ANOVA examining liking. For the ingroup categorization ANOVA, a Race of Target × Sex of Participant interaction emerged, $F(1, 30) = 8.98$, $p = .01$. The pattern showed that both male and female participants judged White targets as ingroup members more frequently than Black targets, but this effect was more pronounced for females. This sex effect collapses across the fluency manipulation and, indeed, sex did not qualify the theoretically meaningful fluency main effect reported in the main text ($p = .82$).

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