On the Psychological Function of Flags and Logos: Group Identity Symbols Increase Perceived Entitativity

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Group identity symbols such as flags and logos have been widely used across time and cultures, yet researchers know very little about the psychological functions that such symbols can serve. The present research tested the hypotheses that (a) simply having a symbol leads collections of individuals to seem more like real, unified groups, (b) this increased psychological realness leads groups to seem more threatening and effective to others, and (c) group members therefore strategically emphasize symbols when they want their group to appear unified and intimidating. In Studies 1a–1c, participants perceived various task groups as more entitative when they happened to have a symbol. In Study 2, symbols not only helped groups make up for lacking a physical characteristic associated with entitativity (physical similarity), but also led groups to seem more threatening. Study 3 examined the processes underlying this effect and found that group symbols increase entitativity by increasing perceived cohesiveness. Study 4 extended our results to show that symbols not only shape the impressions people form of novel groups, but also change people's existing impressions of more familiar and real-world social groups, making them seem more entitative and competent but also less warm. Finally, Studies 5a and 5b further expand our understanding of the psychological function of symbols by showing that group members strategically display symbols when they are motivated to convey an impression of their group as unified and threatening (vs. inclusive and cooperative). We discuss implications for understanding how group members navigate their social identities.

Keywords: entitativity, identity symbols, cohesiveness, group perception

Symbols of group identity such as flags and emblems have been widely used throughout history and across cultures. Indeed, it often seems that most groups have some sort of symbol, or socially shared marker of the group's identity, attributes, values, and history (see Geertz, 1973; Mach, 1993): Sports teams have mascots; organizations have logos; nations have flags, anthems, and monuments. Groups also seem to have a general sense that such symbols are important: For example, one of South Sudan's first actions upon becoming its own country following the Second Sudanese Civil War was to create a new flag (*Encyclopedia Britannica*; Flag of South Sudan, 2014). However, despite the ubiquity of group symbols and the intuitive importance that groups place on them, little research has focused on the psychological meaning of these material trappings of group identity. Given that symbols generally appear to be an important element of group experience, it seems critical to identify how and why symbols shape people's perception, attitudes, and behavior to fully understand how group members manage their social identities.

Previous research has primarily focused on investigating the effects of specific group symbols. For example, exposure to one's national flag seems to prime a variety of attitudes, depending upon the specific concepts that a given person associates with the flag (e.g., Becker et al., 2012; Butz, Plant, & Doerr, 2007; Sibley, Hoverd, & Duckitt, 2011). Specific symbols can affect person perception as well: In one study, mere proximity to group symbols such as a Christian cross affected inferences about a target person's traits, even when evaluators were explicitly told that the pairing of a given person with a given symbol was entirely random (Carlston & Mae, 2007). Thus, the particular content linked to certain symbols may not only affect people's own attitudes and behaviors, but also shape their impressions of other individuals.

Although this research on specific symbols has shed light on how the particular content associated with a symbol can affect specific attitudes and inferences, research has not yet examined

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This research was partially supported by National Science Foundation grant 1226389 to AL. We are grateful to Paul Eastwick, Cheryl Kaiser, and a trio of excellent reviewers for very helpful feedback on previous versions of this article, to Jeff Sherman, Cindy Pickett, and the Attitudes and Social Cognition Lab for helpful suggestions throughout the research process, and to Mojan Azarmi, Nitzan Bluvstein, Nichelle Esquitin, Julia Flickinger, Abbas Hassan, Maxwell Hong, Leona Kelly, Erica Li, Harsimran Minhas, Rishi Negi, Linh Ngu, Pauline Nguyen, JP Riosa, Christine Sifferman, Joshua Walden, Yidan Yin, and Tommy Young for assistance with data collection.

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http://dx.doi.org/10.1037/pspi0000047

whether the simple fact that a group possesses a symbol might influence group perception. In other words, could the mere presence of any symbol—regardless of its content—change the way that others perceive the group as a whole? Crucially, if we want to understand why nearly all groups have symbols, we need to consider the basic psychological functions that nearly all group symbols may have.

In the present research, we integrate the literatures on entitativity and symbolic group identity to propose that the mere presence of a symbol can reify a group, making a collection of individuals seem more like a unified and coherent collective. Given that this perception of realness, or *entitativity* (Campbell, 1958), can lead groups to seem more threatening and effective, symbols could have an important impact on people's judgments about the groups that possess them. Furthermore, we suggest that group members use symbols strategically, in that they are especially likely to display symbols to other groups when they are motivated to convey an impression of their own group as unified and intimidating.

Linking Entitativity and Symbols

Past research on the psychological antecedents of entitativity has focused on identifying the intrinsic characteristics of group members that lead groups to be perceived as real. These characteristics can be divided into two general categories: the group members' physical characteristics, which are assumed to heighten perceived homogeneity, and the group members' actions, which are assumed to create a sense of cohesion (e.g., Brewer, Hong, & Li, 2004; Lickel et al., 2001). For example, groups whose members look physically similar and groups whose members share a common past or common goal tend to seem more entitative to observers (Lickel et al., 2001). The picture painted by existing research, therefore, implies that when people are forming judgments of entitativity, they base those judgments on the actual characteristics of the group members themselves: what they are like and what they do.

Meanwhile, however, a separate body of research on group identity symbols suggests that symbols can sometimes stand in for actual characteristics when group members are striving toward a desired group image. For example, if a group member feels the group does not have a desired level of status, he or she may emphasize a symbol that provides a sense of status, such as a historic building that relates to the group's past achievements (Ledgerwood, Liviatan, & Carnevale, 2007). Although a symbolic building is not itself a high-status achievement, it seems to help substitute for such an achievement when the actual characteristic of high status is lacking (see also Jia, Karpen, & Hirt, 2011; Ledgerwood & Liviatan, 2010; Wicklund & Gollwitzer, 1981). In other words, this research suggests that external trappings of group identity, such as buildings, flags, or logos, can potentially have the same psychological effects as actual characteristics of groups and their members.

Integrating these literatures, we propose that the mere presence of a symbol may reify groups and increase perceptions of entitativity. Although group symbols are not themselves intrinsic characteristics of group members like physical appearance or behaviors, they may still be able to convey a similar psychological sense that a group is a real entity. If so, then symbols could have important implications for how people perceive groups.

Indeed, perceived entitativity tends to play a crucial role in shaping subsequent judgments about groups and their members—for instance, entitative groups are generally perceived as being more effective at meeting their goals (Clark & Wegener, 2009). In addition, they can seem more likely to perform negative, threatening behaviors toward those outside the group (Abelson, Dasgupta, Park, & Banaji, 1998; Dasgupta, Banaji, & Abelson, 1999) and they are more likely to be seen as having harmful intentions (Castano, Sacchi, & Gries, 2003). In short, perceived entitativity has important downstream effects on group perception. Thus, if group identity symbols can change perceptions of entitativity, they may shape people's impressions of groups in these other ways as well.

What Motivates the Use of Symbols?

The logic described above suggests that symbols may make groups seem more entitative, effective, and threatening. We might wonder, then, whether group members are more likely to use symbols when they are motivated to convey this impression of their group. Indeed, past research provides support for a parallel idea at the individual (rather than group) level, suggesting that individuals use symbols and other displays to convey desired impressions of themselves to other people. For instance, research on symbolic self-completion theory suggests that individuals use symbols and other socially recognized indicators to communicate aspects of their desired personal identity or self-image to others (Braun & Wicklund, 1989; Gollwitzer & Kirchhof, 1998; Wicklund & Gollwitzer, 1981). Likewise, research suggests that individuals are more likely to display particular identity-relevant behaviors (e.g., prejudicial statements against an outgroup) when they are motivated to convey to others an impression of themselves as good ingroup members (Klein, Licata, Azzi, & Durala, 2003; Klein, Spears, & Reicher, 2007; Noel, Wann, & Branscombe, 1995). Therefore, at the group level, we might expect that—if symbols can indeed make groups seem more united and intimidating—group members would be more likely to create and display group identity symbols when they are motivated to convey that impression of their group to others (for instance, when they are in a competitive rather than cooperative context).

Overview of Studies

In the current research, we set out to investigate the psychological function of group symbols in two stages. First, we tested the consequences of group symbols for group impressions, investigating whether and how the mere presence of a group symbol leads collectives to seem more like real groups, and whether this perceived entitativity can influence people's impressions of how threatening and how competent a group appears to be. Second, we tested whether group members seek to use group symbols strategically in motivationally relevant circumstances—that is, whether group members are especially likely to display symbols when they are motivated to convey an impression of their group as unified and intimidating.

In Studies 1a–1c, we tested the basic prediction that the mere presence of a group identity symbol will increase perceptions of entitativity. Participants read descriptions of several different types of novel groups, one of which happened to have a symbol. We predicted that, regardless of the particular type of group, the group

with a symbol would be seen as more entitative than groups without a symbol.

In Study 2, we built on these findings to investigate whether the mere presence of a symbol could help make up for those times when group members lack actual, inherent characteristics that contribute to perceptions of entitativity. Participants evaluated pictures of three types of novel groups: those with an actual characteristic known to cue entitativity (physical similarity), those that lacked this characteristic (physical dissimilarity), and those that lacked this characteristic but had a symbol. We predicted that the presence of a symbol would help dissimilar group members make up for their lack of similarity, heightening perceived entitativity relative to dissimilar group members without a symbol. In addition, Study 2 also investigated one important consequence of entitativity: the extent to which a group seems threatening to other groups. We predicted that the mere presence of a symbol would lead a group to seem more threatening, and that this effect would be mediated by perceived entitativity.

In Study 3, we zeroed in on the process by which symbols influence perceived entitativity in the first place. As mentioned earlier, researchers have conceptualized entitativity as stemming from two distinct sources: perceptions of homogeneity and perceptions of cohesion. To investigate whether symbols affect entitativity by changing perceived homogeneity, perceived cohesion, or both, we showed participants pictures of novel groups that varied in whether or not they had a symbol, and then measured both potential mediators—perceived homogeneity and perceived cohesion—as well as entitativity and perceived threat.

In Study 4, we extended our investigation to consider whether symbols can boost the perceived entitativity of more familiar, real-world social groups (e.g., Native Americans, blue collar workers, Jewish people, and conservatives), as well as whether symbols might have important downstream consequences for people's judgments of a group's competence and warmth. We showed participants brief descriptions of community groups and clubs representing a variety of social groups and asked them to rate how entitative, competent, and warm each group seemed to be. Half of the groups were paired with a group logo, whereas half were not. We predicted that the presence of a group logo would increase perceived entitativity, and that it would increase perceived competence while decreasing perceived warmth (consistent with our earlier findings that symbols can make groups seem more intimidating).

Finally, in Studies 5a and 5b, we turned to examine whether group members might intuitively use symbols to strategically manage how their group is perceived when they are motivated to convey particular impressions of their group to others. We manipulated whether participants had the goal of making their group seem unified and intimidating or inclusive and cooperative in the context of an intergroup interaction (a U.S. delegation to another country in Study 5a; a conference involving several different work teams in Study 5b). We then asked participants to indicate how important it was to engage in a series of different behaviors, including several that involved displaying ingroup symbols (e.g., the American flag, a work team logo) to the outgroup in question. We predicted that participants would more strongly endorse the symbol display behaviors when they wanted their group to seem unified and intimidating (vs. inclusive and cooperative).

Across our studies, we varied the type of symbol, the kind of group, and the type of scale used to measure entitativity, which allowed us to triangulate on our constructs of interest and rule out potential alternative explanations for our results.

Study 1a

As an initial test of the hypothesis that the mere presence of a symbol will increase perceptions of entitativity, we presented participants with short descriptions of different groups, one of which happened to have a symbol. We predicted that across different types of groups, descriptions, and symbols, groups that happened to have a symbol would be perceived as more entitative than those without a symbol.

Method

Participants and power. Forty-eight undergraduate students (35 female, 13 male; 21 Asian/Pacific Islander, 10 White, 9 Hispanic/Latino, and 8 other) participated in an online, within-subjects experiment in exchange for course credit. We chose to run as many participants as possible given our resources in this first study. A sample of this size provides 80% power to detect an effect size of $d_z = .41$ (somewhat smaller than a medium-sized effect of $d = .5$, according to Cohen's conventions; Cohen, 1988) on the continuous dependent measure in our within-subjects design; note that all power calculations reported in this article were conducted using G*Power (Faul, Erdfelder, Lang, & Buchner, 2007).

Procedure and materials. The study was presented as a task designed to examine people's first impressions of groups. Participants read that a resident of their town named Bob was recently asked to describe some of the groups to which he belonged, and they saw this information presented in a table.

Group symbol. In the table, participants saw descriptions of five different task groups to which Bob ostensibly belonged (e.g., bowling, dog-walking, watching sports; see Appendix A for full table). The descriptions included information about the groups' typical meeting place and frequency, which was similar across groups, as well as one additional fact about each group. Critically, for one group, this fact mentioned that the group happened to have a symbol, stating: "There's actually an 'official logo' that one of us came up with." This sentence served to manipulate the presence of a group symbol. For the other four groups (the nonsymbol groups), the additional fact was not related to group symbols (e.g., "I found out about it through a flyer I saw somewhere"). Which group was paired with the symbol was counterbalanced across participants.

Entitativity. To assess participants' perceptions of the groups as real entities, we asked participants to complete continuous ratings of entitativity for each group as well as a set of seven forced choice questions that reflected the extent to which they saw the group with a symbol as the most entitative of the five groups (see Appendix B for all items).

For the continuous ratings, we adapted a measure from past research on entitativity (Lickel et al., 2000): Participants reported how "group-like" each group seemed to them as well as how important they thought each group was to Bob on a scale from 1 (*not at all*) to 5 (*very much*). These two items were highly correlated (ranging from $r = .60$ to $r = .78$ across the five groups) and were averaged for each group. The resulting index provided a

measure of perceived entitativity for the symbol group and (averaging across nonsymbol groups) a measure of perceived entitativity for the nonsymbol groups, computed according to counterbalance condition.

For the forced-choice measure, participants read a series of seven questions (adapted from Spencer-Rodgers, Williams, Hamilton, Peng, & Wang, 2007) that required them to pick the one group that they felt best answered each question (e.g., "Which one of Bob's groups seems most cohesive?" and reverse-coded: "Which group do you think is least organized?"). Participants' choices were coded as 1 if they selected the group with the symbol and 0 if they selected a group without a symbol (or vice versa for the two reverse-coded items). Responses to the items were summed to form an index of the extent to which the group with the symbol seemed the most entitative, with scores ranging from 0 to 7.

Results and Discussion

For all analyses, effect sizes are reported as Cohen's *d*, using d_{rm} for within-subjects designs and d_s for between-subjects designs (see Lakens, 2013). Confidence intervals reflect 95% CIs around the difference between means, to provide a sense of how big or small that difference may be.

Entitativity ratings. A 2 (Group Symbol: Symbol vs. Nonsymbol) × 3 (Counterbalance Condition) mixed analysis of variance (ANOVA) with repeated measures on the first factor revealed only a significant main effect of group symbol, $F(1, 45) = 30.71$, $p < .001$, 95% CI M_{diff} [.521, 1.12], $d_{rm} = .81$. As hypothesized, the group that happened to have a symbol was perceived as more entitative than groups without a symbol ($M = 3.85$, $SD = 1.09$ vs. $M = 3.02$, $SD = .66$, respectively). Counterbalance condition had no main or interactive effects, $ps > .28$.[1]

Forced choice entitativity measure. A one-way ANOVA on the forced choice measure of entitativity indicated no differences between counterbalance conditions, $p > .21$; therefore, we collapsed across this variable in our subsequent analysis. A one-sample *t* test was conducted to test the prediction that participants would be more likely than chance to select the group with the symbol as being the most entitative.[2] Indeed, the observed mean ($M = 4.06$, $SD = 1.95$) was significantly higher than chance, $t(47) = 9.46$, $p < .001$, 95% CI M_{diff} [2.10, 3.23], $d_{rm} = 1.01$. That is, participants tended to select a group as being highest in entitativity when it happened to have a symbol.

These results suggest that the mere presence of a group symbol—in this case, a logo—led a group to seem more real and unified. Participants rated these groups higher in entitativity relative to other groups, and they also were more likely to pick the group that happened to have a group symbol as being the highest in different aspects of entitativity.[3]

Study 1b

The results of Study 1a provide initial support for the notion that the mere presence of a symbol can lead groups to seem more like coherent, real entities, but these findings are also limited to a particular type of symbol—namely, group logos. To make a general claim about the effect of group symbols on entitativity, it is important to test whether this effect generalizes across different types of group symbols. In Study 1b, we therefore tested whether an entirely different kind of symbol—group colors—would similarly influence the perceived realness of a group.

Method

Participants and power. Ninety-eight undergraduates (81 female, 17 male; 45 East Asian, 17 White, 16 Latino, 8 South Asian, and 12 other) participated for course credit. Note that a classic power analysis using the mean difference and *SD* of the difference from Study 1a indicates we would need a sample size of $N = 14$ to achieve 80% power to detect an effect of group symbol on our two key dependent variables. However, classic power analyses tend to be overly optimistic (McShane & Bockenholt, 2014; Perugini, Gallucci, & Costantini, 2014). For this and all subsequent studies, therefore, we chose to recruit as many participants as we could given our resources; in each case, our sample size exceeded the sample size suggested by a classic power analysis for 80% power.

Procedure and materials. The procedure and materials were identical to Study 1a except for two changes to the table of groups that participants saw. First, the information about the presence of a group symbol was changed from a logo to shared colors. Second, to rule out the possibility that the results in Study 1a could be caused by an unintended difference in the focus of the nonsymbol and symbol descriptions (i.e., a sentence about the group as a whole vs. a sentence about Bob in particular), we held the focus of the additional information consistent across the different groups. Thus, the nonsymbol group descriptions now contained an additional fact that focused on the group rather than an individual (e.g., "It all got started by people who live in my neighborhood," "Most new members find out about the group from a flyer;" see Appendix A for full table).

Results and Discussion

Entitativity ratings. As in Study 1a, a 2 (Group Symbol: Symbol vs. Nonsymbol) × 3 (Counterbalance Condition) mixed-design ANOVA with repeated measures on the first factor revealed a significant main effect of symbol, $F(1, 95) = 46.68$, $p < .001$, 95% CI M_{diff} [.52, .95], $d_{rm} = .98$: Groups with symbols were perceived as more entitative ($M = 3.88$, $SD = .96$) than groups without symbols ($M = 3.16$, $SD = .44$).[4] In addition, there was also an unexpected and significant interaction between symbol and counterbalance condition, $F(2, 95) = 6.02$, $p = .003$, $\eta_p^2 = .11$. Follow-up tests indicated that all

[1] It is also reasonable to conceptualize importance (one of the two items in this entitativity measure) as a downstream consequence of entitativity rather than an indicator. Hypothesis tests reveal similar results when the importance item is removed from the continuous measure, $F(1, 45) = 44.57$, $p < .001$, 95% CI M_{diff} [.685, 1.278], $d_{rm} = 1.02$.

[2] Chance here was 1.4: Each question in the set of seven had a 20% chance of being selected by chance alone and 0.20 × 7 questions = 1.4.

[3] To ensure that these results were not simply because of the particular information provided about the symbol and nonsymbol groups, we conducted a replication of this study with a separate sample ($N = 77$) using the alternative descriptions noted in Appendix A. We obtained similar results for both the continuous entitativity ratings, $F(1, 73) = 6.62$, $p < .001$, 95% CI M_{diff} = [.07, .54], $d_{rm} = .31$, and the forced choice measure, $t(76) = 10.36$, $p < .001$, 95% CI M_{diff} [1.62, 2.34], $d_{rm} = .88$.

[4] Again, the results were similar when the importance item was removed from the measure, $F(1, 95) = 29.20$, $p < .001$, 95% CI M_{diff} [.41, .88], $d_{rm} = .75$.

three groups showed the same pattern suggested by the overall main effect of group symbol on entitativity; the interaction was caused by the fact that this effect was smaller (and not significant) in one counterbalance condition compared with the others (see Table 1). Thus, across counterbalance conditions, participants perceived the symbol group as higher in entitativity than the nonsymbol groups, but in this particular study, the strength of this effect appeared to depend on the type of group.

Forced choice entitativity measure. Mirroring the previous analysis, a one-way ANOVA on the forced choice measure indicated significant differences between counterbalance conditions, $F(2, 95) = 12.86$, $p < .001$, $d_s = 1.04$. Follow-up tests indicated all three groups significantly differed from each other ($ps < .013$); the three groups were therefore analyzed separately.

Again mirroring the previous analysis, for each group, single sample t tests confirmed our prediction that the means were significantly higher than what would be expected from chance (see Table 1). Thus, we replicated our Study 1a finding that participants selected the group with a symbol as highest in entitativity at greater than chance levels. As with the continuous ratings, however, the interaction with counterbalance condition indicated that in this study, the magnitude (but not direction) of the effect of symbol varied between groups.

In summary, as in Study 1a, participants again rated a group that happened to have a symbol—in this case, shared colors—as higher in entitativity than groups without a symbol. Furthermore, participants once again were more likely to pick the group that happened to have a symbol as being the highest in various aspects of entitativity. The fact that these effects replicated when the additional information provided about each group was consistently about the group (rather than the individual) lends additional support to the conclusion that it is the presence of a symbol, rather than information about group-level behavior, that boosts perceptions of entitativity.

In the present study, we also observed an interaction with counterbalance condition. As this interaction was neither predicted nor observed again in any other study, we hesitate to speculate about it at length. Nonetheless, future research might fruitfully explore whether the magnitude of the effects observed here could be modulated by the particular type of group or perhaps the match between type of symbol and type of group.

Study 1c

The results so far suggest that the mere presence of a symbol can lead groups to seem more entitative and that this effect is not limited to one particular type of symbol. However, there are many ways of measuring entitativity, from single items (e.g., Hogg et al., 2007; Lickel et al., 2001) to scales (e.g., Castano, Yzerbyt, & Bourguignon, 2003) to pictorial measures (e.g., Gaertner & Schopler, 1998), and we wanted to ensure that our results were not because of the particular measures we happened to choose in the previous studies.

Method

Participants. Seventy-six undergraduates (57 female, 6 male, and 13 unreported; 30 Asian/Pacific Islander, 12 White, 9 Hispanic/Latino, 12 other, and 13 unreported) participated in exchange for course credit.

Procedure and materials. The procedure was similar to Studies 1a and 1b, with the changes described below.

Group symbol. Participants now saw a table that contained descriptions of three different task groups: a group that walks their dogs together, a group that plays soccer together, and a group that watches sports together in a bar. The table now contained two additional facts about the group as opposed to one (e.g., "My neighbor is in the group with me" and "It all got started by some people who live in my neighborhood"). Similar to the previous studies, the second fact for one group mentioned that the group happened to have a symbol (i.e., "There's a logo that someone came up with a while back;" see Appendix A).

Which group was paired with the symbol was fully counterbalanced so that across participants, the only aspect of the group description that varied was whether or not it happened to have a symbol (counterbalancing in this way enabled us to use a more powerful analysis to test our results, as described below). In addition, the descriptions were counterbalanced so that the group types were in different columns across participants, and the other two facts were randomly paired with the nonsymbol groups.

Entitativity. For each group, participants completed a 12-item scale designed to measure perceived entitativity (e.g., "To what extent does Group A seem more like a group rather than just a bunch of individuals," "How important is Group A to its mem-

Table 1
Entitativity Measures by Counterbalance Condition for Study 1b

		Entitativity ratings				Forced-choice measure		
	n	Symbol M	Nonsymbol M	t	d_{rm}	Symbol M	t	d_{rm}
Counterbalance 1	31	4.13 (.88)	3.07 (.41)	6.11**	1.21	3.97 (1.62)	8.81**	1.18
Counterbalance 2	34	3.50 (1.04)	3.28 (.45)	1.04	.21	2.00 (1.35)	2.60*	.36
Counterbalance 3	33	4.05 (.85)	3.11 (.42)	5.40**	1.13	2.97 (1.70)	5.29**	.68

Note. *SD*s appear in parentheses below mean.
* $p < .05$. ** $p < .001$.

bers"). Participants rated their response to each item on a scale from 1 (*not at all*) to 9 (*extremely*). They completed all items for each group sequentially, and the table was available for them to refer to it at any time. Responses were averaged to form an index of entitativity toward each group (αs $>$ .93).

Results and Discussion

Entitativity. To test our hypothesis that groups would be seen as more entitative when they happened to have a symbol (vs. not), we conducted a planned linear contrast to compare the cells of our design in which a group was paired with a symbol to the cells in which a group did not have a symbol (symbol coefficient = 1, nonsymbol coefficients = −.5).[5] As hypothesized, participants perceived the group that was described as having a symbol as significantly more entitative than the other two groups, $F(1, 73) = 11.14$, $p = .001$, $\eta^2 = .07$ (see Table 2 for means and *SD*s).

Taken together, then, the results of these studies show that simply reading a group has a symbol can heighten perceived entitativity. We replicated this basic effect across different types of group symbols, different types of groups, different group descriptions, and different measures of entitativity. These findings therefore suggest that the mere presence of a symbol can convey a similar sense of psychological realness as that conveyed by actual, intrinsic characteristics of groups that have been shown to influence perceived entitativity, such as physical similarity or a shared goal.

However, one might wonder about a possible alternative explanation for these results. In particular, it is worth noting that it may be atypical for the types of groups used in Studies 1a through 1c to have a group symbol. For instance, groups of people that walk their dogs together do not usually have a logo. In other words, one might argue that participants' prior knowledge of the groups described in these studies led them to have particular expectations, and that these expectations were violated by the presence of a symbol—and this violation of expectations could perhaps in turn change the way people think about the group. Previous entitativity research avoided this issue of prior expectations by having participants evaluate novel alien groups (e.g., Dasgupta et al., 1999; Ip et al., 2006). Therefore, we adapted this paradigm to use in Study 2. This new paradigm also involved presenting pictures of symbols (rather than verbal descriptions), which enabled us to more fully rule out the possibility that our results in Studies 1a–1c could have been caused by some aspect of the particular wording we chose to describe the symbols in these first experiments.

Study 2

In Studies 1a–1c, the mere presence of a symbol led groups to be perceived as more entitative, suggesting that symbols may be able to convey the same psychological sense that a group is real as actual characteristics of group members. If the mere presence of a symbol can serve such a function—indicating that the group is entitative—then a symbol may also help groups make up for a lack of an actual characteristic that contributes to perceptions of entitativity, such as physical similarity. In Study 2, we tested this hypothesis by having participants evaluate pictures of three types of novel groups: those with an actual characteristic that cues entitativity (physical similarity), those that lacked this characteristic, and those that lacked this characteristic but happened to have a symbol. We predicted that the presence of a symbol would help dissimilar group members make up for their lack of similarity, leading to higher perceived entitativity relative to dissimilar group members without a symbol.

A secondary goal of Study 2 involved investigating the potential downstream consequences of entitativity. One particularly important potential consequence is the extent to which a group is perceived as threatening to other groups, because perceptions of threat can have sizable implications for intergroup behavior and conflict. In previous research, group members high in physical similarity were perceived as more capable of harming others than those low in physical similarity, presumably because of increased perceptions of entitativity (Dasgupta et al., 1999; see also Abelson et al., 1998). Therefore, in Study 2, we tested whether the mere presence of a symbol would lead to greater perceived threat, and whether this effect would be mediated by perceived entitativity.

Method

Participants and power. Sixty-six undergraduates (36 female, 30 male; 23 Asian, 22 Hispanic, 15 White, and 6 other) participated in exchange for course credit. We again chose to run as many participants as resources permitted. A sample of this size provides 80% power to detect an effect size of $d_z = .35$ for the key comparison between ratings of the dissimilar group and the dissimilar group with a symbol (Faul et al., 2007).

Materials. The stimuli used in this study were computer-generated figures (called "Greebles" or "G's" in previous research) that were originally developed to study face perception (Gauthier & Tarr, 1997).[6] The test stimuli consisted of five figures positioned in a desert-like backdrop. The different groups varied randomly in body type and color.

Procedure. Following Dasgupta et al. (1999), participants learned the task was about first impressions of novel creatures and saw the following introduction:

> A graphics artist recently created two fictitious species of intelligent creatures for a new science fiction film that are called "G's" and "H's." This film is about the relationship and interactions between these two species.
>
> We're interested in what people think of G's prior to seeing this film. Today, you will see pictures of several groups of different kinds of G's. You will not be seeing any pictures of the other species in this task. Your task is to form impressions of and judge the extent to which various traits and behaviors are likely to describe each group of G's.

All participants then saw examples of the three different groups of creatures described below. These examples illustrated that the groups varied in body shape, color, and whether they have a symbol, as previous research using entirely novel groups suggests

[5] Note that this analysis is a little different from the analyses used to test our hypothesis in Studies 1a and 1b because this is the first study in which we fully counterbalanced which group was paired with a symbol. In this fully counterbalanced design, a linear contrast is the most appropriate way to test our hypothesis that a group will be seen as more entitative when it has versus does not have a symbol (Rosenthal & Rosnow, 1985).

[6] These figures were originally designed by Scott Yu, and are copyrighted by Michael Tarr (2002) and the Center for the Neural Basis of Cognition.

Table 2
Entitativity Measures by Counterbalance Condition for Study 1c

	Dogwalking group	Soccer group	Bar group
Counterbalance 1 (Dogwalking group has symbol)	6.04	4.49	5.70
$n = 17$	(1.21)	(1.50)	(1.57)
Counterbalance 2 (Soccer group has symbol)	5.53	6.73	5.67
$n = 23$	(1.96)	(1.11)	(1.66)
Counterbalance 3 (Bar group has symbol)	4.31	4.89	4.62
$n = 36$	(1.49)	(1.14)	(1.58)

Note. *SD*s appear in parentheses below mean.

that judgments of entitativity may require a comparison standard (Ip et al., 2006). Participants then rated their agreement with several items about filler traits (e.g., "These G's are happy") to familiarize themselves with the task. For the actual task, participants answered a series of questions about the traits and behaviors of various groups of the creatures (see Appendix B for all items).

Group type. Participants saw three types of groups. The *similar* and *dissimilar* groups were the original two conditions used by Dasgupta et al. (1999): The creatures were either all the same color or all different colors, respectively. Critically, we added a third, *dissimilar-symbol* condition in which we gave the dissimilar creatures a group flag (see Figure 1 for example stimuli). The particular body shape and color of the creatures were randomized across participants.

Entitativity. We measured the degree to which participants perceived each type of group as real and cohesive in two ways. First, for each group, participants completed the Group Entitativity Measure (GEM; Gaertner & Schopler, 1998), a group variant of the Inclusion of the Other in the Self Scale (Aron, Aron, & Smollan, 1992). Participants saw a series of six diagrams each containing five circles that varied in closeness from very far apart (representing low interconnection and low entitativity) to completely overlapping (representing high interconnection and high entitativity). Participants selected the diagram that best represented their perception of the group, resulting in a measure of entitativity that ranged from one to six.

Second, participants rated each group using a six-item entitativity measure (e.g., "There are strong ties among these G's;" Castano et al., 2003) on a scale from 1 (*strongly disagree*) to 7 (*strongly agree*; αs $> .73$ for each of the three groups).

Figure 1. Sample Greebles like those used in Studies 2 and 3. Greebles randomly varied in color and body type. (Stimulus images courtesy of Michael J. Tarr, Center for the Neural Basis of Cognition and Department of Psychology, Carnegie Mellon University, http://www.tarrlab.org/.) See the online article for the color version of this figure.

Outgroup threat. To measure the extent to which the creatures were perceived as threatening to a different group, we used the original five-item scale used by Dasgupta et al. (1999; e.g., "How threatening are these G's toward H's?" and "How much do these G's hate Hs?"). Participants rated their responses to each group type on a scale from 1 (*not at all*) to 7 (*very much*), and the items were averaged to form an outgroup threat index (αs $> .77$).

Results and Discussion

Two participants were excluded from the dataset for spontaneously reporting to the research assistant that they had not understood the task; the results do not change when all participants are included.

Group entitativity measure. A repeated-measures ANOVA on the GEM revealed a significant effect of group type, $F(2, 126) = 68.83$, $p < .001$, $\eta_p^2 = .52$. Planned pairwise comparisons showed that, consistent with Dasgupta et al.'s (1999) untested assumption, the dissimilar group was perceived as significantly less entitative than the similar group, $t(63) = 11.90$, $p < .001$, 95% CI M_{diff} [1.95, 2.74], $d_{rm} = 2.11$. More important, as we predicted, the dissimilar group was perceived as more entitative when it had a symbol, compared with when it did not, $t(63) = 7.00$, $p < .001$, 95% CI M_{diff} [.84, 1.51], $d_{rm} = 1.20$ (see Table 3 for means and *SD*s). An exploratory (unplanned) pairwise *t* test revealed that the dissimilar group with a symbol was still perceived as less entitative than the similar group, $t(63) = 5.10$, $p < .001$, 95% CI M_{diff} [.71, 1.63], $d_{rm} = 1.05$.

Entitativity index. A similar pattern emerged for our second measure of entitativity. A repeated-measures ANOVA revealed a significant effect of group type on entitativity ratings, $F(2, 126) = 64.96$, $p < .001$, $\eta_p^2 = .51$. Planned pairwise comparisons again showed that the dissimilar group was perceived as significantly less entitative than the similar group, $t(63) = 9.96$, $p < .001$, 95% CI M_{diff} [1.34, 2.02], $d_{rm} = 1.69$ (see Table 3). More important, giving the dissimilar group a symbol significantly increased perceived entitativity, $t(63) = 4.14$, $p < .001$, 95% CI M_{diff} [.28, .80], $d_{rm} = .51$. An exploratory pairwise *t* test indicated that the dissimilar group with a symbol was still perceived as less entitative than the similar group, $t(63) = 7.58$, $p < .001$, 95% CI M_{diff} [.84, 1.45], $d_{rm} = 1.19$.

Outgroup threat. A repeated-measures ANOVA on perceived threat revealed a significant effect of group type, $F(2, 126) = 8.50$, $p < .001$, $\eta_p^2 = .12$ (see Table 3). Planned pairwise comparisons replicated Dasgupta et al.'s (1999) original finding: The similar group was perceived as significantly more threatening than the dissimilar-control group, $t(63) = 3.64$, $p < .001$, 95% CI

Table 3
Mean Ratings by Group Type for Study 2

Measure	Group type		
	Similar	Dissimilar	Dissimilar-symbol
Group Entitativity Measure	4.61_a (1.24)	2.27_b (.96)	3.44_c (.99)
Perceived Entitativity Index	5.96_a (.90)	4.27_b (1.08)	4.81_c (1.02)
Perceived Threat Index	4.34_a (1.37)	3.58_b (1.04)	4.21_a (1.21)

Note. *SD*s appear in parentheses below mean. Within a row, means marked with different letters differ from one another at $p < .001$.

M_{diff} [.34, 1.17], $d_{rm} = .62$. More important, and as predicted, the dissimilar group was perceived as significantly more threatening when it had a symbol, compared with when it did not, $t(63) = 3.63$, $p < .001$, 95% CI M_{diff} [.28, .98], $d_{rm} = .56$. An exploratory pairwise t test revealed no difference in perceived threat between the dissimilar group with a symbol and the similar group, $t(63) = .61$, $p = .547$, 95% CI M_{diff} [−.29, .54], $d_{rm} = .10$.

Mediation analyses. We conducted two mediation analyses to examine whether the differences in perceived threat described above were in fact due to changes in entitativity. Our first analysis focused on testing Dasgupta et al.'s (1999) assumption that the increase in perceived threat for physically similar (vs. dissimilar) groups was because of a corresponding increase in perceived entitativity (that could not be tested in the original article because the researchers did not measure entitativity). Our first mediation analysis therefore focused on the similar and dissimilar conditions. Following Judd, Kenny, and McClelland's (2001) recommended procedures for testing mediation in within-subjects designs, we first confirmed that physical similarity (vs. dissimilarity) significantly affected perceptions of entitativity as measured by the GEM, as already described above. Next, we created difference scores to reflect the effect of similarity on entitativity and outgroup threat ratings by subtracting the dissimilar group ratings from the similar group ratings for each participant. We then regressed the outgroup threat difference score on the entitativity difference score as well as the centered sum of the entitativity scores to avoid biased estimation of the mediation effect (see Judd et al., 2001). If the difference score for the mediating variable significantly predicts the difference score for the outcome variable, this indicates mediation. The difference in entitativity due to physical similarity marginally predicted the difference in outgroup threat, $t(61) = 1.90$, $p = .062$, providing some support for Dasgupta et al.'s (1999) theorizing that entitativity explains the effect of similarity on perceived threat.

To test our current hypothesis that perceived entitativity would mediate the effect of symbol on perceived threat, we performed a second mediation analysis that focused on the dissimilar and dissimilar-symbol conditions, again following Judd et al. (2001). As already described, the presence of a symbol significantly increased GEM scores. Regressing the outgroup difference score and the centered sum of the entitativity scores on the entitativity difference score revealed that the difference in entitativity due to the presence of a group symbol significantly predicted the difference in outgroup threat, $t(61) = 2.21$, $p = .031$, indicating that entitativity mediated the effect of group symbol on perceptions of threat.[7]

These results support past theorizing about the effect of physical similarity on the extent to which a group is perceived as a real entity. Of greater importance, they suggest that perceptions of entitativity can be influenced not only by these actual, intrinsic characteristics of group members, but also by external trappings of group identity. Even when a group lacked an intrinsic cue for entitativity (physical similarity), possessing a symbol seemed to prompt a similar sense of psychological realness. The mere presence of a symbol also led groups to be perceived as more of a threat to other groups. Moreover, our results suggest this increase in perceived threat is mediated by the increase in perceived entitativity that both physical similarity and group symbols can bring about.

Taken together, these findings suggest that symbols may help groups compensate for lacking actual characteristics (like physical similarity) that tend to cue entitativity, potentially shedding light on one important function of group symbols. However, several open questions remain. First and foremost, we wondered about the process underlying these results: Do symbols and actual group member characteristics affect perceptions of entitativity via the same mechanism, or do they operate in different ways?

Study 3

In Study 2, we demonstrated that group symbols can help substitute for an actual characteristic to make groups seem entitative, and that this increased entitativity can in turn heighten perceptions of outgroup threat. In our third study, we sought to zero in on the process by which symbols enhance entitativity and threat, and to compare it with the process by which actual group member characteristics affect entitativity and threat.

Previous research has suggested that different group member characteristics, such as physical similarity and behavioral similarity, may affect entitativity via different pathways. In particular, some cues influence entitativity by changing perceptions of group homogeneity, whereas others exert their influence by changing perceptions of group cohesion (Brewer et al., 2004; Haslam et al., 2000; Ip et al., 2006). To explore the processes underlying the effect of group symbols on entitativity, in Study 3, we manipulated the mere presence of a symbol in the context of a novel group and measured perceived homogeneity, cohesion, and entitativity. In addition, we sought to compare the effect of a symbol to how an intrinsic characteristic of group members can influence entitativity by again manipulating physical similarity. Ultimately, this design enabled us to test whether the process by which symbols affect group perceptions is similar to or different than that engendered by an actual, shared group member characteristic.

[7] We also originally intended to test whether a similar pattern emerged when using the entitativity index as the mediator. However, to perform a within-subjects mediation analysis, the correlation between the mediator and the dependent variable must be in the same direction within each level of the independent variable (Judd et al., 2001). Because this was not the case for the entitativity index, we could not test it as a mediator (the correlation was slightly negative for the dissimilar-control group and slightly positive for the similar and dissimilar-symbol groups; all $ps > .75$)

Method

Participants and power. A total of 206 undergraduates (113 female, 89 male, and 4 unreported; 106 Asian, 52 White, 27 Hispanic, and 21 other) participated in the experiment for course credit. A power analysis using the smallest effect size (d_{rm} = .51) for the effect of symbol (i.e., the dissimilar vs. dissimilar-symbol conditions) on our dependent variables in Study 2 indicated a sample of N = 124 participants would provide 80% power to detect a main effect of group symbol on entitativity.[8] As before, we ran as many participants as resources permitted.

Materials. The stimuli were again computer-generated figures, and consisted of five figures positioned in a desert-like backdrop. The different groups varied randomly in body type and color.

Procedure. The procedure was similar to Study 2, but was adapted from the entirely between-subjects design used by Ip and colleagues (2006). As before, participants learned the task concerned first impressions of novel creatures and saw the following introduction:

> A cartoon artist has created a fictional desert creature named Volotos for a science fiction movie. When people see cartoon characters, they can easily form judgments about the characters' psychological characteristics, habits, and goals based on the characters' appearance and living environment.

All participants then saw four examples of different kinds of creatures: a group of four high-similarity creatures with a flag, a group of two high-similarity creatures with a tree, and a group of three high-similarity creatures with neither a tree nor a flag. As in Study 2, these examples illustrated that the creatures varied in body shape, color, and whether they had a symbol. Next, participants learned they would see one specific group of creatures to report their first impressions of the group.

Group symbol. In the symbol condition, the background for the group of creatures contained a flag, whereas in the control condition, the background contained a tree, to hold constant the extent to which the aliens might appear to be congregated around an object. The flags were white with different abstract shapes that varied randomly.

Physical similarity. As in Study 2 and following previous research (Dasgupta et al., 1999; Ip et al., 2006), in the high similarity condition, the creatures were homogenous in body color, whereas in the low similarity condition, the creatures were heterogeneous in body color.

With the exception of perceived outgroup threat, the dependent measures were taken from Ip and colleagues (2006).

Entitativity. Following Ip et al. (2006), entitativity was measured with a single item that asked participants to rate the extent to which the group qualified as a group (1 = *much more like a collection of individuals than a group*, 7 = *much more like a group than a collection of individuals*; see Appendix B for all measures).

Homogeneity. Homogeneity was measured with three items (e.g., "How similar are these Volotos?") on a scale from 1 (*not at all*) to 7 (*very much*), which were then averaged (α = .69).

Cohesion. Cohesion was measured with three items (e.g., "How united are these Volotos?") on a scale from 1 (*not at all*) to 7 (*very much*), which were then averaged (α = .69).

Outgroup threat. We included the five threat items from Study 2, as well as an additional item ("To what extent do these Volotos welcome outsiders?") to help clarify both the nature of threat (i.e., hostility) and that the perceived threat was toward others in the Volotos' universe (rather than the participants themselves). These six items were averaged to form an index of perceived threat (α = .78).

Results and Discussion

Entitativity. We expected to replicate our key finding that group symbols heighten perceived entitativity, which would be indicated by a main effect of symbol in our design. Indeed, a 2 (Group Symbol: Symbol vs. Control) × 2 (Physical Similarity: High vs. Low) between-subjects ANOVA revealed two significant main effects (and no interaction). Conceptually replicating our earlier studies, groups with symbols were perceived as significantly more entitative than groups without symbols, $F(1, 202)$ = 4.27, p = .040, η_p^2 = .02 (see Table 4 for means and *SD*s). In addition, replicating past research, groups with high physical similarity were perceived as more entitative than groups with low similarity, $F(1, 202)$ = 36.99, $p < .001$, η_p^2 = .15 (see Table 4).[9]

Threat. A 2 × 2 ANOVA on perceived outgroup threat again revealed two significant main effects (see Table 4). Replicating the findings from Study 2, symbols increased perceived threat, $F(1, 202)$ = 6.11, p = .014, η_p^2 = .03. Replicating Dasgupta et al. (1999), similarity enhanced perceived threat as well, $F(1, 202)$ = 24.15, $p < .001$, η_p^2 = .11.

Path analysis. We next performed a path analysis to compare the processes by which group symbols and physical similarity affect perceived entitativity and threat, adapting the theoretical model proposed by Ip et al. (2006) in which homogeneity and cohesion are conceptualized as two distinct processes that predict entitativity. The bivariate correlations for all variables are displayed in Table 5. The model depicted in Figure 2 achieved good fit, $\chi^2(4)$ = 5.77, p = .22, comparative fit index (CFI) = 0.99; Tucker-Lewis index (TLI) = 0.98; root mean square error of approximation (RMSEA) = 0.05, 90% CI [0.00, .13].[10] Consistent with previous theorizing regarding the two routes to entitativity, the results suggested that homogeneity and cohesion each independently increased perceived entitativity, which subsequently increased perceived threat (see Figure 2).[11] Intriguingly, whereas physical similarity had direct effects on both cohesion and homogeneity, 95% CIs [.63, 1.22] and [.88, 1.40], respectively, group symbol only had a direct effect on cohesion and not homogeneity, 95% CIs [.20, .78] and [−.07, .43], respectively. Likewise, the indirect paths from physical similarity to entitativity through co-

[8] We use d_{rm} from Study 2 as our best estimate of the expected d_s for Study 3; when the *SD*s of a measure are equal across levels of a within-subjects variable (they are very similar in our study), $d_{rm} = d_s$ (Lakens, 2013).

[9] Across the dependent variables, there were no significant interactions between group symbol and group similarity, Fs < 1, suggesting that these different cues to entitativity have additive rather than interactive effects.

[10] This analysis used the maximum likelihood estimation method in Mplus. We determined model fit through use of the χ^2 test (satisfactory fit if nonsignificant), the comparative fit index (CFI; satisfactory fit if ≥.95), the Tucker-Lewis index (TLI; satisfactory fit if ≥.95), and the root mean square error of approximation (RMSEA; satisfactory fit if ≤.06). Indirect effects were calculated using 5,000 bootstrap samples.

[11] We also tested an alternative model that reversed the configuration of the measured variables, so that the two manipulated variables (group symbol and similarity) predicted entitativity, which in turn predicted homogeneity and cohesion. This model fit poorly, $\chi^2(4)$ = 47.13, $p < .001$, CFI = 0.82; TLI = 0.60; RMSEA = 0.23, 90% CI [0.18, .29].

Table 4
Mean Ratings by Group Symbol and Physical Similarity for Study 3

Measure	Group symbol		Physical similarity	
	Symbol	Control	High	Low
Perceived Entitativity	5.52_a	4.93_b	6.00_a	4.49_b
	(1.71)	(2.04)	(1.42)	(2.01)
	95% CI M_{diff} [.08, 1.11]		95% CI M_{diff} [1.03, 1.98]	
Perceived Threat Index	4.34_a	3.97_b	4.50_a	3.83_b
	(.96)	(1.02)	(.94)	(.97)
	95% CI M_{diff} [.09, .65]		95% CI M_{diff} [.41, .94]	

Note. *SD*s appear in parentheses below mean. Pairs of means marked with different letters differ significantly at $p < .05$.

hesion and homogeneity were both significant, 95% CIs [.11, .28] and [.02, .19], respectively, whereas only the indirect path from group symbol to entitativity through cohesion reached significance, 95% CIs [.04, .17] and [−.01, .04] for cohesion and homogeneity, respectively.

This pattern of results suggests that symbols and shared physical characteristics may affect perceptions of entitativity via somewhat different processes. The effect of group symbol on perceived entitativity seemed largely propelled by changes in perceived cohesion but not homogeneity. In contrast, the effect of physical similarity on entitativity was mediated by changes in both cohesion and homogeneity. Thus, although symbols can lead to similar outcomes as actual characteristics of groups, in terms of increasing psychological realness and perceived threat to others, they may exert these effects via a distinct pattern of underlying processes.[12]

Study 4

Studies 1 through 3 focused on novel groups to test our hypotheses as cleanly as possible, in the absence of any preexisting judgments that people might have about familiar, real-world groups. Having established that symbols reliably increase perceived entitativity in these contexts, we turned next to explore the generalizability of this effect to the information-rich context of real groups, about which people have already formed impressions.

In considering how symbols would affect impressions of familiar groups, we sought to link our work to the already extensive literature on how people think about and form judgments of such groups. Considerable research on the Stereotype Content Model has documented that impressions (or stereotypes) about known groups tend to vary along two dimensions—namely, warmth (which presumably provides functional information about whether the group's intention is positive or negative) and competence (which provides information about how effectively the group will pursue that intent; e.g., Cuddy et al., 2009; Fiske, Cuddy, Glick, & Xu, 2002; see Abele, Cuddy, Judd, & Yzerbyt, 2008; Cuddy, Fiske, & Glick, 2008, for reviews). For instance, groups seen as low in warmth but high in competence tend to elicit a sense of threat, whereas groups seen as high in warmth but low in competence tend to elicit a sense of pity (Fiske et al., 2002). Thus, given that in our prior studies, symbols increased perceived threat, we reasoned that if we instead examined the more basic stereotype dimensions of warmth and competence, we should see that symbols increase perceived competence but decrease perceived warmth. In other words, insofar as threat judgments involve inferences about both a group's ability to act on their intention (how effective or competent they are) as well as the extent to which that group's intention is negative (a lack of warmth; Fiske et al., 2002; Glick, 2005), the heightened judgments of threat that we observed in our prior studies should translate into movement along both the competence and warmth dimensions. Thus, in the present study, we sought to expand our understanding of how symbols affect group impressions by assessing not only perceived entitativity, but also judgments of competence and warmth. Drawing on the Stereotype Content Model, we predicted that participants would perceive groups as *more* competent but *less* warm in the presence (vs. absence) of a group identity symbol.

To test these predictions, we presented participants with descriptions of clubs or community groups representing people from a particular social group (e.g., Native Americans, blue-collar workers, Jewish people). We manipulated whether or not the group descriptions were paired with a logo, and then measured perceptions of entitativity, competence, and warmth. We predicted that participants would rate the groups as more entitative, more competent, and less warm when the group logo was present (vs. absent).

Table 5
Bivariate Correlations in Study 3

	Entitativity	Homogeneity	Cohesion	Threat
Entitativity	1	.448**	.575**	.275**
Homogeneity		1	.535**	.254**
Cohesion			1	.254**
Threat				1

** $p < .001$.

[12] Interestingly, the finding that physical similarity affected entitativity judgments via both perceived cohesion and perceived homogeneity is not consistent with the conclusions of Ip and colleagues (2006): Their hypothesis was that homogeneity alone mediates the effect of physical traits on entitativity. However, because they performed a series of individual Sobel tests rather than using a multiple mediation analysis, it is unclear whether the (more appropriate) type of simultaneous analysis used here would have shown a similar pattern when applied to their data.

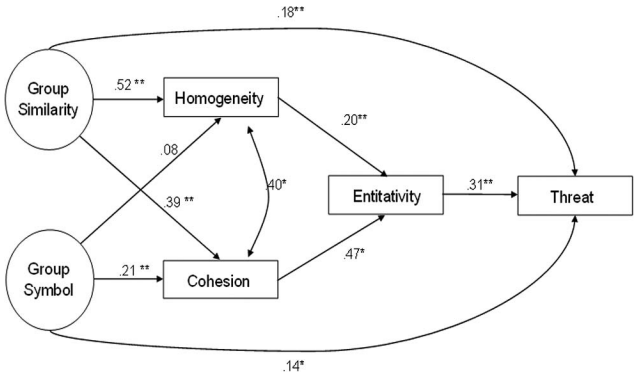

Figure 2. Test of the effect of group symbols and physical similarity on the different routes to entitativity and perceived threat in Study 3. Coefficients are standardized. * $p < .05$, ** $p < .01$.

Pilot Study

To avoid potential problems with ceiling or floor effects on warmth and competence judgments, we collected pilot data to assess perceived stereotypes in our target student population. Ninety-three undergraduates rated the perceived stereotypes for a series of 35 groups in terms of both competence (e.g., "As viewed by society, how competent are members of this group?") and warmth (e.g., "As viewed by society, how warm are members of this group?") on a scale from 1 (*not at all*) to 5 (*extremely*), using the original items from Fiske et al. (2002). We selected eight groups that avoided the extreme ends of the scale—four that our sample saw as moderately competent ($M = 3.35$, $SD = .53$) and moderately warm ($M = 2.94$, $SD = .56$) and four that our sample saw as moderately incompetent ($M = 2.42$, $SD = .60$) and moderately warm ($M = 3.08$, $SD = .56$). A paired t test confirmed that the moderately incompetent groups were perceived as substantially less competent than the moderately competent groups, $t(92) = 14.06$, $p < .001$, $d_{rm} = 1.66$. This allowed us to include group stereotype (competent vs. incompetent) as an additional factor in our design, to explore the potential practical implications of our results for groups that might be especially interested in boosting perceptions of competence.

Method

Participants and power. Participants were 239 undergraduates (69 male, 166 female, and 4 unreported; 85 Asian, 66 White, 54 Hispanic, 7 Black, and 27 mixed-race or other) who completed the study for course credit. A power analysis using the smallest effect size estimate from Study 2 ($d_{rm} = .51$) indicated that a sample of $N = 33$ would provide 80% power to detect an effect of group symbol on entitativity. As before, we ran as many participants as resources permitted.

Materials and procedure. Participants read that they would complete a task about memory and first impressions of novel groups. They learned that they would receive some basic information about several clubs or groups that were randomly selected from a group meeting and planning site (Meetup.com) for another city, and that they would be asked several questions about each group. The instructions indicated that there might be times when it felt like there was not enough information to answer the questions, in which case participants should "answer based on your 'gut' instinct."

As in previous studies, participants first saw two example groups (one with a logo and one without a logo) to familiarize them with the task. To support the cover story and help ensure that they paid attention to the subsequent materials, we asked them to complete a short filler task (a 90 s word puzzle) and then to answer several questions that tested their memory for the example groups (e.g., the groups' names).

For the main study, each participant saw a series of eight community groups presented in random order that were ostensibly taken from the Meetup.com website for Ithaca, NY (e.g., "Ithaca Jewish Society: A club for members of the local Jewish community"). For each group, they answered the same series of questions (described below).

Group symbol. For half of the group descriptions, a logo appeared above the group name. These were novel logos adapted from or inspired by actual group logos and selected based on pilot testing to be comparable in perceived quality and the degree to which they conveyed entitativity, warmth, and competence. The other four group descriptions simply contained the group's name in a large font. We randomized which groups were paired with logos (vs. not), so that across participants, the only difference between the two group symbol conditions was whether a logo was present or absent.

Group stereotype. Four of the groups had been rated by our pilot test participants as moderately competent (atheists, blue-collar workers, conservatives, and Jewish people) and four had been rated as moderately incompetent (Native Americans, obese people, immigrants, and the disabled).[13]

Entitativity. For each group, participants answered five entitativity items adapted from previous scales (e.g., "Some groups seem more 'group-like' than others. How 'group-like' does this group seem to you?" from 1 = *not at all like a group* to 7 = *very much like a group*; "There are many goals in common among members of the group" from 1 = *strongly disagree* to 7 = *strongly agree*; see Appendix B for all measures). These items were averaged to form an index of perceived entitativity ($\alpha = .89$).

Perceived competence. To assess perceived competence, we asked participants to rate each group using four items developed by Fiske and colleagues (2002; e.g., "How skillful are members of this group?" from 1 = *not at all* to 7 = *extremely*). These items were averaged to form an index of perceived competence ($\alpha = .87$).

Perceived warmth. To assess perceived warmth, we asked participants to rate each group using four items developed by Fiske

[13] The group descriptions contained one additional sentence in which half of the groups were described as having experienced a recent setback (e.g., "Attendance at meetings has decreased by about 15%") and half were described as having experienced a recent success ("A recruitment drive brought in a significant amount of new members") partly to help participants feel like they had some basis for making the judgments we were asking them to make, and partly because we were originally interested in including this factor to test a hypothesis unrelated to the current manuscript. Type of additional information (setback vs. success) did not affect any of the results presented here and the findings do not change depending on whether the factor is included in the analyses (i.e., there was no interaction with symbol or group type); thus, we do not discuss it further.

and colleagues (2002; e.g., "How friendly are members of this group?" from 1 = *not at all* to 7 = *extremely*). These items were averaged to form an index of perceived warmth ($\alpha = .92$).

Results and Discussion

Entitativity. A 2 (Group symbol: Symbol vs. Control) × 2 (Group stereotype: Competent vs. Incompetent) RMANOVA revealed the hypothesized main effect of symbol, $F(1, 238) = 5.28$, $p = .022$, 95% CI M_{diff} [.01, .18], $\eta_p^2 = .022$. Replicating and extending the results of our past studies to real-world social groups, participants perceived groups as more entitative when they were paired with a logo ($M = 4.56$, $SD = .76$) compared with when they were not ($M = 4.46$, $SD = .79$). There was also a main effect of group stereotype, $F(1, 238) = 6.00$, $p = .015$, 95% CI M_{diff} [.02, .20], $\eta_p^2 = .025$, such that participants rated the stereotypically competent groups as more entitative ($M = 4.57$, $SD = .80$) than the stereotypically incompetent groups ($M = 4.46$, $SD = .76$). Group stereotype did not moderate the effect of group symbol, $F < 1$, $p = 553$. In other words, the presence of a logo boosted perceived entitativity regardless of whether a group was seen as stereotypically competent or incompetent.

Perceived competence. We predicted that the presence of a symbol would lead groups to be perceived as more competent, regardless of whether or not their group stereotypically lacks competence. A 2 (Group symbol) × 2 (Group stereotype) repeated-measures ANOVA revealed the predicted main effect of symbol on perceived competence, $F(1, 238) = 72.91$, $p < .001$, 95% CI M_{diff} [.27, .43], $\eta_p^2 = .23$: Participants saw groups as more competent when they were paired with a logo ($M = 4.90$, $SD = .79$) compared with when they were not ($M = 4.55$, $SD = .70$). Unsurprisingly, there was also a marginal main effect of group stereotype, $F(1, 238) = 3.54$, $p = .061$, 95% CI M_{diff} [−.003, .14], $\eta_p^2 = .02$, such that participants rated the stereotypically competent groups as more competent ($M = 4.76$, $SD = .66$) than the stereotypically incompetent groups ($M = 4.69$, $SD = .80$). Group stereotype did not moderate the effect of group symbol, $F < 1$, $p = .772$, suggesting that the presence of a symbol can boost perceived competence for stereotypically competent and incompetent groups alike.

Perceived warmth. Consistent with our prediction that the presence of a symbol would decrease perceptions of warmth, a 2 (Group symbol) × 2 (Group stereotype) repeated-measures ANOVA on perceived warmth yielded a main effect of symbol, $F(1, 238) = 139.95$, 95% CI M_{diff} [.36, .50], $p < .001$, $\eta_p^2 = .37$. Groups with a logo were rated as less warm ($M = 4.42$, $SD = .79$) than those without a logo ($M = 4.84$, $SD = .74$). Again, there was also a weak main effect of group stereotype, $F(1, 238) = 4.86$, $p = .028$, 95% CI M_{diff} [.01, .15], $\eta_p^2 = .02$: Participants rated the stereotypically incompetent groups as less warm ($M = 4.59$, $SD = .80$) than the stereotypically competent groups ($M = 4.67$, $SD = .73$), consistent with the presence of a halo effect (Nisbett & Wilson, 1977; Thorndike, 1920). Group stereotype did not moderate the effect of group symbol, $p = .377$.

Mediation analyses. To test whether entitativity mediated the effect of symbol on perceived competence, we again followed Judd et al.'s (2001) recommended procedure for testing mediation in a within-subjects design. As already described, the presence of a symbol significantly increased perceived entitativity. Regressing the competence difference score and the centered sum of the entitativity scores on the entitativity difference score revealed that the difference in entitativity due to the presence of a group symbol significantly predicted the difference in competence, $t(238) = 3.14$, $p = .002$, indicating that entitativity mediated the effect of group symbol on perceptions of competence.

We followed a similar procedure to test whether entitativity mediated the effect of symbol on perceived warmth. Regressing the warmth difference score and the centered sum of the entitativity scores on the entitativity difference score revealed that the difference in entitativity due to the presence of a group symbol did not significantly predict the difference in warmth, $t(238) = 1.46$, $p = .147$, indicating that entitativity did not significantly mediate the effect of group symbol on perceptions of warmth.

Taken together, these results build on our previous studies to suggest that the presence of a symbol can not only shape impressions people form of novel groups, but also change existing impressions of more familiar groups. Community groups representing real-world social groups were seen as more entitative, more competent, and less warm when they had a logo, compared with when they did not. Mediation analyses suggested that the effect of logos on perceived competence was attributable to their effect on entitativity, whereas the evidence was less conclusive with respect to warmth. Symbols may have a direct effect on perceptions of warmth, they may exert their impact via a different process, or we may have been underpowered to detect this effect in the current study; future research might fruitfully seek to tease these possibilities apart.

It is particularly interesting to note that symbols boosted perceived entitativity and competence for groups seen as stereotypically competent and incompetent alike. This finding raises the intriguing possibility that groups who face negative stereotypes about competence might successfully combat such stereotypes by creating and emphasizing group symbols. However, the boost in perceived competence afforded by logos came at a cost—these groups were also perceived as less warm. Thus, symbols may alter people's perceptions of familiar groups in both positive and negative ways.

Study 5a

The studies described thus far suggest that symbols change how groups are perceived, making them seem more entitative and intimidating. Next, we asked whether group members strategically use symbols when they have the goal of making their group appear more entitative and intimidating to others. In other words, if a basic psychological function of group symbols is to convey an impression of a group as a unified and effective entity, as we suggested at the outset of this article, then we might expect group members to strategically display group symbols when they are motivated to portray their group in this light.

To test the hypothesis that group members use symbols strategically to manage how their ingroup is perceived, we manipulated whether participants were motivated to convey an impression of their group as unified and intimidating versus an impression of their group as inclusive and cooperative in the context of an intergroup interaction (a U.S. delegation to another country in Study 5a and a conference involving several different work teams in Study 5b). We then measured the extent to which participants

wanted to display ingroup symbols (e.g., the American flag, a work team logo) to the outgroup in question. We predicted that participants would more strongly endorse behaviors that involved displaying ingroup symbols when they were motivated to convey an impression of their group as unified and threatening (vs. inclusive and cooperative).

Method

Participants and power. Participants were 146 adults (46 male, 98 female, and 2 unreported; 100% from the United States; race and ethnicity not recorded) between the ages of 18 and 72 years ($M = 39.36$, $SD = 13.88$) who completed the study online in exchange for payment through Amazon's Mechanical Turk (MTurk) platform. We chose to run as many participants as our resources would permit; this sample size provides 85% power to detect a medium effect size ($d = .5$).

Procedure and materials. Participants were asked to imagine that they were a member of the United States Foreign Service and that their job was to promote the foreign policy of the United States. In the scenario, they were planning a delegation to a country in South America and needed to make decisions about the upcoming trip.

Group goal. To manipulate whether participants were motivated to convey an impression of their group as unified and intimidating versus inclusive and cooperative, we asked participants to consider one of two international negotiation contexts that were currently relevant for the United States. In the *intimidate* condition, participants read that they were headed to Venezuela, "a country that is currently in conflict with the United States." Their goal was to "convey to the government of Venezuela that the United States is strong and united, in order to intimidate them." In the *cooperate* condition, they read they were headed to Peru, "a country that is currently friendly with the United States." Their goal was to "convey to the government of Peru that the United States is diverse and inclusive, in order to encourage them to form an alliance with the US."

Symbol display behaviors. Participants then saw a randomly ordered list of nine possible behaviors for the upcoming trip (see Appendix B for all items). For each behavior, they indicated the extent to which they thought that behavior should happen for the delegation to be a success. To assess the extent to which participants wanted to display ingroup symbols to the outgroup, we included three behaviors that involved displaying U.S. symbols during the intergroup interaction ("Prominently display the American flag during the meeting," "Emphasize banners with emblems of the United States, such as the bald eagle," and "Make sure the leader of the delegation wears a flag pin"). Participants' importance ratings for these three items were averaged to form an index of symbol display behaviors ($\alpha = .73$).

To rule out the possibility that participants might simply think all behaviors are more important when they want their group to seem unified and intimidating (vs. inclusive and cooperative), we included three behaviors that involved being courteous to the outgroup (e.g., "Learn about local customs before you arrive," "Bring a gift for the [outgroup] government to the meeting"), which if anything should be more important when a group wants to be seen as cooperative (vs. intimidating). We also included three additional, neutral filler items to help mask the true purpose of the experiment (e.g., "Arrive when the weather is good").

Results and Discussion

Symbol display behavior. To test the hypothesis that the goal to convey an impression of the ingroup as unified and intimidating (vs. inclusive and cooperative) would increase participants' desire to display ingroup symbols, we conducted an independent samples *t* test comparing participants' importance ratings for the symbol display behaviors in the intimidate (vs. cooperate) conditions. As predicted, participants expressed a greater desire to display ingroup symbols when their goal was to intimidate Venezuela ($M = 4.99$, $SD = 1.55$) compared to when their goal was to form an alliance with Peru ($M = 4.09$, $SD = 1.38$), $t(144) = 3.70$, $p < .001$, 95% CI M_{diff} [.42, 1.38], $d_s = .61$. In other words, participants placed greater importance on displaying symbols such as flags when they wanted the United States to seem more entitative and intimidating.[14]

Alternative explanations. To rule out the possibility that participants in the intimidate (vs. cooperate) condition simply saw all group behaviors as more important, we also compared importance ratings for the courtesy items in the two conditions. Not surprisingly, participants endorsed the courtesy items more in the cooperate (vs. intimidate) condition, $ps < .003$ (see Table 6 for means and SDs of all items).[15] Thus, the desire to convey an impression of the United States as unified and intimidating led participants to uniquely value behaviors that involved displaying ingroup symbols to the outgroup.

The results of Study 5a suggest that group members strategically display symbols in the service of goals associated with real-world intergroup contexts, preferring to emphasize group symbols more in antagonistic interactions when they want their group to seem cohesive and threatening (vs. friendly interactions when they want their group to seem inclusive and cooperative). However, one might wonder whether participants in the intimidate (vs. cooperate) condition would have more strongly endorsed any behavior that involved focusing on the ingroup rather than the outgroup. In other words, a competitive (vs. cooperative) goal might lead participants to value any behaviors that involve thinking about other ingroup members over those that involve thinking about outgroup members. In our next study, we included additional behavior items to rule out this possibility. We also sought to extend our findings to another common type of group—namely, organizational teams.

[14] We ran another version of this study as part of a classroom demo in which we asked participants ($N = 206$) to imagine they were a member of an alien tribe on a planet where resources were scarce. They read that they were planning a delegation to visit another alien tribe with the goal of either intimidating them or forming an alliance with them. The results replicated: Participants in the intimidate condition placed greater importance on displaying group symbols (e.g., displaying their tribe's flag, singing their tribe's anthem) compared with participants in the cooperate condition ($M = 5.34$, $SD = 1.64$ vs. $M = 3.14$, $SD = 1.55$, respectively), $t(204) = 9.93$, $p < .001$, $d_s = 1.39$.

[15] Note that for some items in this study and the next, *SD*s differed substantially between conditions (violating the homogeneity of variance assumption for a standard *t* test); accounting for unequal variances always yielded virtually identical results.

Table 6
Item Means and SDs in Study 5a

	Cooperate	Intimidate
Symbol display items		
Prominently display the American flag during the meeting	3.90	4.95
	(1.59)	(1.96)
Make sure the leader of the delegation wears a flag pin	4.25	5.24
	(1.79)	(1.90)
Emphasize banners with emblems of the United States, such as the bald eagle	4.13	4.78
	(1.79)	(1.99)
Courtesy items		
Let the Venezuelan government pick what time you arrive	5.28	3.31
	(1.62)	(2.06)
Learn about local customs before you travel	6.86	6.42
	(.48)	(1.13)
Bring a gift for the Venezuelan government to the meeting	6.07	5.07
	(1.31)	(2.03)

Note. *SD*s appear in parentheses below means.

Study 5b

The results from Study 5a suggest that people use symbols strategically when trying to manage intergroup impressions in an international context. In Study 5b, to test the robustness of this effect, we focused on a small task group rather than a national delegation. Moreover, we included additional behaviors that were related to the ingroup but not to symbols to demonstrate the specificity of this effect.

Method

Participants and power. Participants were 102 adults (35 male, 67 female; 100% from the United States; race/ethnicity not recorded) between the ages of 19 and 65 years ($M = 33.62$, $SD = 11.97$) who completed the study online in exchange for payment through Amazon's MTurk platform. A power analysis suggested that we would need 84 people to have 80% power to detect the effect size observed in Study 5a; because classic power analyses can be overly optimistic (e.g., McShane & Bockenholt, 2014), we chose to collect as many participants as our resources would permit.

Procedure and materials. Participants were asked to imagine that they were part of a work group that was planning for an upcoming event. As before, they read that they would need to make some decisions about the event as they were planning.

Group goal. To manipulate whether participants were motivated to convey an impression of their group as unified and intimidating versus inclusive and cooperative, we asked participants to consider one of two organizational contexts. In the *compete* condition, participants read that they were planning for a team competition. The goal was for their work group to "beat the other teams" by conveying that their own team was "cohesive and united." In the *cooperate* condition, participants read instead that they were planning for a team exhibition. The goal was for their work group to "cooperate with the other teams" by conveying that their own team was "inclusive and works well with others."

Symbol display behaviors. As before, participants saw a randomly ordered list of possible behaviors for the upcoming event and were asked to indicate the degree to which they thought that behavior should happen for the event to be a success (see Appendix B for all items). To assess the extent to which participants wanted to display ingroup symbols to the outgroup, we included three behaviors that involved displaying symbols during the intergroup interaction ("Make sure that your work materials clearly display your team's logo," "Create a team flag that you can bring with you to the conference," and "Prominently display your group colors during the conference"). These three items were averaged to form an index of symbol display behaviors ($\alpha = .84$).

Once again, we included three items that involved being courteous to the outgroup (e.g., "Learn the names of the members on the other teams," "Bring coffee and donuts for all of the teams") to assess whether participants would endorse different behaviors selectively, depending on their goal. We also included three items that we expected to be irrelevant to either group goal but that still involved focusing on the ingroup (e.g., "Make sure that your team members can communicate effectively") to assess whether the goal to compete (vs. cooperate) would lead participants to simply endorse any and all behaviors that involved focusing on the ingroup. Finally, we included three additional, neutral filler items to help mask the true purpose of the experiment (e.g., "Learn as much as you can about the event's location").

Results and Discussion

Symbol display behavior. An independent samples t test revealed that participants expressed a greater desire to create and display ingroup symbols when their goal was to compete with the other work teams ($M = 5.24$, $SD = 1.39$) compared with when their goal was to cooperate with the other work teams ($M = 4.08$, $SD = 1.68$), $t(100) = 3.79$, $p < .001$, 95% CI M_{diff} [.55, 1.77], $d_s = .75$. In other words, when participants wanted their own work group to seem cohesive and united (vs. inclusive and cooperative), they more strongly endorsed displaying ingroup symbols to the other organizational teams.

Alternative explanations. To rule out the possibility that participants in the compete (vs. cooperate) condition simply saw all behaviors as more important, or that they saw all ingroup-focused behaviors as more important, we also compared importance ratings for the courtesy and ingroup-focused items in the two conditions. As in Study 5a, participants endorsed the courtesy

Table 7
Item Means and SDs in Study 5b

	Cooperate	Intimidate
Symbol display items		
Prominently display your group colors during the conference	4.04	5.33
	(1.96)	(1.63)
Create a team flag that you can bring with you to the conference	3.58	4.67
	(1.82)	(1.95)
Make sure that your work materials clearly display your team's logo	4.62	5.73
Courtesy items	(1.93)	(1.51)
Bring coffee and donuts for all of the teams	4.53	3.39
	(1.78)	(2.11)
Learn the names of the members on the other teams	6.00	4.53
	(1.29)	(1.93)
Bring a gift for the other teams	3.02	2.16
Ingroup-focused filler items	(1.47)	(1.45)
Make sure that your team members can communicate effectively	6.72	6.69
	(.60)	(.62)
Have a late-night party for your team the night before you leave	2.04	2.59
	(1.47)	(1.92)
Go over the strategy with your team members	6.64	6.88
	(.68)	(.39)

Note. *SD*s appear in parentheses below means.

items more in the cooperate (vs. intimidate) condition, *p*s $< .004$ (see Table 7).

There were no consistent differences between conditions in endorsement for the ingroup-focused filler items: Participants in the compete (vs. cooperate) condition placed similar importance on "make sure that your team members can communicate effectively" and "have a late-night party for your team the night before you leave," $p = .849$ and $p = .104$, while they placed slightly greater importance on "go over the strategy with your team members," $p = .036$ (see Table 7). Alternatively, we can attempt to statistically account for the extent to which the symbol display items might also tap a desire to engage in ingroup-focused behaviors by controlling for the three ingroup-focused items when testing the effect of motivation on symbol display behaviors. An ANCOVA testing the effect of condition on symbol display behaviors, controlling for the three ingroup-focused filler items, was still significant, $F(1, 97) = 9.57$, $p = .003$. Taken together, then, these results suggest that participants strategically endorsed behaviors that they believed would help them meet their goal in a given organizational context (rather than simply endorsing all behaviors or all ingroup-focused behaviors more in one condition vs. the other).

The results of Studies 5a and 5b offer converging support for the notion that group members use group symbols strategically in the service of their current intergroup goals. In both international and organizational contexts, participants placed greater importance on displaying group symbols such as flags and logos when they were motivated to convey an impression of their group as unified and intimidating (vs. inclusive and cooperative). Thus, not only do group symbols convey an impression of groups as cohesive and threatening, as we saw in our earlier studies, but group members also strategically rely on symbols when they want their group to seem cohesive and threatening to others.

General Discussion

Taken together, the results of these studies converge on the conclusion that the mere presence of a group symbol can lead groups to be perceived as more entitative, threatening, and effective, and that group members strategically emphasize symbols when they are motivated to convey an impression of their group as unified and intimidating to others. In Studies 1a through 1c, simply reading that a group happened to have a symbol increased perceived entitativity, and this effect occurred across a wide variety of group types as well as different types of symbols (both logos and team colors).

Study 2 replicated and extended these results using groups of novel alien creatures, to rule out the possibility that the effects in our first studies were due to participants having particular expectations about known groups. Our results suggested that the mere presence of a group identity symbol may help groups to compensate for lacking an actual characteristic (such as physical similarity) that enhances perceived entitativity. Moreover, we found that this increased entitativity in turn shaped other important judgments about the group: Groups that were perceived as high in entitativity seemed more threatening toward other groups.

In Study 3, we sought to unpack the particular process by which symbols have their effect on group perception. Building on past work in this area suggesting that there are two distinct routes to entitativity—cohesion and homogeneity (Brewer et al., 2004; Lickel et al., 2001)—Study 3 showed that group symbols and actual characteristics of group members exert their effects via somewhat different processes. Whereas physical similarity increased perceived entitativity and threat via its impact on both cohesion and homogeneity, group identity symbols appeared to operate solely via the cohesion route. Thus, although symbols and physical similarity appear to have similar outcomes for group perception, they may exert this impact via distinct patterns of psychological mechanisms.

Study 4 extended these findings to consider whether symbols can not only shape the impressions people form of novel groups, but also change people's existing impressions of familiar, real-world social groups. The results showed that when a community group was presented with (vs. without) a logo, participants saw the

group as more entitative. Echoing our previous findings for perceived threat, the presence of a logo also led groups to seem both more competent and less warm.

Finally, Studies 5a and 5b turned to investigate whether group members seek to use group symbols strategically in motivationally relevant circumstances, as our current conceptualization of the psychological function of symbols would lead us to expect. The findings suggested that group members are especially likely to create and display symbols when they are motivated to convey an impression of their group as unified and intimidating (rather than inclusive and cooperative).

Taken together, then, the results of these studies shed new light on the psychological function of group identity symbols. They suggest first that group symbols can broadly influence group impressions, leading collectives to seem more like real, cohesive, effective, and intimidating groups. Second, they suggest that group members strategically display symbols such as flags and logos when they are motivated to convey an impression of their group as unified and intimidating (vs. inclusive and cooperative) to others.

Meta-Analyses

In light of increasing calls to move from evaluating single studies in isolation to considering the information provided by a cumulative body of research evidence (e.g., Braver, Thoemmes, & Rosenthal, 2014; Ledgerwood, 2014a, 2014b; Maner, 2014), we conducted two meta-analyses to quantitatively synthesize our key results and get a better estimate of the size of the effects in our two-part story about the function of group symbols: namely, (a) the effect of group symbols on perceived entitativity and (b) the effect of motivation on symbol display behaviors. Drawing on all of our studies that tested the first effect (the six reported in the text and two additional studies mentioned in Footnote 3 and further below in the section on Boundary Conditions), we meta-analyzed nine effect sizes estimating the influence of symbols on perceived entitativity across a total of 907 participants.[16] Following common practice, we used a random effects model with study as the unit of analysis; when there were multiple effect sizes, we averaged effect sizes within each study to account for statistical dependence (see Card, 2012; see Table 8 for a list of studies and effect sizes). The analysis revealed a robust effect of group symbol on entitativity, Hedges' $g = .51$, 95% CI [.26, .76], $z = 4.05$, $p < .001$, with substantial effect size heterogeneity between studies, $I^2 = 83.77$, $Q(7) = 43.12$, $p < .001$. Thus, aggregating across studies, group symbols appear to have a reliable and (using Cohen's conventions as a benchmark; Cohen, 1988) medium-sized effect on perceived entitativity.

We tested the second effect (i.e., the effect of motivation on symbol display behaviors) in three studies (Study 5a, Study 5b, and the additional study described in Footnote 14), yielding three independent effect size estimates across a total of 454 participants (see Table 8). A random effects meta-analysis revealed a significant and large effect of motivation on the desire to display group symbols, Hedges's $g = .92$, 95% CI [.42, 1.42], $z = 3.61$, $p < .001$, with substantial effect size heterogeneity, $I^2 = 84.36$, $Q(2) = 12.79$, $p = .002$. Taken together, these meta-analyses suggest there is strong evidence for our two-part account of the psychological function of symbols, and the observed heterogeneity in effect sizes suggests that the size of the effect may also depend on particular features of the symbol, group, and/or context—a promising avenue for future research. (Note that future research should also use power analyses that take into account the effect size heterogeneity observed here; see Ledgerwood, Soderberg, & Sparks, in press; McShane & Bockenholt, 2014.)

Table 8
Effect Sizes for Meta-Analyses

	N	Hedges' *g*
Studies testing the effect of symbol on entitativity		
Study 1a	48	.882
Study 1a replication	74	.383
Study 1b	98	.979
Study 1c	76	.250
Study 2	64	.845
Study 3	206	.287
Study 3 replication	97	.482
Study 4	239	.127
Studies testing the effect of motivation on symbol display		
Study 5a	146	.610
Study 5a replication	206	1.380
Study 5b	102	.746

Note. See Footnote 3 for Study 1a replication; see section on Boundary Conditions in the General Discussion for Study 3 replication; see Footnote 14 for Study 5a replication.

Implications for Understanding Symbols

The results of our studies help shed light on the important psychological function that group identity symbols can play, and may therefore help clarify why symbols appear to be so ubiquitous and why group members intuitively place such importance on them (see, e.g., Callahan & Ledgerwood, 2013; Cerulo, 1997; Firth, 1973; Smith, 1975). By increasing perceived entitativity, symbols appear to anchor groups in reality: Their very presence leads groups to seem like more coherent and effective entities to others. From social clubs to organizations to nations, the actual characteristics of group members are often heterogeneous: The physical appearance of Americans varies considerably; the behaviors of the students, professors, and president of a university are often highly dissimilar. However, with a symbol, even a loose crowd of people can seem like more of a "real," competent group. Thus, one critical function that group identity symbols may serve is to lead diverse collections of individuals to seem like unified and effective entities. Moreover, the results of Studies 5a and 5b suggest that people at least intuitively pick up on this function, more strongly preferring to display group symbols when they want to convey an impression of their ingroup as unified and intimidating to others.

[16] Recall that Study 1a, Study1b, and the replication reported in Footnote 3 each included a forced-choice entitativity DV, which we analyzed using a one-sample *t* test, in addition to a continuous entitativity scale. To include an effect size in a meta-analysis, one needs an estimate of the uncertainty of the effect size. However, because there seems to be no guidance available (despite extensive searching) on how to calculate *SE*s around Cohen's *d* for one-sample *t* tests, we were able to include only the continuous measures from these three studies in the meta-analysis reported here. Note that in all three studies, the effect size estimate was larger for the forced-choice (vs. continuous) measure, so the average effect size estimate produced by our meta-analysis may underestimate the true average effects size.

These results also provide important foundational evidence for a theoretical account of when and why groups will create and display group identity symbols to others. As noted at the outset of our introduction, many groups seem to have some sort of symbol, whether it is a national flag, a team mascot, a camp song, or a company logo. And yet just as strikingly, some groups do *not* have symbols—it is relatively rare, after all, for groups of friends or workplace project teams to have a logo or mascot. Insofar as variations in the motivation to convey certain impressions of one's group to others influences the desire to create and display group identity symbols, as our findings in Studies 5a and 5b suggest, we might expect motivation to play a key role in determining which groups have symbols. If and when a collection of individuals wants to seem united and intimidating, they should be especially likely to create and display symbols to others; conversely, if and when a group wants to seem inclusive and friendly (e.g., a group of friends; a workplace team that needs to interact cooperatively with other teams), they may forgo symbols and focus instead on behaviors that can convey their desired impression. One might also predict that if symbols can help stand in for actual characteristics of group members that cue entitativity (as suggested by Studies 2 and 3), group members might be more motivated to create and display symbols when they want to seem unified but lack the intrinsic characteristics (e.g., physical similarity, shared backgrounds) that would make them seem group-like to others.

Our findings also suggest important future directions for examining intragroup processes. Social groups have many functions, including but not limited to fulfilling the need to belong (Baumeister & Leary, 1995) maintaining positive self-esteem (Tajfel & Turner, 1979), maintaining optimal distinctiveness (Brewer, 1991), and reducing uncertainty (Hogg, 2007). Research and theory suggest that entitativity may improve a group's *psychological utility* (e.g., Correll & Park, 2005); that is, the more "real" a group feels, the more likely it can fulfill one's needs. If identity symbols increase the perceived entitativity of ingroups as well as outgroups, then symbols may make groups more rewarding to belong to, help them attract and keep members, and make them generally more effective in meeting their members' needs. Future research could also explore which group members are most likely to value group identity symbols, which may provide a critical tool for communicating one's membership in and commitment to a group (see, e.g., Berger & Heath, 2008; Klein et al., 2007; Ledgerwood & Liviatan, 2010; Noel et al., 1995; Wicklund & Gollwitzer, 1981). More broadly, symbols may be an important way for group members to manage their social identities, constructing and communicating it to themselves and others.

Implications for Understanding Entitativity

The current research contributes to the literature on entitativity by advancing our understanding of the antecedents and consequences of entitativity judgments. To date, entitativity research has typically focused on how perceived entitativity is affected by the actual actions and characteristics of a group's members—what they are like and what they do. The current research shows that symbols can help substitute for actual characteristics to convey a similar psychological sense of entitativity. Moreover, in Study 3, whereas the actual characteristic of physical similarity increased perceived entitativity by changing perceptions of both cohesion and homogeneity, symbols increased entitativity solely via their effect on perceived cohesion. This pattern of results offers support for the notion that different cues can lead to the same outcome of perceived entitativity via distinct processes. These findings also expand our understanding of the consequences of entitativity cues for downstream group judgments. Previous research found that physical similarity increased perceived threat or hostility, an effect that we not only replicated but also extended to the presence of group symbols. Moreover, we found that these effects were mediated by perceived entitativity, which previously had been theorized but not empirically tested. Our results also suggested that increases in entitativity were associated with increased perceptions of competence but decreased perceptions of warmth, paving the way for future research to explore potential interconnections between the literatures on entitativity and stereotyping.

Boundary Conditions

In the studies reported here, the mere presence of a group symbol—whether a flag, a logo, or team colors—led groups to seem more entitative and threatening, as well as more competent but less warm. One might wonder about potential boundary conditions for this effect—would group identity symbols always make a group seem more intimidating to others? In our studies, these effects emerged both for novel groups of alien creatures as well as for familiar, real-world social groups that are stereotypically perceived as moderately warm. However, some researchers have posited that entitativity might not always increase perceived threat, but that the effect might instead depend on people's initial attitudes toward the group (e.g., Sherman et al., 1999). Although there is not much empirical support for this hypothesis to date, we saw some suggestive evidence in a follow-up study similar to Study 3 that involved much friendlier-looking alien creatures. In that study, we replicated all effects (i.e., symbols increased perceived entitativity, homogeneity, and cohesion) except for perceived threat, suggesting that the tendency for symbols to make a group seem more intimidating may diminish or vanish when groups are especially liked. Future research could continue to explore potential boundary conditions for these effects by testing how symbols influence judgments of groups that are viewed in a particularly positive light.

In addition, there may be interesting moderators of the effects observed here based on the particular characteristics of a given symbol. For example, one could hypothesize that distinctive and unique symbols will produce stronger effects on group impressions than symbols that are more commonplace, and that group members would therefore prefer to display more distinctive (vs. common) symbols when they want their group to seem unified and intimidating. Likewise, one might reasonably predict that symbols need to somehow "fit" with the group they represent. A group symbol that seems to embody a group's identity (e.g., a tree logo for an environmental group) may be more effective than a symbol that seems unrelated to or at odds with the group's identity. Indeed, in Study 1b, the magnitude of our effect varied by counterbalance condition, suggesting the same symbol may vary in its ability to affect entitativity based upon the particular group with which it is paired. Although we did not see this interaction in other studies, the possibility that symbol fit might moderate the

effects reported here seems like a potentially promising avenue for future research.

Conclusion

To return to the original question of the basic psychological function generally served by symbolic representations of group identity, the current research suggests that such symbols reify groups. The presence of a symbol led groups to be perceived as more cohesive, which led them to be perceived as more entitative and real. Furthermore, the increased entitativity caused by symbols led groups to be perceived as more threatening and competent. In turn, group members strategically prioritized displaying symbols to others when they were motivated to convey an impression of their group as united and intimidating. Thus, symbols are not simply ornamental: They serve in part as reservoirs of realness, and seem to be an important part of how groups manage their social identities.

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Appendix A

Independent Variables for Studies 1a–1c

Study	Row					
1a Footnote 3 1b	1	I bowl with the same group of people regularly.	I'm a member of a group that walks our dogs together.	Several people I know get together to watch sports at the bar.	I've been taking a cooking class for a while now.	I belong to a group that goes hiking together.
1a Footnote 3 1b	2	I see these people about once a week.	We get together four times a month.	We usually meet 2–3 times a week. I can't always go.	The group gathers every Monday.	Usually, we meet on Saturday.
1a	3	**There's actually an "official logo" that one of us came up with.**	I found out about it through a flyer I saw somewhere.	I think I first started going a few years back.	I had to stop going for a while when I hurt my back.	My neighbor is in it with me.
Footnote 3	3	**There's actually an "official logo" that one of us came up with.**	My coworker is in it and he goes all the time.	Most new members find out about the group from a flyer.	It all got started by some people who live in my neighborhood.	There's a group like this that meets in Sacramento.
1b	3	**There's what's called the "team colors"–green and yellow.**	My coworker is in it and he goes all the time.	Most new members find out about the group from a flyer.	It all got started by some people who live in my neighborhood.	There's a group like this that meets in Sacramento
1c	1	I play soccer with the same group of people regularly.	People I know get together to watch sports at a bar.	I'm a member of a group that walks dogs together.		
1c	2	[Where group regularly meets in town.]	[Where group regularly meets in town.]	[Where group regularly meets in town.]		
1c	3	Usually, we meet on Saturday.	We get together every Monday.	I see these people about once a week.		
1c	4	Two of my coworkers go all the time.	I found out about the group from a flyer.	My neighbor is in the group with me.		
1c	5	**There's a logo that someone came up with a while back.**	It all got started by people who live in my neighborhood.	There's a group like this that meets in Sacramento.		

Note. Bolded text consists of the symbol manipulation. Location of all text varied randomly across columns.

(*Appendices continue*)

Appendix B

Measures Used in Studies 1–5

Full study materials can be obtained online (http://ledgerwood.faculty.ucdavis.edu/resources) or by contacting the corresponding author.

Study 1a, Footnote 3, and Study 1b

Forced choice entitativity measure (Select A, B, C, D, or E)

1. Which one of Bob's groups seems most cohesive (meaning they're unified or well-integrated)?
2. Which group do you think matters least to Bob?
3. Some groups have the characteristics of a "group" more than others do. Which one of Bob's groups do you think is most "group-like"?
4. Which group do you think is most important to Bob?
5. Which group do you think is the least organized?
6. Some groups have a core personality; although there may be differences and similarities in their behaviors, underneath they are basically the same. Which group do you think has the strongest personality?
7. Which group do you think feels the most like a "real" group?

Study 1a, Footnote 3, and Study 1b

Entitativity ratings (1 = *not at all*, 5 = *very much*)

1. In your opinion, how "group-like" is Group [A/B/C/D/E]?
2. How important is Group [A/B/C/D/E] to Bob?

Study 1c

Entitativity scale (1 = *not at all*, 9 = *extremely*)

1. How unified is Group [A/B/C]?
2. How much do members of Group [A/B/C] feel like they are part of the group?
3. To what extent does Group [A/B/C] seem more like a group rather than just a bunch of individuals?
4. How alike are members of Group [A/B/C]?
5. To what extent do members of Group [A/B/C] have similar personalities?
6. How much do members of Group [A/B/C] have sense of common fate or future?
7. How much does Group [A/B/C] cooperate with each other?
8. To what extent does Group [A/B/C] have an organized structure?
9. How important is Group [A/B/C] to its members?
10. To what extent do you think Group [A/B/C] has formal and informal rules?
11. To what extent do you think the behavior of individuals in Group [A/B/C] can be controlled or influenced by other people in the group?
12. To what extent do you think there are strong interpersonal bonds among the people in Group [A/B/C]?

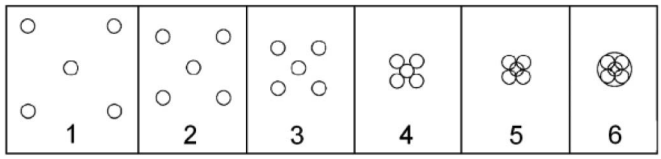
Study 2

Entitativity scale (1 = *strongly disagree*, 7 = *strongly agree*)

1. These G's have many characteristics in common.
2. There are strong ties among these G's
3. These G's cooperate with each other
4. These G's share a common past experience
5. There are strong similarities between these G's.
6. These G's have a sense of common fate

Group Entitativity Measure (*Select 1–6*):

The circles represent the members of the group of G's. For each group, please select the set of circles that best represents the group of G's.



1. Which set of circles best represents the members in this group of G's?

(*Appendices continue*)

Outgroup threat (1 = *not at all*, 7 = *very much*):

1. How prejudiced are these G's toward H's?
2. How threatening are these G's toward H's?
3. How much do these G's hate H's?
4. How friendly are these G's toward H's?
5. How cooperative are these G's with H's?

Study 3

Entitativity:

1. How would you describe these Volotos? (1 = *much more like a collection of individuals than a group*, 7 = *much more like a group than a collection of individuals*).

Homogeneity (1 = *not at all*, 7 = *very much*):

1. To what extent do these Volotos constitute a homogeneous (identical) group?
2. How similar are these Volotos?
3. To what extent do these Volotos share common essential (fundamental) qualities?

Cohesion (1 = *not at all*, 7 = *very much*):

1. To what extent do these Volotos constitute a cohesive group?
2. How united are these Volotos?
3. How high is the team spirit displayed by these Volotos?

Outgroup threat (1 = *not at all*, 7 = *very much*):

1. How prejudiced are these Volotos toward other groups?
2. How threatening are these Volotos toward other groups?
3. How much do these Volotos hate other groups?
4. How friendly are these Volotos toward other groups?
5. To what extent do these Volotos cooperate with other groups?
6. To what extent do these Volotos welcome outsiders?

Study 4

Entitativity:

1. When we consider groups, we sometimes think about them "as a whole" and consider the characteristics of the people in general. Other times, we think about the groups as a number of individuals. How would you describe this group? (1 = *as a number of individuals*, 7 = *as a whole*)
2. Some groups seem more "group-like" than others. How "group-like" does this group seem to you? (1 = *not at all like a group*, 7 = *very much like a group*)
3. Agree/disagree: There are high levels of interaction and communication among members of this group. (1 = *strongly disagree*, 7 = *strongly agree*)
4. Agree/disagree: There are many goals in common among members of the group. (1 = *strongly disagree*, 7 = *strongly agree*)
5. Agree/disagree: This group has high levels of similarity among its members; they are alike in many ways. (1 = *strongly disagree*, 7 = *strongly agree*)

Warmth (1 = *not at all*, 7 = *extremely*):

1. How warm are members of this group?
2. How nice are members of this group?
3. How friendly are members of this group?
4. How sincere are members of this group?

Competence (1 = *not at all*, 7 = *extremely*):

1. How competent are members of this group?
2. How confident are members of this group?
3. How skillful are members of this group?
4. How able are members of this group?

(*Appendices continue*)

Study 5a

Motivation to engage in various behaviors (1 = *definitely should not happen*, 7 = *definitely should happen*):

Instructions: As you are planning the delegation, you must make decisions about the trip. For each of the behaviors below, please indicate the extent to which you think that behavior should happen for the delegation to be a success.

(*All behaviors presented in random order*)

Symbol display behaviors:

1. Prominently display the American flag during the meeting.
2. Make sure the leader of the delegation wears a flag pin.
3. Emphasize banners with emblems of the United States, such as the bald eagle.

Courtesy items:

1. Let the Venezuelan government pick what time you arrive.
2. Learn about local customs before you travel.
3. Bring a gift for the Venezuelan government to the meeting.

Neutral filler items:

1. Keep the delegation fairly small.
2. Arrive when the weather is good.
3. Travel rapidly.

Study 5b

Motivation to engage in various behaviors (1 = *definitely should not happen*, 7 = *definitely should happen*):

Instructions: As you are planning for the event, you must make a number of decisions. For each of the behaviors below, please indicate the extent to which you think that behavior should happen for the delegation to be a success.

(*All behaviors presented in random order*)

Symbol display behaviors:

1. Prominently display your group colors during the conference.
2. Create a team flag that you can bring with you to the conference.
3. Make sure that your work materials clearly display your team's logo.

Courtesy items:

1. Bring coffee and donuts for all of the teams.
2. Learn the names of the members on the other teams.
3. Bring a gift for the other teams.

Ingroup-focused filler items:

1. Make sure that your team members can communicate effectively.
2. Have a late-night party for your team the night before you leave.
3. Go over the strategy with your team members.

Neutral filler items:

1. Schedule your day carefully.
2. Check the weather ahead of time.
3. Learn as much as you can about the event's location.

Received August 26, 2015
Revision received December 2, 2015
Accepted December 5, 2015 ■