American Psychological Association

Journal of Experimental Psychology: Learning, Memory, and Cognition

ISSN: 0278-7393

2022, Vol. 48, No. 1, 13–28
https://doi.org/10.1037/xlm0001009

Members of Highly Entitative Groups Are Implicitly Expected to Behave Consistently Based on Their Deep-Level Goals Instead of Their Shallow-Level Movements

Jun Yin[1, 2], Jipeng Duan[1, 2, 3], Jiecheng Huangliang[1, 2], Yinfeng Hu[1, 2], and Feng Zhang[1, 2]

[1] Department of Psychology, Ningbo University
[2] Center of Group Behavior and Social Psychological Service, Ningbo University
[3] School of Psychology and Cognitive Science, East China Normal University

The current study investigated whether the deep properties or shallow features of behaviors are implicitly expected to be consistent across members of highly entitative groups, by exploiting the notion that goals—as deep properties—and movements—as shallow features—can be dissociated in object-directed behaviors. Participants were asked to view group members' goal-directed behaviors toward an object. Whether perceivers implicitly expected that a new member would perform the same movement to the previously visited location (i.e., exhibit shallow feature-based behavior) or a new movement to the previously visited object (i.e., exhibit deep property-based behavior) was recorded. Study 1 revealed that perceivers implicitly expected members of a highly entitative group to approach the previously visited object with a new movement (i.e., to have a consistent goal) rather than perform the same movement to the previously visited location (i.e., to express a consistent movement). Study 2 confirmed that the responses in Study 1 were explained by group members conforming to, rather than violating, internal expectations (i.e., of consistent movement). Importantly, the implicit expectation of shared behaviors across group members relies on the goal interpretation of actions instead of the associations between actions and outcomes (Study 3). Study 4 replicated the facilitation effect of Study 1 and revealed that the goal-based expectation of common behaviors among group members is based on the majority behavior instead of a single demonstration. Hence, individuals in highly entitative groups are implicitly expected to behave consistently based on the deep properties of behaviors instead of their shallow features.

Keywords: social group, group entitativity, implicit expectation, goal, movement

"No man is an island." Although human beings are diverse and are often treated as independent social thinkers, they are frequently tied to the affiliations of groups and act with collectives (Liberman et al., 2017). Hence, to understand social individuals, it is important to link their behaviors with the groups to which they belong (Bodenhausen et al., 2012; Hamilton & Sherman, 1996; Tajfel et al., 1971). However, not all groups of individuals possess the same level of "groupness" because they can be loose associations (e.g., people in a bus station) or unified entities (e.g., football teams; Lickel et al., 2001). As perceivers, we must use the available information to differentiate between collections of persons that constitute groups and collections of persons that are merely sets of individuals (Hamilton et al., 2002; Ip et al., 2006). Thus, how do we perceive groups? Much recent research within this realm has been dedicated to understanding group entitativity, that is, the degree to which an aggregate of individuals is perceived as a unified entity. This concept was first proposed by Campbell (1958) and has generated a stream of subsequent research, leading to systematic examinations of several important issues, especially the causes and consequences of entitativity (Agadullina & Lovakov, 2018; Crump et al., 2010; Dasgupta et al., 1999; Igarashi & Kashima, 2011; Ip et al., 2006; Lakens, 2010; Lickel et al., 2000; McConnell et al., 1997; Rydell et al., 2007; Sani et al., 2005; Sheikh & Hirschfeld, 2019; Spencer-Rodgers et al., 2007; Sviry-dzenka et al., 2010; VanBergen et al., 2020; Yzerbyt et al., 1998).

Since Campbell's initial discussion of entitativity, many cues that affect entitativity have been identified, including perceptual cues (e.g., collective movement, common fate); even the type of group plays a role in judging entitativity (Crump et al., 2010; Igarashi & Kashima, 2011; Ip et al., 2006; Lakens, 2010; Lickel et al., 2000; Sani et al., 2005; Svirydzenka et al., 2010). Substantial work has also pursued this issue by documenting several consequences of entitativity, including dispositional inferences about

This article was published Online First April 29, 2021.
Jun Yin https://orcid.org/0000-0002-2009-6068
Jiecheng Huangliang https://orcid.org/0000-0001-6693-9537
Yinfeng Hu https://orcid.org/0000-0002-3157-8134
This work was supported by National Natural Science Foundation of China (Grant 31871091), Fundamental Research Funds for the Provincial Universities of Zhejiang (Grant SJWZ2020001), and K. C. Wong Magna Fund of Ningbo University. All data and supplementary videos demonstrating how a trial in each study was run, have been made publicly available via the Open Science Framework, and can be accessed at https://osf.io/tah2j/?view_only=5b857e20ba8f444ba41a4f124c23936d.
Correspondence concerning this article should be addressed to Jun Yin, Department of Psychology, Ningbo University, No. 616 Fenghua Road, Ningbo 315211, China. Email: yinjun1@nbu.edu.cn

members, the type and depth of cognitive processing about members, stereotyping, and so on (Agadullina & Lovakov, 2018; Dasgupta et al., 1999; McConnell et al., 1997; Rydell et al., 2007; Spencer-Rodgers et al., 2007; VanBergen et al., 2020; Yzerbyt et al., 1998). The most notable finding is that, when a group is perceived as being an entity rather than a loose aggregate of people, group members are expected to share characteristics and behave consistently (Hamilton et al., 2002; Hamilton et al., 2009). However, the following is an important question that has received relatively little research attention: What types of characteristics are expected to be consistent: shallow features (e.g., directly observed movements of actions) or deep properties (e.g., inferred goals or traits)? The current article presents a method to disentangle these two types of expectations to address this question and proposes that the members of a high-entitativity group are implicitly expected to behave consistently based on the deep properties of behaviors (e.g., goals).

Cues That Contribute to Group Entitativity

Campbell (1958) used the term "entitativity" to express the quality of "groupness" and describe the perception of a group as a real entity rather than an aggregate of individuals. Similar to the principles of perceptual organization, which cause discrete elements to be perceived as parts of a whole, Campbell emphasized the role played by cues of proximity, similarity, and common fate in forming group entitativity. That is, when an aggregate of individuals is spatially close, appears similar, moves synchronously, or appears to have a common fate (e.g., common outcomes), then it will be more likely to be perceived as a unified entity.

Lickel and colleagues (2000) applied Campbell's concepts to empirical research. Specifically, participants were asked to rate the extent to which different individuals "qualified as a group." This rating was used as a measure of group entitativity, and participants rated each of those same groups on several group properties, including the extent to which members interact, the importance of the group to its members, the similarity among group members, the extent to which members share common goals and a common fate, the size of the group, and so on. Consistent with Campbell's claim, they found that common fate and similarity were cues that strongly predicted group entitativity. Furthermore, Ip and colleagues (2006) established a causal relationship between similarity and group entitativity by manipulating similarity in physical traits (e.g., same skin color) and concerted collective behavior (e.g., same movement) and demonstrated that both similarities evoke high group entitativity. Lakens (2010) manipulated movement synchrony by presenting stick figures with similar or dissimilar movement rhythms. He revealed that figures moving in synchrony were rated higher on entitativity than those moving in different rhythms, and the measured similarity of movement was linearly related to ratings of perceived entitativity. Hence, the role of common fate in group entitativity has been documented.

Even more than the previous cues, group types can produce different effects on group entitativity (Hamilton et al., 2002; Lickel et al., 2000). It has been suggested that groups are divided into different types, including intimacy groups (e.g., family, close friends, a local street gang), task-oriented groups (e.g., a committee, a jury, the cast of a play, people working in a restaurant), groups based on social categories (e.g., women, Black people, Jewish people, Americans), and loose associations (e.g., students at the same university, people living in the same neighborhood, people who like classical music). Regarding group types, participants did not perceive different groups as being identical, but intimacy groups were judged highest in entitativity, followed by task-oriented groups, groups based on social categories, and loose associations (Lickel et al., 2000). Therefore, people are equipped with the ability to capture possible cues to organize a collection of social individuals into a unified entity.

Downstream Effects of Group Entitativity on Processing Individuals

When a group is highly entitative, group-level characteristics instead of those of discrete individuals are extracted online, and the "essence" of such a group is searched. It has been suggested that highly entitative groups are represented as prototypic representations, and low-entitative groups are associated with exemplar-based representations (Brewer et al., 1995). In other words, members of high-entitativity groups are treated categorically, whereas members of low-entitativity groups are treated individualistically. Consequently, the inference of group members is guided by the group-level information, showing that group-level characteristics are applied somewhat indiscriminately across all members of highly entitative groups and that members of highly entitative groups are expected to behave consistently (Hamilton & Sherman, 1996; Hamilton et al., 2002; Hamilton et al., 2009).

The conclusion that group members are expected to share behavioral tendencies has been well documented in studies on the role of group entitativity in stereotyping (Agadullina & Lovakov, 2018; Rydell et al., 2007; Yzerbyt et al., 1998). A stereotype is a generalized belief about the stable attributes of a social group, and stereotypes often involve overgeneralizing across group members even though they do not have these attributes (Hilton & von Hippel, 1996). For example, groups based on social categories (e.g., career women) were described with more abstract, enduring language than task groups; however, group entitativity mediated stereotypic judgments between different group types (e.g., a professional baseball team). A meta-analysis found that the entitativity of the outgroup predicts its associated stereotypes (Agadullina & Lovakov, 2018). Importantly, the behaviors of members of a highly entitative group were more likely to be applied with dispositional attributions (i.e., assigning the cause of a certain behavior to the internal characteristic), further promoting group members' stereotypes (Yzerbyt et al., 1998).

Crawford and colleagues (2002) provided more direct evidence to support the finding that the generalization of group members' attributes to new members relies on group entitativity. They used a savings-in-relearning task in which the behavior of one group member was exposed during the first phase of the experiment. If the trait underlying this behavior was inferred and generalized across all of the other members, the learning of a matching trait in the second (paired associates) task for a new group member (i.e., transfer effect) should be facilitated. They found that the transference of traits from one group member to other group members was stronger for high-entitativity groups than for low-entitativity groups. For novel social groups without rich social learning, even infants expect members of highly entitative groups (e.g., similar appearance or moving synchronously) to share stable characteris-

tics and to act alike (Fisher et al., 2015; Gelman & Davidson, 2013; Powell & Spelke, 2013). In a pioneering study of infants' expectations of group members' behaviors (Powell & Spelke, 2013), infants first watched an animated display of two groups that were operationalized with three agents in each group having an identical appearance, being near each other, and moving synchronously (i.e., high-entitativity group). Then, two agents from the same group performed a similar action (i.e., jumping or sliding on a platform), and the remaining agents of this group behaved either consistently or inconsistently with the others. The infants looked significantly longer in the inconsistent action trials than in the consistent action trials, showing that they expect members of social groups to act alike. However, this effect was not present when three agents moved independently (i.e., low-entitativity group).

In summary, when a group is perceived as being an entity rather than a loose collection of people, its members are categorized in a more undifferentiated way at the group level. Accordingly, they are expected to behave in a more common and consistent manner.

Commonness Based on Shallow Features or Deep Properties

In the object categorization domain, the inductive generalization can operate based on two types of information: shallow or deep (Reed & Friedman, 1973; Sims & Colunga, 2011; Sloutsky et al., 2007; Sutherland & Cimpian, 2017; please note that these two types of information are sometimes referred to as perceptual and conceptual, but the perception is inferred; to avoid confusion, we have used more general words). Shallow information refers to the directly observed features of items that we encounter, such as appearance and observed movements of actions. Deep information refers to deeper facts about these items, such as internal characteristics and functions or goals that might not be directly observable. Hence, the expectation of consistent behavior in highly entitative groups could be based on the commonness of shallow features or deep properties of other's behaviors—goals and traits because observed behaviors not only show their shallow-level features of specific actions but also are interpreted in terms of the goal pursued and traits (Hassin et al., 2005; Jacob & Jeannerod, 2005; Van Overwalle et al., 2012; Woodward, 1998).

It has been suggested that people hold subjective essentialism views of groups by linking observable features of deep inherent characteristics to groups and their members, and the entitativity of a social group encourages perceivers to call on this view (Bastian & Haslam, 2006; Haslam et al., 2000; Prentice & Miller, 2007; Yzerbyt et al., 2001; Yzerbyt et al., 1998). In one notable study, Yzerbyt and colleagues (1998) examined how group entitativity impacted social attribution. In their study, participants were assigned to the team of questioners, the team of answerers, or the role of observer in a quiz game. Each three-person questioner group and each three-person answerer group was presented to observers as being either an entitative group (e.g., from the same institution) or an aggregate group (e.g., from different institutions). The study found that observers saw questioners as being more competent than answerers. Importantly, this attribution bias was much higher in the entitative than aggregate groups, both for the group and individual ratings. Hence, group entitativity promoted the search of the underlying essence (e.g., dispositional attribution) to explain a group member's behavior. The evidence supporting the relationship between group entitativity and subjective essentialism placed greater emphasis on the explanation for known group members' behaviors. Whether the expectation of unknown group members' behaviors relies on deep inherent characteristics lacks direct evidence. In any case, this essentialist belief hints that the deep-level goals (or other deep-level properties) that are closer to an essence than the shallow-level movements would be consistently expected in highly entitative groups. The positive answer to this question would highlight the core role of subjective essentialism in perceiving social groups.

Nevertheless, some studies have reported that the abstract properties of highly entitative groups are applied to unknown group members, partially supporting the idea that deep properties are generalized across group members (Crawford et al., 2002; Dasgupta et al., 1999; McConnell et al., 1997; Rydell et al., 2007; Spencer-Rodgers et al., 2007; VanBergen et al., 2020; Yzerbyt et al., 1998). However, studies have usually used words to label individuals' behaviors and even directly presented trait-related words, for example, the transferred traits in the study of Crawford and colleagues (2002), and have generally concerned stereotypes (Agadullina & Lovakov, 2018; Rydell et al., 2007; Yzerbyt et al., 1998). The use of labels might drive participants to create deep and stable representations of the described person and the categorical representation of groups. The reason is that the linguistic label is sometimes supposed to refer to an internal trait of the described person and the nature of the group; accordingly, participants easily and spontaneously generalize the corresponding trait in linguistic descriptions of group members (Noyes & Keil, 2019; Orvell et al., 2019). In everyday life, our experience of our surroundings is primarily visual; the information that we can directly obtain consists of individuals' observable actions, whereas their deep properties must be inferred. Hence, direct evidence to support the idea that deep properties are generalized across group members remains lacking. Importantly, individuals with the same goals and traits tend to have similar shallow features of actions. For example, consider the following description of the behavior of one group member by himself: "I like to sleep about 10 hours every day. I usually wake up about noon or one and manage to crawl out of bed sometime around 2:00. I take late afternoon classes so that I can sleep late." Based on this description, this member's trait can be summarized as "lazy" (Crawford et al., 2002). When another member of this group is expected to behave similarly based on this lazy behavior regardless of whether this generalization operates based on the shallow-level action or the deep-level trait, this member will mostly be expected to perform a series of "lazy" actions, such as taking late afternoon classes. Hence, the previous tests about generalizing behaviors have not allowed us to disentangle whether members of a highly entitative group are expected to behave consistently based on the deep properties or shallow features of behaviors.

Overview of Studies

To investigate whether the deep properties or shallow features of behaviors are expected to be consistent across members of a highly entitative group, we examined whether participants observing object-directed behaviors expect group members to exhibit a common set of shallow-level movements (i.e., actions) or to ap-

proach the same goal. Object-directed behaviors are interpreted as being guided by underlying goals and intentions with the principle of rationality. According to this principle, in a given situation, agents are assumed to select the most efficient actions to achieve their goals (Gergely & Csibra, 2003; Jara–Ettinger et al., 2016). Hence, when the situation changes, if agents persist with the goal, they should adjust their actions and plan new actions to be efficient in pursuing the old goal in the new situation. For example, consider a ball and a teddy bear that are presented on the left and right sides of a platform, respectively; a hand reaches for the teddy bear. However, if the locations of the ball and teddy bear are swapped, then the goal interpretation of behavior will accordingly predict that the hand should perform a new action to reach the same goal (i.e., teddy bear); otherwise, the hand should perform the old action but pursue a new goal. This dissociation has been successfully used to test infants' goal representation of object-directed behaviors (Woodward, 1998).

The current study exploited this dissociation to test the types of characteristics that are expected to be consistent across members of a highly entitative group: movements, as shallow features, or inferred goals, as deep properties. Here, we focused on implicit expectations as revealed by the spontaneous responses of participants regarding the commonness displayed by group members. Nevertheless, we consulted some critical post hoc reports about expectations for additional evidence regarding whether the deep properties or shallow features of behaviors are expected to be consistent across members of a highly entitative group. Concerning the implicit measurement, it does not appeal to linguistic labels. Specifically, we presented two group members performing the same movement to achieve the same goal. However, during testing, the location for reaching this goal was changed; therefore, the goal had to be reached through a new movement—yet the old movement would achieve a new goal. Finally, a new agent from the same or different group performed the same movement to achieve an inconsistent goal or a different movement to achieve a consistent goal—previously presented as the two exemplars before testing. The implicit generalization of behaviors across social groups was measured by asking the participants to judge the new agent's movement. If group members are implicitly expected to behave consistently based on their deep properties, the new movement to reach the old goal can be expected to be judged more rapidly than the old action to reach the new goal (a proxy for goal-based consistency) because it fits well with the internal expectation of holding consistent goals. However, if group members are implicitly expected to behave consistently based on the shallow features of behaviors, perceivers can be expected to judge the old movement to reach the new goal more rapidly than the new movement to reach the old goal (a proxy for movement-based consistency). Importantly, this effect will be higher for members from a highly entitative group because such a group can be treated as a "real" group relative to those from a lowly entitative group.

Four studies were conducted. First, we assessed whether implicitly expecting consistent behaviors from group members is based on shallow-level movements or deep-level goals of behaviors and whether this expectation holds more strongly in a highly entitative group than in a lowly entitative group (Study 1). In Study 2, we removed the external target as the possible goal, and only the shallow-level movements of behaviors could be extracted to form implicit expectations of common behaviors among group members to exclude possible alternatives (e.g., always judging the inconsistent movement more rapidly than the consistent movement because the former violates our expectation and should be detected quickly). In Study 3, we investigated whether the goals of behaviors in a highly entitative group are relied on to form implicit expectations by directly manipulating whether the status of the goal of the behavior is available. Finally, to replicate the results of Study 1 and investigate whether implicitly expecting consistent behaviors is based on majority or consensus behavior, we manipulated the number of exemplars (e.g., single demonstration vs. multiple demonstrations) to demonstrate the common behaviors before testing. Given that the majority behavior represents the behavior that the greatest proportion of group members have converged on and that a single member's behavior is more likely to be derived by his or her desire (Jachimowicz et al., 2018; Morgan et al., 2012; Pryor et al., 2019), the unknown group member should be implicitly expected to behave consistently with the majority behavior in accordance with their common goals. To exclude the possibility that the attentional enhancement by the highly entitative group results in an increased ability to learn new associations, a judged agent from a different group was introduced. If group entitativity plays a role in forming implicit expectations about group members' behaviors, then the expectation of consistency should not be extended to an agent who is not a member.

Study 1

This study was designed to distinguish between movement- and goal-based consistency when observing group members performing object-directed behaviors. Specifically, two groups of agents were presented, and the members of each group were spatially close to each other and moved synchronously. Then, two members from a social group performed a consistent movement directed to the same object on one side of the screen; however, there was another object on the other side of the screen. The movement was presented as efficiently approaching the object (i.e., moving straight to the left or right object), which has been suggested to be interpreted as having the goal of reaching the target object (Jastorff et al., 2011; Schachner & Carey, 2013; for a review, see Jara–Ettinger et al., 2016). Subsequently, with respect to their locations, the two objects were swapped, and a new agent from the same or a different group performed the same movement to reach an inconsistent goal or a different movement to reach a goal consistent with that of the previously presented action. Goal-based consistency predicts that, when the judged agent undertakes an inconsistent movement to pursue an external goal consistent with that of the exemplars, the response of judging the agent's action will be faster than that when the judged agent undertakes a consistent movement to pursue an external goal that is inconsistent with that of the exemplars (i.e., facilitation effect).

Method

Participants

Forty-two adult volunteers (18 men and 24 women, aged 18–21 years old, M_{age} = 19 years) were paid approximately \$3 each to participate in this experiment. Two participants (a man and a woman) were excluded based on the criterion that response accu-

racy should be greater than 60%. The sample size was determined using the following reasons. By referring to a previous study (Xu et al., 2019), which had almost the same methods as the current study but did not include the external target or the lowly entitative group and was replicated in the condition of the highly entitative group of Study 2 with a significant medium effect size ($\eta_p^2 = .10$, computed as SPSS mode in G*Power software, Version 3.0; Faul et al., 2009), an alpha level of .05, and a power of .80 to detect an interaction effect, the estimated minimum sample size required was 36 individuals. However, our design was slightly different from Xu et al. (2019), because the factor of group entitativity was included. Considering that the main question of interest was whether the facilitation effect between different agent groups (or different numbers of exemplars in Study 4) depended on the group's entitativity (or action efficiency in Study 3), we conducted a power analysis using G*Power software (Version 3.0; Faul et al., 2009) to determine the minimum required sample size to detect a significant effect assuming a medium effect size of $\eta_p^2 = .06$ with two groups and two measures. The minimum sample size was determined to be 34. To reach this criterion and be conservative, we collected more individuals than this sample size in case some of them were rejected, and 40 valid individuals were finally included. Half of the participants were presented with a video of a highly entitative group, and half were shown a video of a lowly entitative group. Because Studies 2 to 4 were set as further controls for or replications of Study 1, for consistency, all of the studies recruited 40 participants. All participants had normal or corrected-to-normal vision and no history of neurological disorders. The study was approved by the Research Ethics Board of the Department of Psychology at the authors' university and was performed in accordance with the relevant guidelines and regulations. In all of the experiments, we reported all measures, manipulations, and exclusions.

Apparatus and Stimuli

The stimuli were all presented on a gray background using a 19-in. CRT monitor (1,024 × 768 pixel resolution; 120 Hz refresh rate) at a 60-cm viewing distance using custom software written in MATLAB with the Psychophysics Toolbox libraries (Brainard, 1997).

The visual stimuli were computer-animated events with group behaviors. Each event included two agents with different appearances. These agents were selected randomly from six animated figures with distinct colors and shapes (see Figure 1a). Each agent was rendered with two eyes as facial features and subtending 1.5° × 1.5°.

Procedure and Design

Each trial started with the presentation of a fixation cross (1.5° × 1.5°) at the center of the screen for 500 ms, and it was then replaced by a blank background for 200–300 ms. Thereafter, two groups of agents were presented. In the high-entitativity group condition, the agents composing each group initially appeared near one another in the top two corners of the screen; immediately thereafter, the agents in each group made a series of synchronized movements around a circular path at a speed of 5.03° per second (see Figure 1b) and supplemental videos on OSF https://osf.io/tah2j/view_only=5b857e20ba8f444ba41a4f124c23936d; "group entitativity manipulation". In the low-entitativity group condition, six animated agents moved independently instead of synchronously and then fanned out into an ABABAB arrangement without spatial closeness (as opposed to the AAABBB arrangement in the high-entitativity group condition). This phase lasted 3,600 ms.

Following this introductory sequence, all of the agents went to the top of the platforms, and two agents as demonstrated exemplars in the group successively performed the same goal-directed behavior; all of these steps lasted 14,600 ms (see Figure 1b; "group members' behavior"). Specifically, each exemplar initially moved down to the lower side of the screen. Then, the agent turned to the left or right, balanced within the participant, to approach one of two objects as its target at a speed of 7.22° per second and returned to its starting point. The two objects, a white square and a black club placed in the lower left-hand and right-hand corners of the screen, respectively, were counterbalanced across participants and accompanied by different sounds when being approached.

Next, a plate was presented to cover two objects, and the positions of the objects were swapped. This phase is demonstrated in Figure 1b as "plate loading" and lasted 1,700 ms. Subsequently, a new agent from either the same or a different group moved. This agent imitated the behaviors of the two exemplars. That is, it moved down to the lower part of the screen and stopped, and a question mark was presented above this agent for 2,000–2,500 ms (randomly determined; see Figure 1b, "waiting"; here, there is no explicit requirement to tell the participants what to do). Finally, the last agent started to move again to the left or right object on the screen. The participants were asked to judge whether this agent moved to the left or right object as quickly as possible by pressing "F" or "J" on a standard keyboard (see Figure 1b; "response"). If the participants did not respond within 2,000 ms, the program automatically proceeded to the next trial.

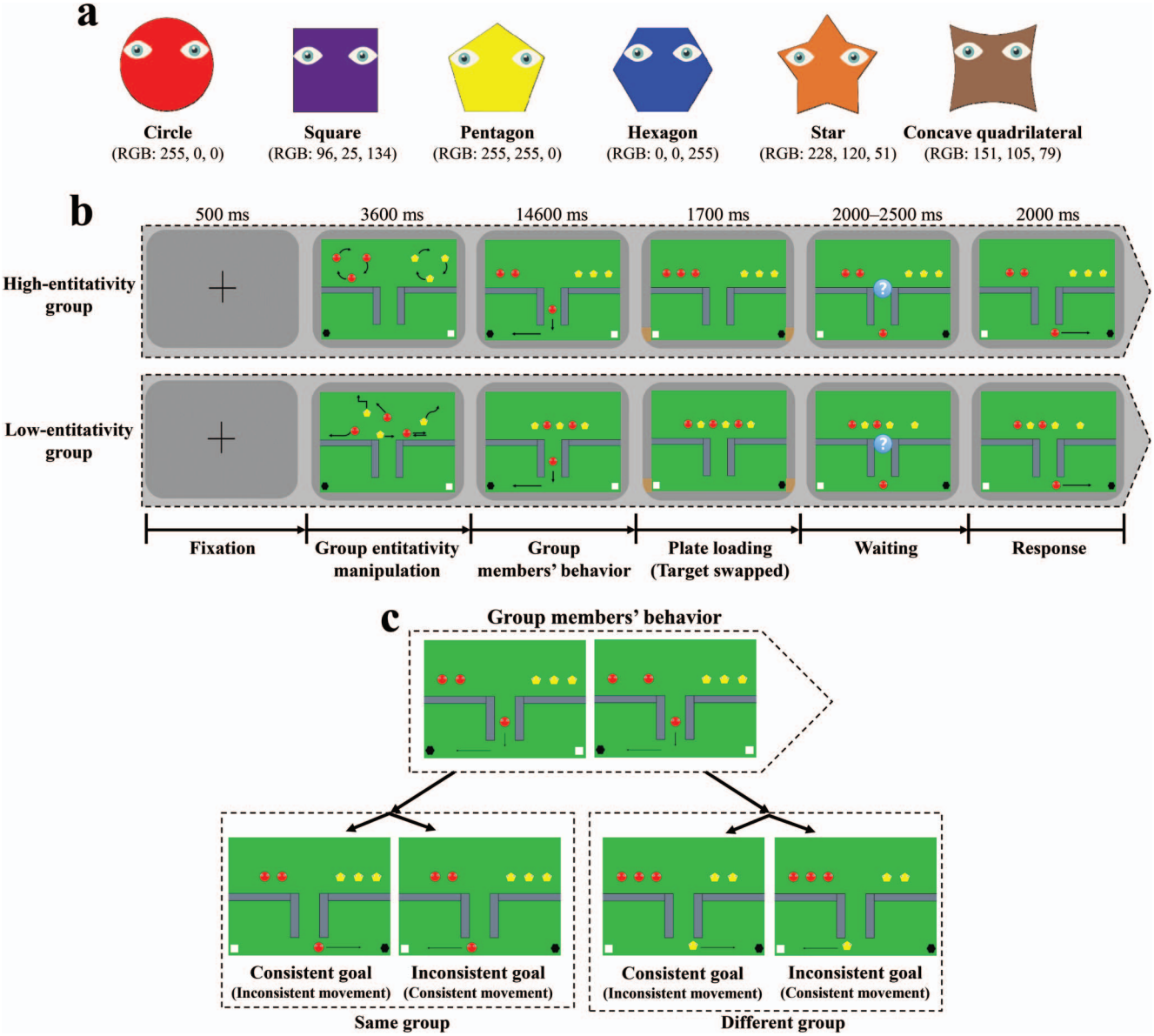
To limit possible comparisons between the two groups' entitativity conditions in each participant and to limit the experimental duration, this factor was set as a between-subjects design. Each participant completed 96 trials that followed a 2 (agent group: same vs. different) × 2 (goal consistency: consistent vs. inconsistent) design (see Figure 1c). Hence, the design of this experiment was a 2 (group entitativity: high vs. low) × 2 (agent group: same vs. different) × 2 (goal consistency: consistent vs. inconsistent) mixed measures design with repeated measures for the second and third factors. The agent group was defined by whether the judged (i.e., last) agent belonged to the same or a different group as the two exemplars. Goal consistency was defined by whether the approached target of the judged agent was consistent with that of the previous two agents, that is, consistent or inconsistent. That is, a consistent goal indicates an inconsistent movement, and an inconsistent goal indicates a consistent movement. Before the formal experiment, the participants had 2 min to practice. Each participant had a break after completing 24 trials and finished the entire experiment within 55 min.

Validity of Group Entitativity Manipulation

To test whether the operation in this experiment was valid, 44 new adults were recruited to watch one of the videos in the "group entitativity manipulation" phase (i.e., 22 participants for each condition) and, for 7 items, to evaluate whether the agents with the same appearance looked like a unified group (i.e., group entitativ-

Figure 1

Depiction of (a) the Six Figures Used in All of the Experiments, (b) an Example of a Trial Sequence From Study 1, and (c) How Each Condition Was Conceptualized in Study 1



Note. RGB = Red, Green and Blue color code. See the online article for the color version of this figure.

ity; Campbell, 1958). These 7 items were established according to the definition and characteristics of group entitativity (Campbell, 1958; Crawford et al., 2002). In general, a unified group consists of at least three persons who have a common goal and collective interest, and group members depend on and influence each other. An integrative social group also includes social norms and shows that members connect with and embrace each other (Aronson et al., 2015). Hence, the participants were asked to evaluate group entitativity regarding whether the three agents with the same appearance (1) have a common goal; (2) have a collective interest; (3) depend on each other; (4) influence each other; (5) have social norms; (6) connect with each other; and (7) embrace each other. Each item was rated on a scale ranging from 1 (*completely disagree*) to 7 (*completely agree*).

The internal consistency (i.e., Cronbach's alpha) for the video with the high-entitativity and low-entitativity groups was 0.60 and 0.61, respectively. An independent *t* test revealed that group entitativity was judged more strongly for the video with the high-entitativity group ($M = 4.90$, $SE = 0.16$) than for the video with the low-entitativity group ($M = 3.69$, $SE = 0.20$; $t(42) = 4.74$, $p < .001$, Cohen's $d = 1.43$, 95% CI [0.69, 1.72]). Considering the low internal consistency, which might have been caused by the large

standard errors associated with such a small sample (if the data of two conditions collapsed, the internal consistency was 0.733), computing the mean value for all items' scores as a dependent variable was inappropriate. Hence, the rated score of each item was treated as a dependent variable, and a Hoteling's T^2 two independent group analysis was conducted that indicated a statistically significant mean difference between the high- and low-entitativity groups' conditions for the seven dependent variables ($T^2(7, 36) = 3.32$, $p = .008$). These results suggest that the manipulation of group entitativity in this experiment is valid.

Results

Because the reaction time (RT) was emphasized for the participants and was closely related to our hypothesis, the analyses mainly focused on the RT data, but the accuracy data were also reported (and can be accessed at https://osf.io/tah2j/view_only=5b857e20ba8f444ba41a4f124c23936d). The mean RT of each participant for each condition (see Figure 2) was computed after excluding trials with wrong responses and response times greater than three standard deviations from the mean (exclusion rate = 3.80%). The RT data were subjected to a 2 (group entitativity: high vs. low) × 2 (agent group: same vs. different) × 2 (goal consistency: consistent vs. inconsistent) analysis of variance (ANOVA). The analysis revealed that the main effect of goal consistency, $F(1, 38) = 6.23$, $p = .017$, $\eta_p^2 = .14$, the interaction between agent group and goal consistency, $F(1, 38) = 7.52$, $p = .009$, $\eta_p^2 = .17$, and the three-way interaction, $F(1, 38) = 9.09$, $p = .005$, $\eta_p^2 = .19$, attained significance. The other effects were nonsignificant (group entitativity: $F(1, 38) = 2.82$, $p = .101$, $\eta_p^2 = .07$; agent group: $F(1, 38) < 0.01$, $p = .984$, $\eta_p^2 < .01$; Group Entitativity × Agent Group: $F(1, 38) = 0.47$, $p = .499$, $\eta_p^2 = .01$; and Group Entitativity × Goal Consistency: $F(1, 38) = 0.19$, $p = .666$, $\eta_p^2 < .01$).

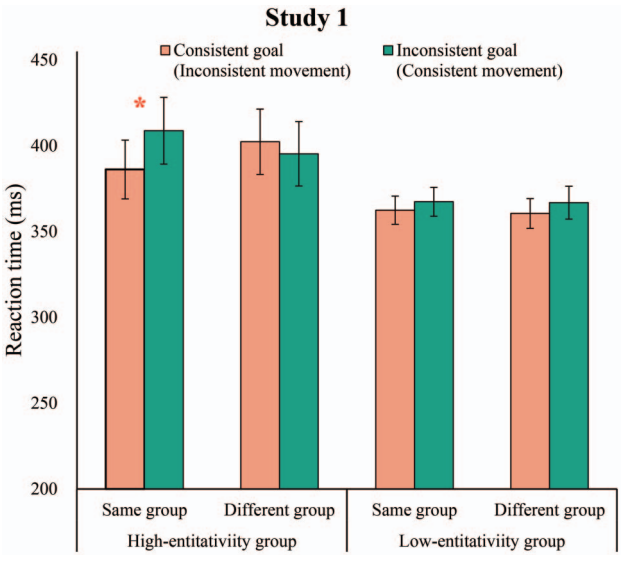
Further analysis of the three-way interaction ($BF_{10} = 17.29$; BF_{10}, H1/H0, Bayesian factor; $BF_{10} < 0.33$ suggesting substantial evidence supporting H0 and $BF_{10} > 3.00$ suggesting substantial evidence supporting H1) revealed that only in the high-entitativity group condition was the interaction effect between the agent group and goal consistency significant, $F(1, 19) = 12.40$, $p = .002$, $\eta_p^2 = .40$, $BF_{10} = 102.67$. In contrast, no significant effect was found for this interaction effect in the low-entitativity group condition, $F(1, 19) = 0.06$, $p = .815$, $\eta_p^2 < .01$, $BF_{10} = 0.28$. A simple effects analysis showed that in the high-entitativity group condition, when the judged agent belonged to the same group as the two exemplars, the participants responded more rapidly when the agents pursued a consistent goal ($M = 386$ ms, $SE = 17$) than when they pursued an inconsistent goal ($M = 409$ ms, $SE = 19$; $F(1, 19) = 13.54$, $p = .002$, $\eta_p^2 = .42$, $BF_{10} = 17.96$, 95% CI [−36, −10]). However, when the judged agent belonged to a group different from that of the two exemplars, this effect was absent (consistent goal: $M = 402$ ms, $SE = 19$; inconsistent goal: $M = 395$ ms, $SE = 19$; $F(1, 19) = 1.51$, $p = .234$, $\eta_p^2 = .07$, $BF_{10} = 0.57$, 95% CI [−5, 19]).

To further examine whether goal-based consistency depended on group entitativity, we compared the facilitation effect (as measured by the RT in the inconsistent goal condition minus that in the consistent goal condition) of high-entitativity group conditions with that of low-entitativity group conditions when the judged agent belonged to the same group as the two exemplars. The facilitation effect was found to be higher in the high-entitativity group condition ($M = 23$ ms, $SE = 6$) than in the low-entitativity group condition ($M = 5$ ms, $SE = 3$; $t(38) = 2.64$, $p = .012$, Cohen's $d = 0.83$, $BF_{10} = 4.29$, 95% CI [4, 31]). Hence, the implicit expectation of goal-based consistency relies on group entitativity.

The 2 (group entitativity: high vs. low) × 2 (agent group: same vs. different) × 2 (goal consistency: consistent vs. inconsistent) ANOVA was conducted using the accuracy data. None of the effects reached significance (group entitativity: $F(1, 38) = 2.46$, $p = .125$, $\eta_p^2 = .06$; agent group: $F(1, 38) = 0.52$, $p = .476$, $\eta_p^2 = .01$; goal consistency: $F(1, 38) < 0.01$, $p = .976$, $\eta_p^2 < .01$; Group Entitativity × Agent Group: $F(1, 38) = 2.70$, $p = .109$, $\eta_p^2 = .07$; Group Entitativity × Goal Consistency: $F(1, 38) < 0.01$, $p = .976$, $\eta_p^2 < .01$; Agent Group × Goal Consistency: $F(1, 38) = 3.75$, $p = .060$, $\eta_p^2 = .09$; three-way interaction: $F(1, 38) = 1.42$, $p = .241$, $\eta_p^2 = .04$).

Figure 2

Reaction Times in Study 1 as a Function of Group Entitativity, Agent Group, and Goal Consistency



Note. The bars represent the mean RT for each condition. Error bars represent the standard error of the mean. The asterisk indicates that the difference in RTs between conditions was significant. See the online article for the color version of this figure.

Post Hoc Investigations

To evaluate whether participants relied on the common goal to expect group members' behaviors, we recruited 60 new participants (17 men, 43 women; $M_{age} = 21$ years) and asked them to explicitly report their expectations and reasons. Specifically, the video with the same trial sequence as the previous experiment was presented to participants in slides. During the "waiting" phase, participants were explicitly asked to report how this agent would behave and the reasons for this expectation instead of identifying the agent's subsequent movement. Sixty participants were randomly and evenly allocated to one of two groups (a high-

entitativity group and a low-entitativity group). Two videos with different animated figures were displayed in sequence for each participant: the third agent from the same group as exemplars and the third agent from the different group as exemplars, and the presentation order was counterbalanced across participants. The explicit expectations were coded as (1) expecting a consistent goal (i.e., the agent moved in the direction in which the common goal as two exemplars were directed); (2) expecting consistent movement (i.e., the agent moved in the direction in which the common behavior as two exemplars moved); and (3) unclear expectation (i.e., any direction was possible). The reported reasons were only analyzed on clearly explicit expectations: expecting a consistent goal and expecting consistent movement. They were coded as (1) common-goal-based reason (e.g., group members should pursue the same goal); (2) common-movement-based reason (e.g., group members should act with the same movement pattern); and (3) unknown reason (e.g., guessing, intuitive). Responses were recorded by a second, independent coder for reliability; in rare cases of disagreement, two codes were discussed, and the consensus was used. The two coders agreed on 100% of participants' category designations for the question about expectations and 100% of participants' category designations for the question about reasons.

When the agents were from a high-entitativity group, the third agent from the same group was more likely to be expected to move in the direction of the common goal as directed by the two exemplars (i.e., coded as expecting consistent goal, 22/30; but 8/30 to expecting consistent movement; $\chi^2(1) = 6.53$, $p = .011$), whereas the opposite expectation was to hold for the agent from the different group (i.e., coded as expecting a consistent goal, 9/30; but 21/30 to expecting consistent movement; $\chi^2(1) = 4.80$, $p = .028$). Importantly, for these 22 participants whose reports for the agent from the same high-entitativity group were coded as expecting a consistent goal, almost all participants (i.e., 21/22; $\chi^2(1) = 18.18$, $p < .001$) thought that this expectation was based on keeping a common goal. However, for these 9 participants whose reports for the agent from the different high-entitativity group were coded as expecting a consistent goal, their reported reasons did not concentrate on an answer (i.e., keeping a common goal, 5/9; keeping a common action, 4/9; $\chi^2(1) = 0.11$, $p = .739$).

Nevertheless, in contrast to the results regarding the implicit expectation, when the agents were from a low-entitativity group, the third agent from the same group was more likely to be explicitly expected to move in the direction of the common goal as directed by the two exemplars than to be explicitly expected to exhibit a consistent movement (with 24/30 participants coded as expecting a consistent goal and 6/30 coded as expecting a consistent movement; $\chi^2(1) = 10.80$, $p = .001$), whereas no such expectation was held for the agent from the different group (with 14/30 participants coded as expecting a consistent goal and 14/30 coded as expecting a consistent movement). For these 24 participants whose reports for the agent from the same low-entitativity group were coded as expecting a consistent goal, almost all participants (i.e., 23/24; $\chi^2(1) = 20.17$, $p < .001$) thought that this expectation was also based on keeping a common goal.

Discussion

These findings suggest that perceivers implicitly expect group members to behave consistently based on their common goal instead of movement, showing goal-based consistency. As to implicit measurement, this expectation must be based on the unified group (i.e., high-entitativity group) and its members (i.e., individuals from the same group as exemplars). The explicit reports revealed that group members from both the high-entitativity and low-entitativity groups were explicitly expected to pursue the same goal. It is possible that the participants used the explicit knowledge of a social group to form expectations, if given the opportunity to deliberate, and to interpret behaviors, as the group having low entitativity still shows some social group information, even less than the group having high entitativity. In any case, the post hoc investigations revealed that the commonness expectation in the high-entitativity group was truly based on the goal of behaviors. Hence, this study provides initial evidence to support the idea that members of high-entitativity groups are implicitly expected to behave consistently based on the deep properties of behaviors.

Study 2

Study 1 found that when the new agent pursued the same goal as that pursued by the two exemplars from the same high-entitativity group, the judgment of this agent's action was faster than when the new agent pursued a different goal. Hence, we concluded that individuals from a high-entitativity group are implicitly expected to behave consistently based on their deep-level goals instead of their shallow-level movements when both types of information are available. However, because the consistent goal condition showed that the judged agent performed a movement that was inconsistent with that of the two exemplars, it is possible to argue that this inconsistency might violate our expectation about maintaining consistent movement, has attentional salience, and thus should be quickly discriminated. In other words, the facilitation effect in Study 1 could be explained by expectation violation as well, and the results of Study 1 could be explained by movement-based consistency. To examine this alternative explanation, in Study 2, we removed the external target as a possible goal. If what was revealed in Study 1 is truly explained by movement-based consistency, the same results as those in Study 1 (i.e., responding more rapidly when the new agent performs a movement that is inconsistent with that of the two exemplars relative to when the new agent performs a movement that is consistent with that of the two exemplars) would be observed in this study because all of the actions were kept constant between the two studies; otherwise, results that are different from those of Study 1 would be found.

Method

Forty new students (17 men, 23 women) aged 16–25 years old ($M_{age} = 20$ years) were paid approximately \$3 each to participate in this experiment. The stimuli and procedure were the same as those of Study 1; however, the targets on the sides of the screen were removed and, accordingly, only the movement could be expected to be consistent or not. To match the current settings, the term "goal consistency" was replaced with "movement consistency," but the same condition structure as that in Study 1 was maintained. Specifically, in the consistent movement condition of the current experiment, the agents acted exactly the same as in the inconsistent goal condition of Study 1; in the inconsistent move-

ment condition of the current experiment, the agents acted exactly the same as in the consistent goal condition of Study 1.

Results and Discussion

The mean RT of each participant for each condition (see Figure 3) was computed after excluding trials with wrong responses and response times more than three standard deviations from the mean (exclusion rate = 4.84%). The RT data were subjected to a 2 (group entitativity: high vs. low) × 2 (agent group: same vs. different) × 2 (movement consistency: consistent vs. inconsistent) ANOVA. The analysis revealed that the interaction between agent group and movement consistency, $F(1, 38) = 5.03$, $p = .031$, $\eta_p^2 = .12$ reached significance and that the three-way interaction, $F(1, 38) = 4.07$, $p = .051$, $\eta_p^2 = .10$, tended to be significant. The other effects were nonsignificant (group entitativity: $F(1, 38) = 0.81$, $p = .374$, $\eta_p^2 = .02$; agent group: $F(1, 38) < 0.01$, $p = .981$, $\eta_p^2 < .01$; Group Entitativity × Agent Group: $F(1, 38) = 0.03$, $p = .859$, $\eta_p^2 < .01$; movement consistency: $F(1, 38) = 0.27$, $p = .616$, $\eta_p^2 = .01$; Group Entitativity × Movement Consistency: $F(1, 38) = 3.56$, $p = .067$, $\eta_p^2 = .09$).

Further analysis of the three-way interaction effect ($BF_{10} = 11.96$) revealed that only in the high-entitativity group was the interaction effect between agent group and movement consistency significant, $F(1, 19) = 4.78$, $p = .042$, $\eta_p^2 = .20$, $BF_{10} = 16.06$, whereas no significant effect for this interaction effect in the low-entitativity group condition was found, $F(1, 19) = 0.25$, $p = .620$, $\eta_p^2 = .01$, $BF_{10} = 0.30$. A simple effects analysis showed that in the high-entitativity group condition, when the judged agent belonged to the same group as the two exemplars, the participants responded more rapidly when the agents acted consistently ($M = 381$ ms, $SE = 9$) than when they acted inconsistently ($M = 424$ ms, $SE = 24$; $F(1, 19) = 5.06$, $p = .037$, $\eta_p^2 = .21$, $BF_{10} = 2.14$, 95% CI [−84, −3]). However, when the judged agent was from a group that was different from that of the two exemplars, this effect was absent (consistent movement: $M = 417$ ms, $SE = 24$; inconsistent movement: $M = 389$ ms, $SE = 17$; $F(1, 19) = 2.22$, $p = .153$, $\eta_p^2 = .10$, $BF_{10} = 0.71$, 95% CI [−11, 67]).

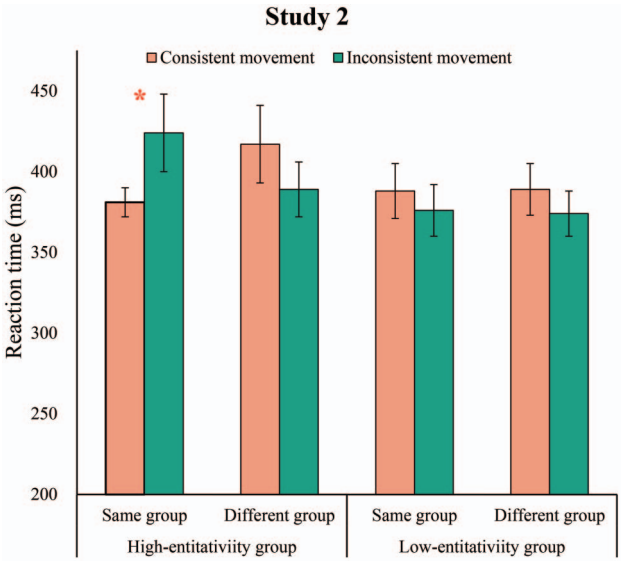
Similar to Study 1, we compared the facilitation effect (calculated by subtracting the RT in the consistent movement condition, equivalent to the inconsistent goal condition in Study 1, from that in the inconsistent movement condition, equivalent to the consistent goal condition in Study 1) of the high-entitativity group condition with that of the low-entitativity group condition when the judged agent belonged to the same group as the two exemplars. We found that the facilitation effect was higher in the high-entitativity group condition ($M = 43$ ms, $SE = 19$) than in the low-entitativity group condition ($M = -12$ ms, $SE = 7$; $t(24.511) = 2.66$, $p = .014$, Cohen's $d = 0.84$, $BF_{10} = 4.54$, 95% CI [12, 98]).[1] Hence, the expectation of action consistency relies on group entitativity; however, different from Study 1, the facilitation effect shows a faster response in the consistent movement condition than in the inconsistent movement condition.

The 2 (group entitativity: high vs. low) × 2 (agent group: same vs. different) × 2 (movement consistency: consistent vs. inconsistent) ANOVA was conducted using the accuracy data. None of the effects reached significance (Fs < .37, ps > .540, $\eta_p^2 < .01$), except that the main effect of movement consistency, $F(1, 38) = 5.43$, $p = .025$, $\eta_p^2 = .13$, and the interaction effect between the agent group and movement consistency, $F(1, 38) = 4.89$, $p = .033$, $\eta_p^2 = .11$, were significant. This interaction effect reasoned that the difference in accuracy between consistent movement and inconsistent movement conditions showed different patterns between when the judged agent was from the same group (0.97 vs. 0.97; $F(1, 38) = .05$, $p = .822$, $\eta_p^2 < .01$) and when the judged agent was from a different group (0.96 vs. 0.98; $F(1, 38) = 9.21$, $p = .004$, $\eta_p^2 = .20$).

Hence, in contrast to Study 1, the inconsistent movement condition (corresponding to the consistent goal in Study 1) was judged more slowly than the consistent movement condition (corresponding to the inconsistent goal in Study 1) for highly entitative groups. This finding confirms that the facilitation effect of response can be explained by the judged content fitting with the internal expectation, supporting the idea that individuals in highly entitative groups are implicitly expected to show consistency based on the deep properties of behaviors when there is an option to choose between the deep-level goal and the shallow-level movement of a behavior.

Figure 3

Reaction Times in Study 2 as a Function of Group Entitativity, Agent Group, and Movement Consistency



Note. The bars represent the mean RT for each condition. Error bars represent the standard error of the mean. The asterisk indicates that the difference in RTs between conditions was significant. See the online article for the color version of this figure.

Study 3

Regarding the results of Study 1, it remains unclear whether the implicit expectation of common behaviors among group members is truly based on the goal interpretation of observed behaviors or on the association between actions and external objects. According to the principle of rationality, it has been largely documented that

[1] Here, the variances of the two groups were tested to be not equal; thus, all of the reported statistics were corrected values. The non-parameter tests also showed the same significant results.

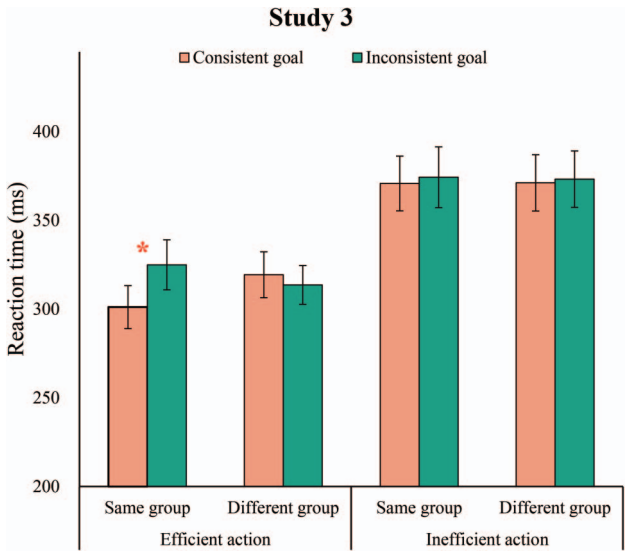
goal interpretation depends on the efficiency of actions: If actions are inefficient with respect to meeting a possible goal, they are not suitable for the goal, and the reasons for these actions become ambiguous (Baker et al., 2009; Gergely & Csibra, 2003; Jara-Ettinger et al., 2016; Jastorff et al., 2011; Schachner & Carey, 2013; Southgate & Csibra, 2009; here the term "goal" mainly refers to object-directed or external goal). Hence, this experiment presented participants with behaviors that were inefficiently related to the external object by changing "going straight" to "jumping" to reach the external object (as used in Gergely et al., 1995; Marsh et al., 2014). Moreover, to further test the role of an action's goal in expecting group members' behaviors, we also caused the action of "jumping" to become efficient by adding an obstacle in the path to the external object, with the goal, as the deep property of behavior, accordingly being available again. If the members of a highly entitative group are implicitly expected to behave consistently based on the goals of behaviors, the same effect as that in Study 1 in highly entitative groups should be observed when the action is efficiently related to the external target, but the effect should disappear for inefficient action.

Method

Forty new students (14 men, 26 women) aged 17–21 years old (M_{age} = 19 years) were paid approximately $3 each to participate in this experiment. The stimuli and procedure were the same as those in the high-entitativity group of Study 1; however, two exemplars reached the identical object by undertaking a jumping action instead of traveling straight toward the object (see Figure 4). Half of the participants participated in the condition in which, with respect to reaching the target, the action was efficient because an obstacle was added in the path to the target, and group members had to jump over this obstacle. Half of the participants were presented with the condition in which, with respect to reaching the target, the action was inefficient because the situation was the same as that in Study 1, but group members jumped. Please note that the judged agent reached the target by jumping when its final action was revealed in the "response" phase.

Figure 5

Reaction Times in Study 3 as a Function of Action Efficiency, Agent Group, and Goal Consistency



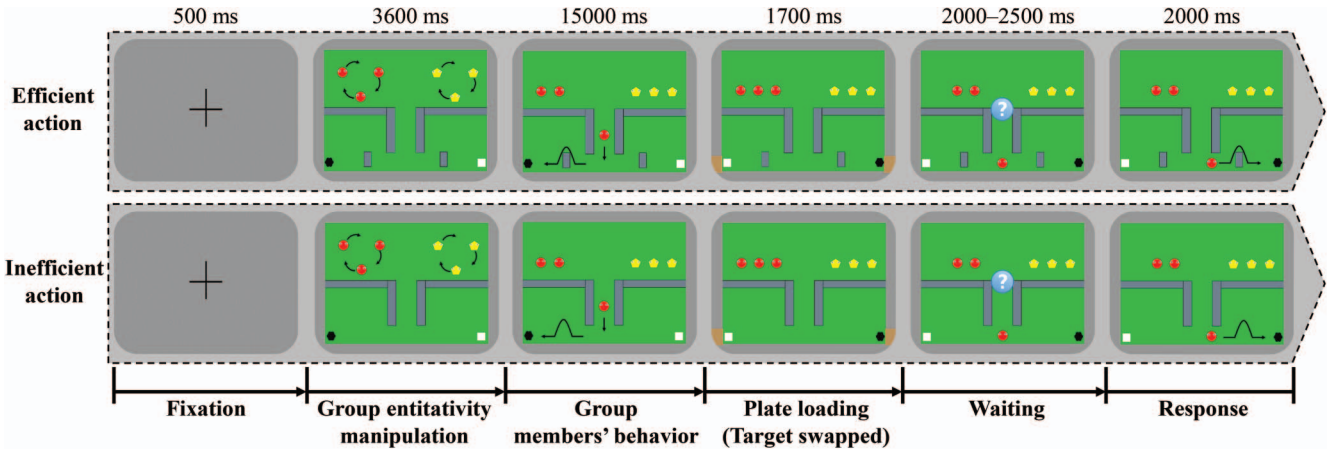
Note. The bars represent the mean RT for each condition. Error bars represent the standard error of the mean. The asterisk indicates that the difference in RTs between conditions was significant. See the online article for the color version of this figure.

Results

Figure 5 shows the mean RTs for the trials in all of the conditions. The same criteria as those in Study 1 were adopted to exclude trials, and 5.52% of trials were finally excluded. A 2 (action efficiency: efficient vs. inefficient) × 2 (agent group: same vs. different) × 2 (goal consistency: consistent vs. inconsistent) ANOVA revealed that the main effect of action efficiency was significant, showing that the participants in the efficient action

Figure 4

An Example of a Trial Sequence From Study 3



Note. See the online article for the color version of this figure.

condition (M = 315 ms, SE = 14) responded more rapidly than those in the inefficient action condition (M = 372 ms, SE = 14; $F(1, 38) = 8.39$, $p = .006$, $\eta_p^2 = .18$); the main effect of goal consistency, $F(1, 38) = 7.26$, $p = .010$, $\eta_p^2 = .16$, the interaction between the agent group and goal consistency, $F(1, 38) = 5.79$, $p = .021$, $\eta_p^2 = .13$, and the three-way interaction, $F(1, 38) = 4.89$, $p = .033$, $\eta_p^2 = .11$, reached significance. The other effects were nonsignificant (agent group: $F(1, 38) = 0.45$, $p = .508$, $\eta_p^2 = .01$; Action Efficiency × Agent Group: $F(1, 38) = 0.61$, $p = .439$, $\eta_p^2 = .02$; Action Efficiency × Goal Consistency: $F(1, 38) = 1.98$, $p = .168$, $\eta_p^2 = .05$).

Further analysis of the three-way interaction ($BF_{10} = 6.60$) showed that, when group members acted efficiently to reach the external target, the interaction effect between agent group and goal consistency was significant, $F(1, 19) = 9.73$, $p = .006$, $\eta_p^2 = .34$, $BF_{10} = 59.35$, whereas there was no significant interaction effect when the group members acted inefficiently to reach the external target, $F(1, 19) = 0.02$, $p = .887$, $\eta_p^2 < .01$, $BF_{10} = 0.35$. Simple effects analysis showed that in the efficient action condition, when the judged agent was from the same group as the two exemplars, the participants responded more rapidly when the agents pursued a consistent goal (M = 301 ms, SE = 12) than when they pursued an inconsistent goal (M = 325 ms, SE = 14; $F(1, 19) = 16.92$, $p = .001$, $\eta_p^2 = .47$, $BF_{10} = 39.37$, 95% CI [−36, −12]). However, in the efficient action condition, when the judged agent belonged to a group different from that of the two exemplars, this effect was absent (consistent goal: M = 319 ms, SE = 13; inconsistent goal: M = 314 ms, SE = 11; $F(1, 19) = 0.97$, $p = .337$, $\eta_p^2 = .05$, $BF_{10} = 0.44$, 95% CI [−7, 18]).

To further examine whether the goal-based consistency depended on the goal status, we compared the facilitation effect (calculated by subtracting the RT in the consistent goal condition from that in the inconsistent goal condition) of the efficient action condition with that of the inefficient action condition when the judged agent belonged to the same group as the two exemplars. The facilitation effect was found to be higher in the efficient group condition (M = 24 ms, SE = 6) than in the inefficient condition (M = 4 ms, SE = 5; $t(38) = 2.53$, $p = .016$, Cohen's $d = 0.80$, $BF_{10} = 3.53$, 95% CI of the mean difference = [4, 36]). Hence, the implicit expectation of common behaviors among group members is based on the goal interpretation of observed behaviors.

The accuracy data were submitted to a 2 (action efficiency: efficient vs. inefficient) × 2 (agent group: same vs. different) × 2 (goal consistency: consistent vs. inconsistent) ANOVA. The main effect of action efficiency was found to be significant, showing that participants in the condition of efficient action (M = 0.95, SE = 0.006) responded less accurately than those in the condition of inefficient action (M = 0.98, SE = 0.006; $F(1, 38) = 8.82$, $p = .005$, $\eta_p^2 = .19$). None of the other effects was significant (agent group: $F(1, 38) = 3.63$, $p = .064$, $\eta_p^2 = .09$; goal consistency: $F(1, 38) = 1.40$, $p = .245$, $\eta_p^2 = .04$; Action Efficiency × Agent Group: $F(1, 38) = 0.82$, $p = .370$, $\eta_p^2 = .02$; Action Efficiency × Goal Consistency: $F(1, 38) = 0.43$, $p = .515$, $\eta_p^2 = .01$; Agent Group × Goal Consistency: $F(1, 38) = 0.25$, $p = .618$, $\eta_p^2 < .01$; three-way interaction: $F(1, 38) = 0.42$, $p = .522$, $\eta_p^2 = .01$).

Post Hoc Investigations

Similar to Study 1, we recruited 60 new participants (25 men, 35 women; M_{age} = 20 years) and asked them to explicitly report their expectations and reasons during the "waiting" phase. These participants were randomly and evenly allocated to either the videos that display efficient action or the videos that display inefficient action. Moreover, to investigate whether the goal-directedness could be realized by the manipulation of the action efficiency, we added a new video to the last slide. Specifically, when the first exemplar went back to the initial position, the video paused and participants were asked to answer "To what extent do you think the object on the lower left/right corner of the screen is the directed goal of the just moving agent?" (rated from 0% = *completely unlikely* to 100% = *completely likely*; whether the term "left" or "right" was used depends on the location that this agent just approached). When the second exemplar went back to the initial position, we asked the question again. The correlation between these two rated scores was 0.814 ($p < .001$); hence, the average score was computed to measure the perceived goal-directedness. The explicit expectations and reported reasons followed the same coding criteria as Study 1. The two coders agreed on 100% of participants' category designations for the question about expectations and agreed on 99.3% of participants' category designations for the question about reasons.

When the two exemplars acted efficiently to approach the external target, the third agent from the same group was more likely to be expected to move in the direction of the common goal as directed by the two exemplars (i.e., coded as expecting a consistent goal, 21/30; but 9/30 in expecting consistent movement; $\chi^2(1) = 4.80$, $p = .028$), whereas no such difference was found for the agent from the different group (i.e., coded as expecting a consistent goal, 12/30; but 17/30 in expecting consistent movement; $\chi^2(1) = 0.86$, $p = .353$). Importantly, for these 21 participants whose reports for the agent from the same group were coded as expecting a consistent goal, almost all participants (i.e., 20/21) thought that this expectation was based on keeping a common goal, $\chi^2(1) = 17.19$, $p < .001$. When the two exemplars acted inefficiently to achieve the external target, the reports between expecting a consistent goal and expecting consistent movement was not significantly different when the third agent was either from the same group (16/30 vs. 14/30; $\chi^2(1) = 0.13$, $p = .715$) or from a different group (17/30 vs. 12/30; $\chi^2(1) = 0.86$, $p = .353$).

Furthermore, the perceived goal-directedness was higher in the efficient action condition (M = 84) than in the inefficient action condition (M = 69; $t(58) = 3.09$, $p = .003$, Cohen's $d = 0.80$, 95% CI of mean difference = [5, 24]); hence, the manipulation of goal-directedness was valid by changing an action efficiency.

Discussion

The current results of both implicit measurement and explicit reports suggest that the efficiency factor determines whether perceivers expect shared behaviors across group members. Again, the explicit reports revealed that the expectation of common behaviors relied on the availability of behaviors' goals. Hence, this experiment provides evidence that the implicit expectation of consistent behaviors across members of highly entitative groups depends on the interpretation of the goals of the underlying behaviors.

Study 4

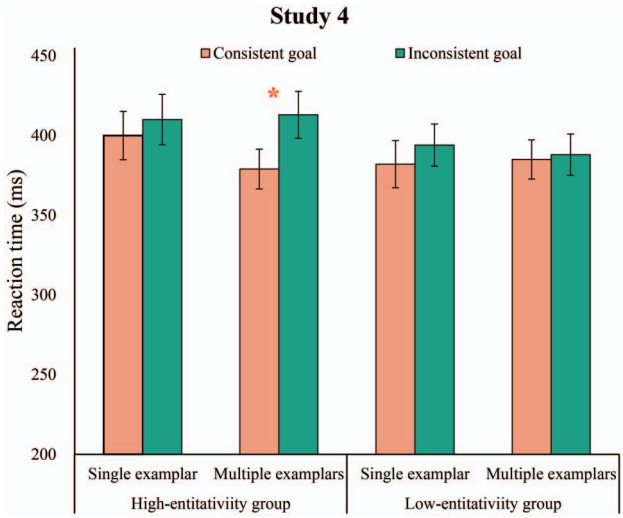
The above studies have demonstrated that people implicitly expect the members of highly entitative groups to behave consistently with respect to the deep-level goals of their behaviors. It is not clear whether this expectation is based on the majority, behavior because participants may reason that only when an individual performed the goal-directed behavior should this goal be shared across group members regardless of the social context of group members demonstrating this behavior. This study was designed to test this possibility by having one of four group members or three of four group members perform the same object-directed behavior. This study also aimed to replicate the basic effect that the facilitation effect was present within members in the highly entitative group but disappeared in members of the lowly entitative group because it provided additional support for the main hypothesis of this research. In this case, the different group conditions were removed, but we presented the manipulation of the number of exemplars performing the same object-directed behavior in groups with different entitativity between subjects. If the majority-based expectation is the case, results consistent with those in Study 1 should be observed only when three of four group members performed the same behavior.

Method

Forty new students (18 men, 22 women) aged 18–25 years old (M_{age} = 21 years) were paid approximately $3 each to participate in this experiment. The stimuli and procedure were almost the same as those of Study 1, except for the notes below. Only one group of four figures was presented, and—across participants—these four figures were presented with either synchronized movements as a high-entitativity group condition or independent movements as a low-entitativity group condition (see Figure 6). In each group entitativity condition, half of the trials (i.e., 48 trials) displayed that only one agent as an exemplar approached one of the targets at the lower side of the screen, and half of the trials displayed that three agents as exemplars approached the same target at the lower side of the screen. Hence, the design of this experiment was a 2 (group entitativity: high vs. low) × 2 (number of exemplars: single vs. multiple) × 2 (goal consistency: consistent vs. inconsistent) mixed measures design with repeated measures for the second and third factors.

Figure 7

Reaction Times in Study 4 as a Function of Group Entitativity, Number of Exemplars, and Goal Consistency



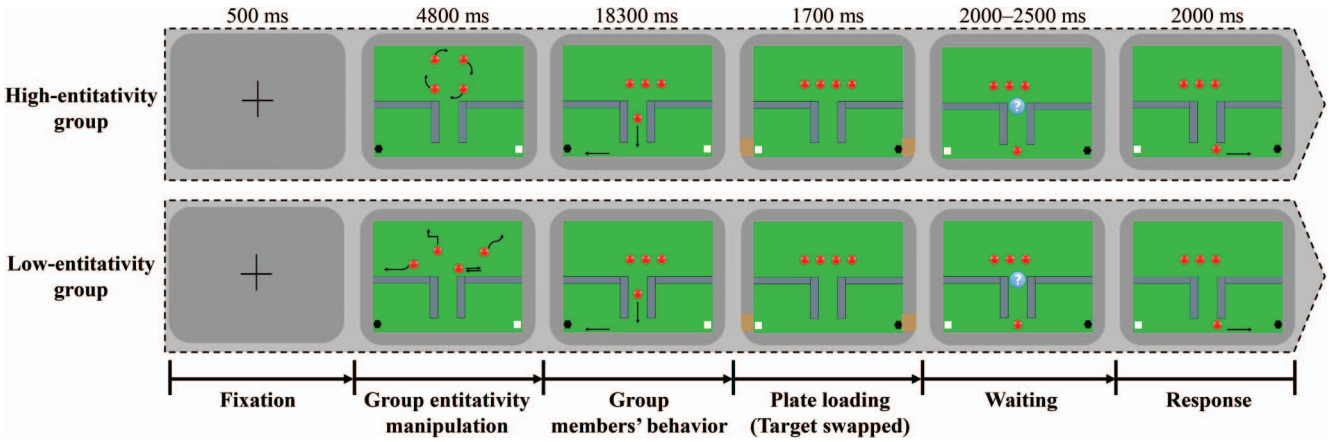
Note. The bars represent the mean RT for each condition. Error bars represent the standard error of the mean. The asterisk indicates that the difference in RTs between conditions was significant. See the online article for the color version of this figure.

Results and Discussion

Figure 7 shows the mean RTs for the trials in all of the conditions. The same criteria as those in Study 1 were adopted to exclude trials, and 4.69% of the trials were finally excluded. A 2 (group entitativity: high vs. low) × 2 (number of exemplars: single

Figure 6

An Example of a Trial Sequence From Study 4



Note. See the online article for the color version of this figure.

vs. multiple) × 2 (goal consistency: consistent vs. inconsistent) ANOVA revealed that the main effect of goal consistency, $F(1, 38) = 30.21$, $p < .001$, $\eta_p^2 = .44$, the interaction between group entitativity and goal consistency, $F(1, 38) = 7.30$, $p = .010$, $\eta_p^2 = .16$, and the three-way interaction, $F(1, 38) = 9.59$, $p = .004$, $\eta_p^2 = .20$, reached significance. The other effects were nonsignificant (group entitativity: $F(1, 38) = 0.48$, $p = .492$, $\eta_p^2 = .01$; number of exemplars: $F(1, 38) = 3.57$, $p = .066$, $\eta_p^2 = .09$; Group Entitativity × Number of Exemplars: $F(1, 38) = 2.15$, $p = .151$, $\eta_p^2 = .05$; Number of Exemplars × Goal Consistency: $F(1, 38) = 2.05$, $p = .161$, $\eta_p^2 = .05$).

Further analysis of the three-way interaction ($BF_{10} = 13.12$) revealed that only in the high-entitativity group condition was the interaction effect between number of exemplars and goal consistency significant, $F(1, 19) = 11.93$, $p = .003$, $\eta_p^2 = .39$, $BF_{10} = 7.19$. In contrast, no significant effect was found for this interaction effect in the low-entitativity group condition, $F(1, 19) = 1.22$, $p = .284$, $\eta_p^2 = .06$, $BF_{10} = 0.61$. A simple effects analysis showed that, in the high-entitativity group condition, when multiple exemplars (i.e., the majority) demonstrated the same behavior, participants responded more rapidly when the judged agent pursued a consistent goal ($M = 379$ ms, $SE = 13$) relative to when it pursued an inconsistent goal ($M = 413$ ms, $SE = 15$; $F(1, 19) = 43.31$ $p < .001$, $\eta_p^2 = .70$, $BF_{10} = 3233.58$, 95% CI [−45, −23]). However, when only a single exemplar (i.e., the minority) demonstrated the behavior, this effect was absent or at least became weak (consistent goal: $M = 400$ ms, $SE = 15$; inconsistent goal: $M = 410$ ms, $SE = 16$; $F(1, 19) = 2.93$, $p = .103$, $\eta_p^2 = .13$, $BF_{10} = 0.89$, 95% CI [−23, 2]).

To further examine whether goal-based consistency depended on group entitativity, we compared the facilitation effect (calculated by subtracting the RT in the consistent goal condition from that in the inconsistent goal condition) of high-entitativity group conditions with that of low-entitativity group conditions when multiple exemplars performed the same object-directed behavior and when one exemplar performed this behavior. When three exemplars demonstrated the same object-directed behavior, the facilitation effect was found to be higher in the high-entitativity group condition ($M = 34$ ms, $SE = 5$) than in the low-entitativity group condition ($M = 3$ ms, $SE = 4$; $t(38) = 4.54$, $p < .001$, Cohen's $d = 1.44$, $BF_{10} = 360$, 95% CI [17, 45]). However, no difference between the two conditions was found when a single exemplar demonstrated the behavior, $t(38) = 0.22$, $p = .829$, Cohen's $d = 0.07$, $BF_{10} = 0.32$, 95% CI [−19, 14]. Moreover, only when three exemplars from the high-entitativity group condition demonstrated the same behaviors was the facilitation effect higher than zero, $t(19) = 6.59$, $p < .001$, Cohen's $d = 1.45$, $BF_{10} = 7429$, 95% CI [23, 45]. Hence, the expectation of goal-based consistency relies on group entitativity and is sensitive to the proportion of group members demonstrating behaviors, showing majority-based expectations.

The 2 (group entitativity: high vs. low) × 2 (number of exemplars: single vs. multiple) × 2 (goal consistency: consistent vs. inconsistent) ANOVA was conducted using the accuracy data. None of the effects reached significance (group entitativity: $F(1, 38) = 0.04$, $p = .840$, $\eta_p^2 < .01$; number of exemplars: $F(1, 38) = 3.01$, $p = .0.091$, $\eta_p^2 = .07$; goal consistency: $F(1, 38) = 2.04$, $p = .161$, $\eta_p^2 = .05$; Group Entitativity × Number of Exemplars: $F(1, 38) = 0.59$, $p = .446$, $\eta_p^2 = .02$; Group Entitativity × Goal Consistency: $F(1, 38) = 0.80$, $p = .377$, $\eta_p^2 = .02$; Number of Exemplars × Goal Consistency: $F(1, 38) = 0.14$, $p = .709$, $\eta_p^2 < .01$; three-way interaction: $F(1, 38) = 2.86$, $p = .099$, $\eta_p^2 = .07$).

These findings suggest that perceivers implicitly expect highly entitative group members to behave consistently based on their common deep-level goals instead of their shallow-level movements when the majority perform the same behavior. Hence, this study replicates the major results of Study 1 and provides further evidence to support the idea that members of high-entitativity groups are implicitly expected to behave in a common manner based on the deep properties of behaviors.

General Discussion

To investigate whether the deep properties or the shallow features of behaviors are implicitly expected to be consistent across members of a highly entitative group, we assumed that, with regard to object-directed behaviors, goals—as deep properties—and movements—as shallow features—can be dissociated, and we examined whether the expectation across high-entitativity group members operates based on the movements or the goals of behaviors. We revealed that when the judged agent—to pursue a consistent external goal—undertook a movement that was inconsistent with that of the exemplars, the response of identifying the agent's movement was faster than that when the judged agent—to pursue an inconsistent external goal—undertook a movement consistent with that of the exemplars (i.e., facilitation effect) in the highly entitative group of Study 1, showing goal-based consistency. Moreover, such an expectation was present only based on membership in a unified group (i.e., highly entitative group). Study 2 confirmed that the facilitation effect of the response in Study 1 was explained by the judged movement that fit with, rather than violates, the internal expectation. Importantly, the implicit expectation of shared behavior across group members relied on the goal interpretation of actions instead of the association between actions and outcomes, as when the action was efficient with respect to reaching the external object and the expectation of goal-based consistency was present. In contrast, when this action became inefficient, the expectation of goal-based consistency disappeared in Study 3. Study 4 further replicated the facilitation effect of Study1 and revealed that the goal-based expectation of common behaviors among group members is based on the majority behavior instead of a single demonstration. Hence, when forming implicit expectations regarding the behaviors of high-entitativity group members, people rely on the level of the goal of object-directed behavior, supporting the idea that individuals in highly entitative groups are implicitly expected to behave consistently based on the deep properties instead of the shallow features of behaviors.

The current research once again documented that expecting consistent behaviors only occurs in cases of highly entitative groups in the implicit measurement (Crawford et al., 2002; Hamilton et al., 2002; Hamilton et al., 2009). The explicit reports deviated from the implicit measurement and demonstrated that expecting common behaviors occurs in both lowly and highly entitative groups. We speculate that this deviation may have occurred because the participants providing explicit reports, despite having an ambiguous expectation in the trials involving a lowly entitative group, wanted to provide a definitive answer and, accordingly, appealed to the explicit knowledge of a social group to

form expectations and interpret behaviors; although the social group had low entitativity, a little social group information was still present. Future studies should investigate when and why this difference in expectations might occur.

In our studies, perceivers immediately obtained details of the boundary of social groups from visual cues (i.e., moving synchronously) but without accumulating the specific experiences of those groups and without linguistic labels to possibly drive categorization. Definitive information about social groups consists of individuals' membership based on visual cues. Hence, membership might be sufficient to induce the tendency of generalizing behaviors, as suggested by Dunham (2018)—beliefs about abstract commonness among persons in social groups can stem from mere membership. Previously, using linguistic labels to describe one person's behaviors in a given context demonstrated that the behavior trait was generalized to high-entitativity group members (Crawford et al., 2002; Hamilton et al., 2002; Hamilton et al., 2009). However, linguistic labels could drive participants to create deep and stable concepts for the described person and the categorical representation of groups. Our studies did not ask the participants to apprehend any label or perform generalization tasks; nevertheless, the generalization of the deep property of behavior was found among individuals in highly entitative groups. Moreover, previous evidence supporting the implicit generalization of the deep property of behaviors to group members did not deviate from the explanation of generalizing the shallow-level movements of behaviors because both types of characteristics coincided and produced the same prediction regarding generalization. However, our research directly contrasted the expectation of goal-based consistency among group members with the expectation of movement-based consistency among group members and demonstrated that the goal as a deep property of behavior rather than the shallow features of behavior is implicitly expected to be common among individuals in highly entitative groups.

Although our findings were consistent with the prediction of goal-based commonness expectation, it is possible to argue that the commonness could be described with specific rules instead of the deep-level goal, such as objects in the same group having the same kind of magnetic attraction to the goal objects. However, the current research relied on the previous demonstration that when the agent acts efficiently to approach the external object, this event is automatically interpreted as that the agent's goal is to reach this object. This demonstration has been widely documented by behavioral studies, computational models, fMRI studies, and so on (Baker et al., 2009; for a review, see Jara-Ettinger et al., 2016; Jastorff et al., 2011; Schachner & Carey, 2013; Southgate & Csibra, 2009). Importantly, Study 3 was designed to manipulate the status of goal attribution by changing the action efficiency to the external object to test whether participants had implicit expectations about the commonness of deep-level goals within group members. This manipulation was validated by the post hoc evaluations about goal-directedness. In both situations of efficiently and inefficiently approaching the object, the relation of similar objects being attracted to the same outcome stayed the same, but only when the agent acted efficiently to the external object, that is, when the external object was treated as the agent's directed goal, the facilitation effect predicted by our hypothesis was observed. Moreover, in Studies 1 and 3, the explicit reports showed that when the agent was from the same group and acted efficiently to approach the external object, people truly relied on the shared goal to expect consistent behaviors. Hence, our research supports the concept that the deep characteristics of highly entitative groups are extracted and applied to group members.

Nevertheless, it is possible that the characteristic of object-directed behavior that perceivers expect to be consistent in our studies is more abstract than that based on a specific goal. For instance, object-directed behavior might be interpreted as driven by a preference for the object. Regardless, current research has already demonstrated that that which is extracted for generalization is commonness based on the deep property of behavior (e.g., it can be either a goal or preference) rather than certain shallow-level features. However, this conclusion seems to contradict the results of Study 2 and shows that shallow-level movements are implicitly expected to be common among group members. It is possible that, when only the shallow-level information is available, this information might also be relied on to establish expectations about group members' behaviors. Nevertheless, even if no external object exists, people can also think that the movement of "moving left" or "moving right" indicates that reaching that location is the goal. Hence, goal-based consistency and movement-based consistency still coincide and are difficult to disassociate in such a setting. For this reason, we presented object-directed behavior to separate possible content that frames commonness among group members. Further studies should address the question of the specificity of the deep property of behavior without an external target that, as with the content, perceivers expect to be consistent among group members.

The expectation regarding the common behaviors within group members relies on the deeper reasons underlying behaviors, which is consistent with the subjective essentialism view of groups that suggests the existence of a deep essence that would account for the detected regularities (Haslam et al., 2000; Prentice & Miller, 2007; Yzerbyt et al., 2001). In our study, members of entitative groups are viewed as having a goal beneath the surface that drives their behavior, and the deep-level goals may be treated as more approximate contents to the essence of a social group than shallow-level movements, hence guiding the inference of the unknown member. Moreover, the current research suggested that the essentialist belief was mainly evoked in the highly entitative group, as Yzerbyt and colleagues (1998) demonstrated, confirming that entitativity leads people to call on an essence that would explain the observed regularities. The contribution of the present study to the literature is that it expands the impact role of the subjective essentialism view of groups to expecting unknown group members' behaviors and illustrates that this belief is based on the majority behavior in social groups. The expectation of consistent deep property among group members also highlights the mind attribution to the group, showing that the higher the group's entitativity is, the more that this group's mind is attributed to (Tanibe et al., 2019; Waytz & Young, 2012). Regarding unified groups, the tendency to search for a common deep property across group members could drive perceivers to attribute a central mind to the group, with this mind dominating all consistent characteristics. Furthermore, the expectation of holding consistent external goals across groups contrasts with rituals and conventions because, seemingly, rituals and conventions emphasize movement-based consistency, such as how to celebrate New Year's Day. The results of Study 2 could provide some hints about this question. In fact, most behaviors based on

rituals and conventions do not have specific external goals (Kapitány & Nielsen, 2015; Legare & Souza, 2012). When clear external goals are unavailable, applying culturally defined actions to all group members might be acceptable. This action generalization does not necessarily need to be based on the object-directed goal because performing an action is the intended outcome and can be represented by the group norm that is supposed to be realized.

We should be cautious in generalizing the findings to groups formed by social categories, such as race, gender, or ethnicity. The groups used in the current studies were more task-directed with, for instance, synchronous movement often indicating coordination. A central feature of task groups is the degree to which their members are driven by common goals (Lickel et al., 2000). The expectation of goal-based consistency might be specific to this feature of task groups. However, this specific expectation could be dubious because group entitativity has been suggested to play a crucial mediating role in generalizing behaviors (e.g., stereotyping) across different types of groups (Spencer-Rodgers et al., 2007) and that group entitativity even promotes the use of deep property (e.g., disposition) attributions for the behavior of group members. Hence, the expectation of goal-based consistency across group members is possibly prevalent in different types of groups, and the determining factor is group entitativity. However, this speculation must be further addressed to respond to the specificity of our conclusion.

Moreover, the current research used computer animation with nonhuman agents. This method made it possible to strictly control for possible confounding factors, further allowing us to effectively inspect the disengagement of the deep property of behaviors from the shallow feature of behaviors. This method has been widely employed to gain an understanding of behaviors (Heider & Simmel, 1944; Ludwig et al., 2020; Powell & Spelke, 2013; Schachner & Carey, 2013). However, it might have limited the external generalizability of our findings, and future studies should use recorded human actions to test our findings.

In conclusion, members of a high-entitativity group are implicitly expected to behave consistently based on the deep properties of underlying behaviors (e.g., goals). This conclusion elucidates the level of the characteristics of behaviors that are spontaneously extracted and applied to new group members.

References

Agadullina, E. R., & Lovakov, A. V. (2018). Are people more prejudiced towards groups that are perceived as coherent? A meta-analysis of the relationship between out-group entitativity and prejudice. *British Journal of Social Psychology*, *57*(4), 703–731.

Aronson, E., Wilson, T. D., Akert, R. M., & Sommers, S. R. (2015). *Social Psychology*. Pearson Education.

Baker, C. L., Saxe, R., & Tenenbaum, J. B. (2009). Action understanding as inverse planning. *Cognition*, *113*(3), 329–349.

Bastian, B., & Haslam, N. (2006). Psychological essentialism and stereotype endorsement. *Journal of Experimental Social Psychology*, *42*(2), 228–235.

Bodenhausen, G. V., Kang, S. K., & Peery, D. (2012). Social categorization and the perception of social groups. In S. T. Fiske & C. N. Macrae (Eds.), *The SAGE handbook of social cognition* (pp. 311–329). Sage.

Brainard, D. H. (1997). The psychophysics toolbox. *Spatial Vision*, *10*, 433–436.

Brewer, M. B., Weber, J. G., & Carini, B. (1995). Person memory in intergroup contexts: Categorization versus individuation. *Journal of Personality and Social Psychology*, *69*(1), 29–40.

Campbell, D. T. (1958). Common fate, similarity, and other indices of the status of aggregates of persons as social entities. *Behavioral Science*, *3*(1), 14–25.

Crawford, M. T., Sherman, S. J., & Hamilton, D. L. (2002). Perceived entitativity, stereotype formation, and the interchangeability of group members. *Journal of Personality and Social Psychology*, *83*(5), 1076–1094.

Crump, S. A., Hamilton, D. L., Sherman, S. J., Lickel, B., & Thakkar, V. (2010). Group entitativity and similarity: Their differing patterns in perceptions of groups. *European Journal of Social Psychology*, *40*(7), 1212–1230.

Dasgupta, N., Banaji, M. R., & Abelson, R. P. (1999). Group entitativity and group perception: Associations between physical features and psychological judgment. *Journal of Personality and Social Psychology*, *77*(5), 991–1003.

Dunham, Y. (2018). Mere membership. *Trends in Cognitive Sciences*, *22*(9), 780–793.

Faul, F., Erdfelder, E., Buchner, A., & Lang, A. G. (2009). Statistical power analyses using G* Power 3.1: Tests for correlation and regression analyses. *Behavior Research Methods*, *41*(4), 1149–1160.

Fisher, A. V., Godwin, K. E., & Matlen, B. J. (2015). Development of inductive generalization with familiar categories. *Psychonomic Bulletin & Review*, *22*(5), 1149–1173.

Gelman, S. A., & Davidson, N. S. (2013). Conceptual influences on category–based induction. *Cognitive Psychology*, *66*(3), 327–353.

Gergely, G., & Csibra, G. (2003). Teleological reasoning in infancy: The naïve theory of rational action. *Trends in Cognitive Sciences*, *7*(7), 287–292.

Gergely, G., Nádasdy, Z., Csibra, G., & Bíró, S. (1995). Taking the intentional stance at 12 months of age. *Cognition*, *56*(2), 165–193.

Hamilton, D. L., & Sherman, S. J. (1996). Perceiving persons and groups. *Psychological Review*, *103*(2), 336–355.

Hamilton, D. L., Sherman, S. J., & Castelli, L. (2002). A group by any other name—The role of entitativity in group perception. *European Review of Social Psychology*, *12*(1), 139–166.

Hamilton, D. L., Sherman, S. J., Crump, S. A., & Spencer-Rodgers, J. (2009). The role of entitativity in stereotyping: Processes and parameters. In T. D. Nelson (Ed.), *Handbook of prejudice, stereotyping, and discrimination* (pp. 179–198). Erlbaum.

Haslam, N., Rothschild, L., & Ernst, D. (2000). Essentialist beliefs about social categories. *British Journal of Social Psychology*, *39*(1), 113–127.

Hassin, R. R., Aarts, H., & Ferguson, M. J. (2005). Automatic goal inferences. *Journal of Experimental Social Psychology*, *41*(2), 129–140.

Heider, F., & Simmel, M. (1944). An experimental study of apparent behavior. *The American Journal of Psychology*, *57*(2), 243–259.

Hilton, J. L., & von Hippel, W. (1996). Stereotypes. *Annual Review of Psychology*, *47*(1), 237–271.

Igarashi, T., & Kashima, Y. (2011). Perceived entitativity of social networks. *Journal of Experimental Social Psychology*, *47*(6), 1048–1058.

Ip, G. W., Chiu, C. Y., & Wan, C. (2006). Birds of a feather and birds flocking together: Physical versus behavioral cues may lead to trait- versus goal-based group perception. *Journal of Personality and Social Psychology*, *90*(3), 368–381.

Jachimowicz, J. M., Hauser, O. P., O'Brien, J. D., Sherman, E., & Galinsky, A. D. (2018). The critical role of second-order normative beliefs in predicting energy conservation. *Nature Human Behaviour*, *2*(10), 757–764.

Jacob, P., & Jeannerod, M. (2005). The motor theory of social cognition: A critique. *Trends in Cognitive Sciences*, *9*(1), 21–25.

Jara–Ettinger, J., Gweon, H., Schulz, L. E., & Tenenbaum, J. B. (2016). The naïve utility calculus: Computational principles underlying commonsense psychology. *Trends in Cognitive Sciences*, *20*(8), 589–604.

Jastorff, J., Clavagnier, S., Gergely, G., & Orban, G. A. (2011). Neural mechanisms of understanding rational actions: Middle temporal gyrus activation by contextual violation. *Cerebral Cortex*, *21*(2), 318–329.

Kapitány, R., & Nielsen, M. (2015). Adopting the ritual stance: The role of opacity and context in ritual and everyday actions. *Cognition*, *145*, 13–29.

Lakens, D. (2010). Movement synchrony and perceived entitativity. *Journal of Experimental Social Psychology*, *46*(5), 701–708.

Legare, C. H., & Souza, A. L. (2012). Evaluating ritual efficacy: Evidence from the supernatural. *Cognition*, *124*(1), 1–15.

Liberman, Z., Woodward, A. L., & Kinzler, K. D. (2017). The origins of social categorization. *Trends in Cognitive Sciences*, *21*(7), 556–568.

Lickel, B., Hamilton, D. L., & Sherman, S. J. (2001). Elements of a lay theory of groups: Types of groups, relational styles, and the perception of group entitativity. *Personality and Social Psychology Review*, *5*(2), 129–140.

Lickel, B., Hamilton, D. L., Wieczorkowska, G., Lewis, A., Sherman, S. J., & Uhles, A. N. (2000). Varieties of groups and the perception of group entitativity. *Journal of Personality and Social Psychology*, *78*(2), 223–246.

Ludwig, N. N., Hecht, E. E., King, T. Z., Revill, K. P., Moore, M., Fink, S. E., & Robins, D. L. (2020). A novel social attribution paradigm: The Dynamic Interacting Shape Clips (DISC). *Brain and Cognition*, *138*, Article 105507.

Marsh, L. E., Mullett, T. L., Ropar, D., & Hamilton, A. F. D. C. (2014). Responses to irrational actions in action observation and mentalising networks of the human brain. *NeuroImage*, *103*, 81–90.

McConnell, A. R., Sherman, S. J., & Hamilton, D. L. (1997). Target entitativity: Implications for information processing about individual and group targets. *Journal of Personality and Social Psychology*, *72*(4), 750–762.

Morgan, T. J. H., Rendell, L. E., Ehn, M., Hoppitt, W., & Laland, K. N. (2012). The evolutionary basis of human social learning. *Proceedings of the Royal Society B: Biological Sciences*, *279*(1729), 653–662.

Noyes, A., & Keil, F. C. (2019). Generics designate kinds but not always essences. *PNAS: Proceedings of the National Academy of Sciences of the United States of America*, *116*(41), 20354–20359.

Orvell, A., Kross, E., & Gelman, S. A. (2019). "You" and "I" in a foreign land: The persuasive force of generic-you. *Journal of Experimental Social Psychology*, *85*, Article 103869.

Van Overwalle, F., Duynslaeger, M. V., Coomans, D., & Timmermans, B. (2012). Spontaneous goal inferences are often inferred faster than spontaneous trait inferences. *Journal of Experimental Social Psychology*, *48*(1), 13–18.

Powell, L. J., & Spelke, E. S. (2013). Preverbal infants expect members of social groups to act alike. *Proceedings of the National Academy of Sciences of the United States of America*, *110*(41), E3965–E3972.

Prentice, D. A., & Miller, D. T. (2007). Psychological essentialism of human categories. *Current Directions in Psychological Science*, *16*(4), 202–206.

Pryor, C., Perfors, A., & Howe, P. D. L. (2019). Even arbitrary norms influence moral decision-making. *Nature Human Behaviour*, *3*(1), 57–62.

Reed, S. K., & Friedman, M. P. (1973). Perceptual vs conceptual categorization. *Memory & Cognition*, *1*(2), 157–163.

Rydell, R. J., Hugenberg, K., Ray, D., & Mackie, D. M. (2007). Implicit theories about groups and stereotyping: The role of group entitativity. *Personality and Social Psychology Bulletin*, *33*(4), 549–558.

Sani, F., Todman, J., & Lunn, J. (2005). The fundamentality of group principles and perceived group entitativity. *Journal of Experimental Social Psychology*, *41*(6), 567–573.

Schachner, A., & Carey, S. (2013). Reasoning about "irrational" actions: When intentional movements cannot be explained, the movements themselves are seen as the goal. *Cognition*, *129*(2), 309–327.

Sheikh, H., & Hirschfeld, L. A. (2019). Collections, collectives, and individuals: Preschoolers' attributions of intentionality. *Cognition*, *190*, 99–104.

Sims, C., & Colunga, E. (2011). Perceptual and conceptual cues in classification and inference tasks. *Proceedings of the Annual Meeting of the Cognitive Science Society*, *33*, 637–642. https://escholarship.org/uc/item/0wj9h53f

Sloutsky, V. M., Kloos, H., & Fisher, A. V. (2007). When looks are everything: Appearance similarity versus kind information in early induction. *Psychological Science*, *18*(2), 179–185.

Southgate, V., & Csibra, G. (2009). Inferring the outcome of an ongoing novel action at 13 months. *Developmental Psychology*, *45*(6), 1794–1798.

Spencer-Rodgers, J., Hamilton, D. L., & Sherman, S. J. (2007). The central role of entitativity in stereotypes of social categories and task groups. *Journal of Personality and Social Psychology*, *92*(3), 369–388.

Sutherland, S. L., & Cimpian, A. (2017). Inductive generalization relies on category representations. *Psychonomic Bulletin & Review*, *24*(2), 632–636.

Svirydzenka, N., Sani, F., & Bennett, M. (2010). Group entitativity and its perceptual antecedents in varieties of groups: A developmental perspective. *European Journal of Social Psychology*, *40*(4), 611–624.

Tajfel, H., Billig, M. G., Bundy, R. P., & Flament, C. (1971). Social categorization and intergroup behaviour. *European Journal of Social Psychology*, *1*(2), 149–178.

Tanibe, T., Hashimoto, T., Tomabechi, T., Masamoto, T., & Karasawa, K. (2019). Attributing mind to groups and their members on two dimensions. *Frontiers in Psychology*, *10*, Article 840.

VanBergen, N., Irmak, C., & Sevilla, J. (2020). Product entitativity: How the presence of product replicates increases perceived and actual product efficacy. *The Journal of Consumer Research*, *47*(2), 192–214.

Waytz, A., & Young, L. (2012). The group-member mind trade-off attributing mind to groups versus group members. *Psychological Science*, *23*(1), 77–85.

Woodward, A. L. (1998). Infants selectively encode the goal object of an actor's reach. *Cognition*, *69*(1), 1–34.

Xu, H., Duan, J., Chen, M., & Yin, J. (2019). The mechanisms of action prediction based on social group information. *Chinese Journal of Applied Psychology*, *25*(3), 239–252.

Yzerbyt, V., Corneille, O., & Estrada, C. (2001). The interplay of subjective essentialism and entitativity in the formation of stereotypes. *Personality and Social Psychology Review*, *5*(2), 141–155.

Yzerbyt, V. Y., Rogier, A., & Fiske, S. T. (1998). Group entitativity and social attribution: On translating situational constraints into stereotypes. *Personality and Social Psychology Bulletin*, *24*(10), 1089–1103.

Received July 19, 2020
Revision received December 8, 2020
Accepted December 9, 2020 ■