THE EFFECTS OF SUPERORDINATE GOALS AND SUPERORDINATE IDENTITY ON OUTGROUP LIKING AND BEHAVIORAL AGGRESSION

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ABSTRACT

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What causes ingroup members to like outgroup members? The goal of the present study was to understand the roles of superordinate identities and superordinate goals in producing outgroup liking and reducing aggression. By comparing their effects on liking and aggression it allows us to compare the common ingroup identity model and the ingroup favoring norm to understand intergroup conflict. Superordinate identities is defined as the need for an overarching identity that includes the ingroup and the outgroup. Superordinate goals is defined as the need for cooperative interdependence in which the groups are working toward the same goals. The study compared the use of these to determine if one or both was most effective for establishing outgroup liking by exploring the creation of one group or two groups and cooperation or competition. Three participants were brought to the lab and told they were either in one group or two groups and either in cooperation or competition with another group, then they completed a measure of behavioral aggression and several questionnaires. Data from 132 (13 groups per cell) University of Dayton undergraduate students were collected. Superordinate goals led to differences in outgroup liking and behavioral aggression, but superordinate identities and the interaction of the two did not. Participants in the cooperation condition

were more likely than those in the competition condition to trust the outgroup and represent their group as one group identity which led to higher outgroup liking. Furthermore, participants in the competition condition were more likely than those in the cooperation condition to act aggressively toward the other group and neither trust nor the conceptual representations impacted the effect. Results supported the ingroup favoring norm, suggesting that establishing a cooperative interdependence between groups could prevent violence and promote peace by forming outgroup trust.

Dedicated to Mom, Dad, Matthew, and John

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INTRODUCTION

Intergroup relations impact people's attitudes and behaviors toward others and positively or negatively influence small to large scale group interactions and understanding these relations can help prevent aggressive behavior and bring liking. For example, relations between Democrats and Republicans in the current United States political landscape or between ethnicities in urban neighborhoods are affected by intergroup processes (Gaertner & Dovidio, 2005). The relations between these groups can influence liking toward outgroup members, which could lead to conflict and aggression or peace (Gaertner & Dovidio, 2005). Understanding how intergroup relations function, and what generates outgroup liking can be important for creating more positive relations and producing liking toward others. Several theories investigate the formation of outgroup liking, particularly the use of superordinate identities and superordinate goals. Superordinate identities is the idea that two or more groups can have an overarching larger group identity that includes members of the ingroup and the outgroup (Brewer, 1999; Gaertner & Dovidio, 2005; S. L. Gaertner et al., 1989). Superordinate goals is the idea that two or more groups can work toward the same goal and have a cooperative interdependent relation (Brewer, 2000; Sherif, 1958). These two constructs are commonly theorized to produce liking between two groups, but several explanations exist for why one or the other may work. Two of the main theories discussing the role of superordinate identities and/or superordinate goals in outgroup liking are the common ingroup identity model and the ingroup favoring norm. The proposed study compares the use of these constructs and evaluates the reasons why one or both increases outgroup

liking.

Common Ingroup Identity Model (CIIM)

The common ingroup identity model stems from the social identity theory that people's group identity is a part of their self-identity, and it focuses on the role of cognitive categorizations of outgroups on intergroup relations and how they can produce outgroup liking. The CIIM maintains that differences in outgroup liking are influenced by the way in which the outgroup is cognitively represented by the ingroup (S. L. Gaertner et al., 1993). Social identity theory (SIT) claims that people strive to have a positive self-identity, which includes their social identity (Leary & Baumeister, 2000; Tajfel & Turner, 1979). As a result, people tend to view their ingroups and its members positively because the group is a part of their personal identity and can positively influence their self-esteem (Abrams & Hogg, 1988; Leary & Baumeister, 2000; Tajfel & Turner, 1979). However, as a result of meta-contrast (i.e., social group comparison), people tend to view outgroup members negatively and work to maximize ingroup and outgroup differences as a way to better their ingroup, which in turn boosts their self-esteem (Tajfel, 2001; Turner et al., 1979). Therefore, to change negative outgroup feelings, ingroup members must change their representations of outgroup members by identifying them as more similar to the self and their ingroup, which tend to be viewed favorably (S. L. Gaertner et al., 2000). The CIIM claims that people are able to increase their liking of outgroup members by cognitively recategorizing them as ingroup members, from "us" and "them" to an inclusive "we" (S. L. Gaertner et al., 1993; Perdue et al., 1990). By recategorizing them as a part of the ingroup, liking should increase because people view their ingroup and its members positively. Hence, the CIIM works to produce outgroup liking by recognizing

the role of cognitive representations in influencing intergroup outcomes.

The common ingroup identity model suggests several pathways to explain how intergroup relations can be formed or changed. The CIIM states that the cognitive categorization of outgroup members mediates the relation between antecedents, specific causes or conditions influencing intergroup outcomes, and consequences, outcomes of intergroup relations (S. L. Gaertner et al., 1993). The model proposes several antecedents such as intergroup interdependence and group differentiation (S. L. Gaertner et al., 2000). These antecedents can then lead to differing consequences such as cognitive effects, affective consequences, and behavioral effects (e.g., outgroup liking, behavioral aggression). Cognitive representations of the outgroup and ingroup (e.g., one group, two groups, individuals) mediates the relation between the antecedents and consequences, influencing positive or negative outcomes (S. L. Gaertner et al., 1993). Therefore, because several antecedents can lead to several representations that can lead to several outcomes there can be numerous pathways for forming and changing intergroup relations.

As the result of many pathways, the common ingroup identity model can explain outcomes in situations of cooperation and competition, in which superordinate identities play a role. Superordinate identities produce outgroup liking by turning outgroup members into ingroup members, whom people tend to like. For example, Democratic and Republican politicians would share a superordinate identity: American politicians. A superordinate identity does not change liking for those already considered to be a part of the original ingroup. Instead, it generates liking toward members of the previous outgroup who are now considered new members of the ingroup (Gaertner & Dovidio, 2005; Kramer & Brewer, 1984). Once an individual is recognized as an ingroup member,

people tend to view them favorably. People view their fellow ingroup members positively because they are a part of their self-identity and they strive to have a positive view of self (Tajfel & Turner, 1985). By making salient a superordinate identity, bias reduction toward Black students was found, where White students increased their liking of Black students (Nier et al., 2001). Using a superordinate identity in intergroup relations works by making previous outgroup members new ingroup members, so making an overarching identity salient can be key to generating outgroup liking and preventing aggression (Brown et al., 1999; Yamagishi & Mifune, 2008).

The pathway that CIIM employs for the formation of high outgroup liking uses cooperation (i.e., interdependence to reach goals) as the antecedent and a superordinate identity as the cognitive representation (S. L. Gaertner et al., 1990). From the antecedent of cooperation, the CIIM states that group members should recategorize the ingroup and outgroup into a representative "we" (i.e., into a superordinate identity), and consequently high outgroup liking should occur (S. L. Gaertner et al., 1989; S. L. Gaertner et al., 1990). So, when two separate groups cooperate and recognize themselves as part of a larger group then their liking of outgroup members should increase (Bettencourt et al., 1992; Dovidio et al., 2000; Gaertner & Dovidio, 2005; Kramer & Brewer, 1984). When looking at a difference in biases toward ingroup or outgroup members, those who cooperated in one big group had the least difference in biases and identified as one big group more often than those who competed in separate groups, showing that when given the antecedent to cooperate participants created a superordinate identity that reduced outgroup bias (S. L. Gaertner et al., 1990). When competition is the antecedent though, the pathway produces new results that can lead to intergroup aggression, behavior

intended to harm an outgroup member (Baron, 1977). When two groups are in competition they have two similar goals where one group's ability to succeed is dependent on their achievement and the other groups failure (S. L. Gaertner et al., 2000). Competition as the antecedent leads to the cognitive categorization of "us" and "them" (i.e., two separate groups; S. L. Gaertner et al., 2000; Perdue et al., 1990). Since people tend to like their ingroup members and not the outgroup members, the situation consequentially leads to low outgroup liking (Tajfel, 2001). Furthermore, the situation can lead to aggressive behavior between groups. When groups feel their ability to succeed is compromised by the other group it can lead to the fear of failing and the need to defend the group from failure, which are two predictors of intergroup aggression (Spanovic et al., 2010; Böhm et al., 2015). Cooperation and competition lead to two outcomes based on their differing capability to produce recategorization into a superordinate identity, the key step in the CIIM for creating outgroup liking and preventing aggression.

In the CIIM, without superordinate identity formation highest outgroup liking is not possible; however, there can be drawbacks to promoting recategorization into a superordinate identity. In the CIIM, for people to recategorize themselves into a superordinate identity, they must decrease their identity with their original ingroup (Deschamps & Brown, 1983). Situations that produce the most outgroup liking, and least discrimination were in circumstances of mutual differentiation, where participant's superordinate identity and subordinate identity were made salient, and their roles in the larger group were different but equal, so their unique group identity was maintained (Deschamps & Brown, 1983; Dovidio et al., 1998; Gonzalez & Brown, 2003; Hornsey &

Hogg, 1986). In addition, when people feel threatened, they are more likely to act with aggression toward others. So, when joining a superordinate group threatens their subgroup identity and therefore self-identity, they are more likely to act with aggression toward outgroup members that threaten this identity (Struch & Schwartz, 1989; Wenzel et al., 2007). Despite the potential problems, the common ingroup identity model is a widely held theory of intergroup relations and for explaining how to produce outgroup liking via a superordinate identity.

Ingroup Favoring Norm (IGFN)

Another model for understanding intergroup relations and the formation of outgroup liking is the ingroup favoring norm. The IGFN focuses on why group norms, expected behavior of group members, matter in intergroup relations and how outgroups can help ingroup success. The IGFN is the norm of group interest (NGI), that people are inclined to act in the favor of their group. According to NGI, unlike the SIT, instead of using a sociometer to guide attitudes and behavior, people follow accessible social norms that guide attitudes and provide behavioral prescriptions (Hertel & Kerr, 2001; Horwitz & Rabbie, 1982; Pettigrew, 1991; Tajfel & Turner, 1979). Humans became increasingly social beings millions of years ago when becoming a part of a group was the most successful route for survival (Caporael & Brewer, 1991). Group members can work collectively to gather the highest amount of resources for the whole group. Since the success of the ingroup impacts individual survival, their ingroup becomes vital to who they are and how they behave, which in turn forms an ingroup favoritism (L. Gaertner et al., 2006). Therefore, people look out for their fellow group members not because they want their ingroup to be better compared to outgroups, but because they do not want to

let their ingroup down (Hertel & Kerr, 2001; Horwitz & Rabbie, 1982; Montoya & Pinter, 2016; Pettigrew, 1991). People want to act in their groups best interest and they look to group norms for how to best act. Since many things influence behavior in group contexts, ingroup liking does not lead to outgroup dislike because they are distinct constructs, and the potential for outgroup indifference is possible (Pittinsky et al., 2011a). Indifference can occur because ingroup membership is not about a positive self-identity but about survival and maximizing group success regardless of outgroup success, which negates the need for meta-contrast and self-enhancement (Hertel & Kerr, 2001; Horwitz & Rabbie, 1982; Pettigrew, 1991). Therefore, proponents of the IGFN do not believe ingroup liking means automatic outgroup dislike (Montoya & Pinter, 2016). Group norms and ingroup favoring are crucial for explaining group behavior because acting in the groups best interest is the most important for group members survival, so looking to group norms about an outgroup can explain their intergroup relations.

Proponents of the ingroup favoring norm propose three main pathways to establish norms to produce positive intergroup relations and prevent aggression, the most important being via superordinate goals. The first pathway deals with the importance of valuing positive intergroup contact. In this pathway the IGFN suggests that emphasizing the benefits of a cooperative intergroup relation helps group members want to act cooperatively (Hertel & Kerr, 2001). Since individual members will act in the groups best interest, when cooperation is seen as beneficial members will want to cooperate. The next pathway stresses the importance of creating cooperative norms in intergroup relations. Group members will act cooperatively when they feel it benefits the group's interest (Louis et al., 2005; Wolf et al., 2009). So, a cooperative group norm will develop when

cooperation is seen as beneficial. Adherence to the group and its norms impacts intergroup behavior, meaning the norm of group interest and group norms matter in predicting attitudes and behavior (Horwitz & Rabbie, 1982; Jetten et al., 1996; Montoya & Pittinsky, 2013).

The final pathway emphasizes the importance of superordinate goals between two groups (Sherif, 1958). Superordinate goals produce outgroup liking by creating a cooperative interdependent relation, when groups rely on each other for the highest possible success, which is perceived as positive by the ingroup. For example, Democratic and Republican politicians may share a superordinate goal to reduce America's debt and must work together to maximize their success in achieving this goal. By making salient superordinate goals, it creates the need to work together to maximize group success and therefore generate cooperation while attempting to accomplish a goal (Sherif, 1958). Outgroup members do not need to become ingroup members for superordinate goals to initiate liking. It allows group members to maintain their group identity while maximizing the success of their group and the other group (Brown & Wade, 1987). When science and art students were given group specific tasks to complete while attempting to accomplish a goal together, they were more inclined to like the opposing group members after accomplishing a goal (Deschamps & Brown, 1983). Since superordinate goals works through cooperation, making salient the need for a cooperative interdependent relation can be key in forming outgroup liking and preventing intergroup aggression (Sherif et al., 1988). The ingroup favoring norm states that superordinate goals help establish outgroup trust, which in turn can generate outgroup liking in individuals, rendering an overarching identity unnecessary (Insko et al., 2005; Montoya & Pittinsky,

2011). Instead, groups establish that they are working toward the same goal(s) in which cooperation between the two groups will amplify their results (Montoya & Pinter, 2016). The collaboration helps form trust between the two groups because the outgroup is willing to help the ingroup succeed (Insko et al., 2005; Montoya & Pittinsky, 2011). Through trust, ingroups are able to establish higher outgroup liking while remaining in two separate groups (Montoya & Pinter, 2016). Since people care only about their ingroup's success, they will be more inclined to view the outgroup positively when they work together because the outgroup is helping them maximize success in achieving goals.

Through the pathway of superordinate goals, the ingroup favoring norm can explain differences in intergroup relations in situations of cooperation and competition. As explained, if groups have an established cooperative norm for working toward a shared goal they will generate high outgroup liking that is mediated by the formation of outgroup trust. A cooperative norm can form when cooperating maximizes ingroup success in achieving the shared goal (Montoya & Pinter, 2016; Sherif, 1958). However, situations occur in which cooperating would hinder instead of maximizing the ingroup's success. When this situation occurs, competition becomes in the groups best interest to maximize success (Pettigrew, 1991). So, a competitive group norm forms in which ingroup members will not work with outgroup members and may try to thwart outgroup success, potentially through aggression (Louis et al., 2005; Wildschut et al., 2002). As a result, outgroup trust cannot be formed because they are not working together, and the outgroup may try to disrupt their success (Montoya & Pinter, 2016, Montoya & Pittinsky, 2011). Without the formation of outgroup trust, forming high outgroup liking becomes difficult and the potential for intergroup aggression occurs (Montoya & Pinter, 2016).

When there is competition between groups, an aggressive norm can form guiding individual group members to act aggressively toward outgroup members. Competition threatens the ingroups ability to maximize success which is a predictor of groups becoming aggressive (Pettigrew, 1991; Struch & Schwartz, 1989) In cooperative or competitive manipulations between groups, participants worked on a task with their ingroups where they were either cooperating with another group for the highest combined score or competing with another group for the highest score between the two (Montoya & Pittinsky, 2011). Those who cooperated with the outgroup had increased liking toward the outgroup and the increase suggests that the superordinate goals were enough to establish liking. So, when groups have a superordinate goal and work cooperatively to achieve it, high outgroup liking should occur through the formation of outgroup trust, but if they compete for the shared goal, low outgroup liking and intergroup aggression could occur.

Current Study

The project examined and compared the roles of superordinate identities and superordinate goals in producing outgroup liking and preventing aggression to evaluate the efficacy of the CIIM and IGFN. The study had four conditions employing a 2 (superordinate goals: cooperative or competitive) × 2 (superordinate identities: two separate groups or one big group) between-participant design. The four conditions and their predicted outgroup liking and aggression are found in Table 1.

Hypotheses

Hypothesis 1. a. Main effects of both superordinate goals and superordinate identities should occur, in which cooperation compared to competition leads to higher

outgroup liking and lower behavioral aggression and one group compared to two groups leads to higher outgroup liking and lower behavioral aggression.

Hypothesis 1. b. If both superordinate goals and superordinate identities are present, a synergistic interaction should produce high outgroup liking and low behavioral aggression. A simple main effect of superordinate goals in which cooperation compared to competition leads to higher outgroup liking and lower behavioral aggression. A simple main effect of superordinate identities in which one group compared to two groups leads to higher outgroup liking and lower behavioral aggression.

Hypothesis 2. In support of the IGFN, the amount of outgroup liking and aggression should be mediated by outgroup trust, such that cooperation leads to more trust than competition, regardless of group identity.

Hypothesis 3. In support of the CIIM, the amount of outgroup liking and aggression should be mediated by cognitive representations of the groups. Those in the one group in cooperation condition should be more likely than those in the two groups in competition condition to view the groups as "one group identity" leading to the highest liking and lowest aggression. Those in the two groups in competition condition should be more likely than those in the one group in cooperation condition to view the groups as "two separate groups" leading to the lowest liking and highest aggression.

METHODS

Participants

An *a priori* power analysis (Cohen, 1977), using G*Power software (Faul et al., 2007) and referencing previous research with superordinate goals and superordinate identity manipulations (Deschamps & Brown, 1983; Gaertner et al., 1989; S. L. Gaertner et al., 1990; Montoya & Pittinsky, 2011; Gonzalez & Brown, 2003; Nier et al., 2001) estimates that 125 participants (adjusted to 132 for equal cells and cell groups) is desirable for a small effect ($n^2 = .035$), desired power ($\alpha = .80$), and alpha level ($p < .05$). A total of 132 individuals participated in the study. Thirty-two participants were in each condition except the two groups in competition condition had 29 participants. Three individuals completed the study each time it was performed, and one or two confederates were used when fewer than three participants volunteered for the study, resulting in 13 groups of three per condition. Three participants did not answer all of the questionnaires and were therefore excluded from several analyses. Participants were undergraduate students enrolled in a psychology course at the University of Dayton. Participants were compensated with partial course credit for their time.

Measures

Ratings of the Interaction

The question assessed participant ratings of their interaction. The question asked how much it felt cooperative, friendly, quarrelsome, close, pleasant, trusting, frustrating, competitive, honest or useless with the outgroup from 1 (*not at all*) to 7 (*very much*) (S. L. Gaertner et al., 1989). The measure is found in Appendix A.

Conceptual Representations of the aggregate

Two questions about participants representations of the other group, developed by Gaertner et al. (1989). The questions assessed the representation of the other group and the extent each participant felt like each representation from 1 (*not at all*) to 7 (*very much*) The questionnaire is found in Appendix B.

Representation of the self to others

Six diagrams each with a center circle representing the self, surrounded by other circles of differing difference from the self, measured representations of ingroup closeness (L. Gaertner & Schopler, 1998). Following the first diagrams, another six of the same diagrams were presented to measure participant representations of their perceived closeness to outgroup members. The diagrams are found in Appendix C.

Outgroup trust

Participant's perceptions of the outgroup's willingness to positively or negatively affect the ingroup's outcomes were assessed using nine items on a 9-point scale ($\alpha = .95$; Montoya & Pittinsky, 2011). Items included "If members of the other group were placed in a situation in which they could gain at my expense, I believe they would do so" and "Members of the other group cannot be trusted." The scale is found in Appendix D.

Outgroup liking

Three subscales from the Allophilia scale (Pittinsky et al., 2011b) assessed the extent to which the participants liked the outgroup members. Participants recorded their responses on a 7-point scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*), with items such as "I like members of the other group" and "I have positive feelings for members of the other group." The scale included 11-items within the three subscales with

alpha coefficients ranging from .88 to .92. The scale is found in Appendix E.

Aggression

The Tangram Helping/Hurting Task assessed behavioral aggression, which is participant's willingness to hurt an outgroup member's success on a tangram task. The number of "hard" tangrams chosen out of eleven were used to assess behavioral aggression. Motivations for the tangrams chosen were measured through 5 questions on a 5-point scale (Saleem et al., 2015). The scale is significantly correlated with other measures of aggression, anger, hostility, and violence, as well as with the motivation to hurt another and actual harm (Saleem et al., 2015). The measure is found in Appendix F.

Procedure

Participants were given an informed consent before beginning the study. The participants were randomly assigned to one of the four conditions. To form a group, three people were needed for each study session. The group of three was taken to the same room and told to sit around the same table, with a sign on the table labeled "Group A."

Superordinate identities manipulation

The experimenter told the participants that another group of three participants was in another room also completing the study. In reality, there was not another group of three participants. In the "superordinate identities" manipulation, the experimenter told the participants whether they were either in one group condition or two groups condition. For the one group condition, the participants were told that them and the other group were a part of the same larger "Group A" and they were to put "Group A" on all of the forms and questionnaires they filled out for the remainder of the experiment. In the two groups condition the experimenter informed the group that they were in "Group A" and

were to put "Group A" on the remainder of forms and questionnaires, and that the other group was "Group B," who labeled themselves as such on their forms and questionnaires.

The Anagram Task

Following the superordinate identities manipulation, the group was told they were completing two tasks for the study to assess problem-solving in a group. They were told that the first task was an anagram task and went through the instructions for how to complete the task. The participants were told that in the task, anagrams were to be done in individual groups, so their group would complete a different set of anagrams than the other group. Participants were told that their group and the other group could win $5 each dependent on the anagram task; but there was not money to win because they did not actually complete the task.

Superordinate Goals Manipulation

Following the explanation of the anagram task the group was given the manipulation for superordinate goals (cooperation or competition), similar to the one used by Montoya and Pittinsky (2011). In the cooperation condition, the experimenter told the group that they were completing the task with their group but that their score would be added with the score of the other group for the highest possible overall score, and a perfect score between them wins. In the competition condition, the experimenter told the group that they would complete the task with their group of three and that their score would be compared against the other group's score and the group with the highest score wins.

Behavioral Aggression Task

The experimenter then told the participants that they were stepping out to check

on the other group's status before beginning the anagram task. When the researcher returned, they informed the participants that the other group would complete the anagram task first, and they would go second. At this time, the experimenter explained the second task while they were "waiting" for their turn on the anagram task. The Tangram Helping/Hurting task was used to assess behavioral aggression. The participants were given the opportunity to solve 1-2 of them from a practice packet to ensure that they understood the task. After they practiced, the experimenter told them that each individual in their group and each individual in the other group would complete 10 tangrams in 10 minutes, and those who complete their tangrams could be eligible to win money. The experimenter then informed them that they choose the tangrams that the other participants have to complete, and so each of them chose 11 tangrams out of 30 ranging from easy, medium, and hard.

Group Anagram Information

Following the explanation of the tangram task the experimenter told them it was their turn to complete the anagram task, but they had information about the other group to share first. The experimenter allowed participants to look through the anagrams the other participants completed along with the two questions on the bottom of the page. All conditions were told that the other group successfully answered 12 anagrams. To reinforce the superordinate goals manipulation, groups were told the other group answered two questions regarding whether the other group would help them or not. In the cooperation conditions, participants were told that the other group said they would "give" them two of their anagrams, so they only had to complete 8 successfully (instead of the required 10). They were also told that the other group said the experimenter is allowed to

give them the answers of their unanswered anagrams to help them learn. In the competition conditions, the participants were told that the other group chose to "take" two of their anagrams, so that means they were expected to complete 12 anagrams successfully (instead of the required 10). In addition, the other group did not give the experimenter permission to give their group answers to their unanswered anagrams to help them learn.

Once the participants heard the information about the other group's anagram task the experimenter had the participants record their feelings about the group interaction, their conceptions of the aggregate, their representation of the self to others, their outgroup trust, their outgroup liking, and their motivation for choosing the tangrams for the other participants. Following the questionnaires participants were debriefed and compensated for their time through class credit.

RESULTS

An HLM analysis for interclass correlations (ICC) between group members for each outcome variable was completed (Griffin & Gonzalez, 1995). An ICC less than .40 is considered a poor relation and between .40–.59 is considered a fair relation (Cicchetti, 1994). Results indicated an ICC of .003 for outgroup liking and .458 for behavioral aggression. According to these guidelines, group members are poorly related on their outgroup liking scores and fairly related on their behavioral aggression scores, suggesting that group members are not highly interchangeable meaning the results can be evaluated on the individual level and not the group level.

Manipulation Checks

All manipulation checks were entered into a 2 (superordinate goals) × 2 (superordinate identities) between-participants analysis of variance (ANOVA) to determine the effectiveness of the manipulations.

Ratings of the Interaction

Ratings of the interaction measured the degree to which participants felt the interaction was cooperative, friendly, quarrelsome, close, pleasant, trusting, frustrating, competitive, honest or useless with the other group. Differences in ratings of the interaction helped determine if the superordinate goals manipulation was successful. Those who were in the cooperation condition rather than the competitive condition were expected to answer the cooperative adjectives higher and vice versa for the competitive adjectives. Participants in the cooperation condition did rate the cooperative adjectives higher than those in the competition condition. They felt the interaction was more

cooperative, $F(1, 127) = 79.52$, $p < .001$, partial $\eta^2 = .39$, friendly, $F(1, 127) = 68.97$, $p < .001$, partial $\eta^2 = .35$, close, $F(1, 126) = 25.03$, $p < .001$, partial $\eta^2 = .17$, pleasant, $F(1, 126) = 44.81$, $p < .001$, partial $\eta^2 = .26$, trusting, $F(1, 126) = 33.83$, $p < .001$, partial $\eta^2 = .21$, and honest, $F(1, 126) = 7.63$, $p = .007$, partial $\eta^2 = .06$. Furthermore, participants in the competition condition rated the competitive adjectives higher than those in the cooperative condition. They felt the interaction was more quarrelsome, $F(1, 124) = 12.09$, $p = .001$, partial $\eta^2 = .09$, frustrating, $F(1, 125) = 67.45$, $p < .001$, partial $\eta^2 = .35$, competitive, ($F(1, 127) = 147.42$, $p < .001$, partial $\eta^2 = .54$, and useless, $F(1, 125) = 30.91$, $p < .001$, partial $\eta^2 = .20$. Overall, the cooperative condition lead to more favorable ratings of the interaction than the competition condition, suggesting that the superordinate goals manipulation of cooperation and competition was successful.

Conceptual Representations of the Outgroup

Conceptual representations of the outgroup measured each individual's representation of the group as either one group identity, two groups within one group, two separate groups, or separate individuals; and how much it felt like each of these representations. Differences in representations helped determine if the superordinate identities manipulation was successful. Participants in the one group condition were expected to think they were in one group identity and those in the two groups condition were expected to think they were in two separate groups. For participants perceived conceptual representation of the outgroup, a profile analysis was completed using a mixed ANOVA showing a main effect of superordinate goals, $F(1.65, 199.64) = 16.73$, $p < .001$, partial $\eta^2 = .12$, and superordinate identities, $F(1.65, 199.64) = 10.05$, $p < .001$, partial $\eta^2 = .08$. Participants in the one group condition were more likely to think they

were in one group identity and those in the two groups condition were more likely to think they were in two separate groups. Both conditions also had a substantial percentage of participants think they were in two groups within one group identity.

For the "one group identity" representation, the main effect for superordinate identities was significant, $F(1, 125) = 4.02$, $p = .047$, partial $\eta^2 = .03$, indicating that participants in the one group condition were more likely than participants in the two groups condition to say they felt they were in "one group identity." For the "two groups within one group" representation, the main effect for superordinate identities was marginal, $F(1, 125) = 3.72$, $p = .056$, partial $\eta^2 = .03$, indicating that participants in the one group condition were descriptively more likely than participants in the two groups condition to feel they were in "two groups within one." For the "two separate groups" representation, the main effect for superordinate identities was significant, $F(1, 125) = 12.68$, $p = .001$, partial $\eta^2 = .09$, indicating that participants in the two groups condition were more likely than the participants in the one group condition to feel they were in "two separate groups." Finally, for the "separate individuals" representation, the main effect for superordinate identities was not significant, $F(1, 125) = 1.92$, $p = .17$, partial $\eta^2 = .02$. Overall, results suggest that the superordinate identities manipulation was effective. Participants mostly chose the best or the next best representation that represented their group manipulation and were least likely to choose the representation that did not match their group manipulation.

Representation of the Self to Others

Representation of the self to others measured each participant's visual representation of how close they considered themselves to their ingroup and outgroup

members. Differences in their representations of closeness helped determine if the superordinate identities manipulation was successful. Participants in the one group condition were expected to feel closer to the outgroup and those in the two groups condition were expected to feel further to the outgroup. All groups were expected to feel close to their ingroup. The main effects of superordinate identities were not significant for closeness to ingroup members, $F(1, 125) = 0.04$, $p = .85$, partial $\eta^2 = .000$, and closeness to outgroup members, $F(1, 125) = .017$, $p = .896$, partial $\eta^2 = .000$. However there were significant interactions for closeness to ingroup members, $F(1, 125) = 8.40$, $p = .004$, partial $\eta^2 = .063$, and closeness to outgroup members, $F(1, 125) = 5.37$, $p = .022$, partial $\eta^2 = .041$. These indicated that participants in the one group in cooperation condition felt closest to ingroup and outgroup members, and participants in the one group in competition condition felt the least close to ingroup and outgroup members. The results of this manipulation check did not give much insight into the success of the superordinate identities manipulation. As a whole, the manipulation checks showed that the manipulations were successful.

The Superordinate Goals × Superordinate Identities Interaction for Outgroup Liking and Behavioral Aggression

A 2 (superordinate goals) × 2 (superordinate identities) between-participants ANOVA was completed to evaluate outgroup liking and behavioral aggression for an interaction of superordinate identities and superordinate goals. The means, standard deviations, and correlations for each variable for each group are found in Table 2.

Outgroup Liking

For outgroup liking, there was a main effect for superordinate goals, $F(1, 125) = 8.22$, $p = .005$ partial $\eta^2 = .06$, suggesting that those in the cooperation condition liked outgroup members more than those in the competition condition. The main effect for superordinate identities was not significant, $F(1, 125) = 0.94$, $p = .33$, partial $\eta^2 = .01$. The Superordinate Goals × Superordinate Identities interaction was not significant, $F(1, 125) = 0.04$, $p = .84$, partial $\eta^2 = .000$. The plot of the ANOVA is found in Figure 1.

Behavioral Aggression

Results for behavioral aggression also did not result in a Superordinate Goals × Superordinate Identities interaction, $F(1, 128) = 1.00$, $p = .32$, partial $\eta^2 = .008$, or a significant main effect of superordinate identities, $F(1, 128) = 0.001$, $p = .97$, partial $\eta^2 = .000$. There was a significant main effect for superordinate goals, $F(1, 128) = 46.24$, $p < .001$ partial $\eta^2 = .27$, suggesting that those in the cooperation condition were less aggressive toward outgroup members than those in the competition condition. The plot of the ANOVA is found in Figure 2.

Moderated-Mediation of Outgroup Liking and Behavioral Aggression

A main goal of the study was to examine outgroup trust and conceptual representations (i.e., one group identity, two groups within one group identity, two separate groups, separate individuals) as mediating the effect of Superordinate Goals × Superordinate Identities on outgroup liking and behavioral aggression. The moderated-mediation models were tested using the PROCESS macros for SPSS version 3.4 (Hayes, 2013). Moderated-mediation was tested using a bootstrapping approach, which determines significance of mediation by producing confidence intervals based off percentiles through repeated resampling of the data and does not have normality

assumptions (Preacher & Hayes, 2008). A moderated-mediation tests for conditional indirect effects, which are the magnitude of an indirect effect (i.e., mediation effect) at a specific level of the moderator (Preacher et al., 2007). The present moderated-mediation models measured if the indirect effects of superordinate goals (i.e., independent variable) on outgroup liking or behavioral aggression (i.e., outcome variables) via outgroup trust or the conceptual representations (i.e., the five mediators) were conditional on the level of superordinate identity (i.e., moderator). The statistical model of the moderated-mediation tested is found in Figure 3. The Superordinate Goals × Superordinate Identities–mediator links were the a_3 pathways, the superordinate goals–mediator links were the a_1 pathways, and the superordinate identities–mediator links were the a_2 pathways (Preacher, et al., 2007). The mediator–outgroup liking and behavioral aggression links were the b_1 pathways (Preacher, et al., 2007). The conditional indirect effects from the moderated-mediation analyses were determined through the product a_3b_1. To help understand the direction of the moderated-mediations the a_3 and b_1 effects are reported for each model, and the effects of each moderated-mediation model for outgroup liking and behavioral aggression are reported for the conditional indirect effects.

The Effects of the a Links for each Mediator

To determine the effects in the $a_{1\&3}$ pathways, each of the mediators were separately entered into a Superordinate Goals × Superordinate Identities ANOVA, to find differences in the Superordinate Goals × Superordinate Identities–mediator link and the superordinate goals–mediator link. The means and standard deviations are found in Table 3, and ANOVA statistics are found in Table 4. When outgroup trust was the outcome variable, the interaction effect was not significant. However, the main effect for

superordinate goals was significant, indicating that trust was greater in the cooperation condition than the competition condition. Next, the one group identity representation was entered into the Superordinate Goals × Superordinate Identities ANOVA and the interaction effect was marginal. The main effect for superordinate goals was significant, indicating that participants were more likely to feel they were in "one group identity" in the cooperation condition than in the competition condition. Then, when the two groups within one group representation was analyzed as the outcome variable, the interaction effect was not significant, but the main effect for superordinate goals was significant, indicating that participants were more likely to feel they were in "two groups within one group" in the cooperation condition than in the competition condition. When the two separate groups representation was entered into the ANOVA, the interaction effect was significant, indicating that participants felt they were in "two separate groups" the most in the two groups in competition condition and the least in the one group in cooperation condition. The main effect for superordinate goals was also significant, indicating that participants were more likely to feel they were in "two separate groups" in the competition condition than in the cooperation condition. Finally, when the separate individuals representation was analyzed in the ANOVA, neither the interaction effect nor the main effect for superordinate goals was significant. None of the conditions differed from each other in how much the groups felt like separate individuals. Overall, the results indicated in the moderated-mediation models for outgroup trust, the one group identity representation, the two groups within one group representation, and the two separate groups representation had significant differences in the a_1 links; and in the model for the two separate groups representation there was a significant difference in the a_3 link.

The Effects of Each Mediator on the Outcome Variables

The coefficients of the mediator–outgroup liking and behavioral aggression links were found in the moderated-mediation models and correlations showed the direction and the relation between each mediator and the outcome variables. For this pathway, only the outgroup trust–outgroup liking link and the one group identity representation–outgroup liking linking were significant. The effects of these pathways are found in Figure 4 and Figure 5. The other three mediators were not significant for outgroup liking, and all five mediators were not significant for behavioral aggression. The means, standard deviations, and correlations for the mediators with outgroup liking and behavioral aggression are found in Table 5.

Moderated-Mediation of Outgroup Liking

For outgroup liking, to find the conditional indirect effects, each of the five mediators (i.e., trust, cognitive representations—one group identity, two groups within one group, two separate groups, separate individuals) were run separately in their own moderated-mediation model. The effects of the moderated-mediation models for outgroup liking are found in Table 6. In the moderated-mediation for outgroup trust, Superordinate Goals × Superordinate Identities was not significant for outgroup liking via outgroup trust, however the indirect effect of superordinate goals on outgroup liking via trust was significant. The cooperation condition lead to more outgroup liking than the competition condition in the one group condition and the two groups condition, and the direct effect of superordinate goals on outgroup liking was no longer significant. The mediation effects for this model are found in Figure 4. For the one group identity representation, the moderated-mediation effect was not significant for outgroup liking via

the one group identity representation. However, the mediation effect of superordinate goals on outgroup liking via the one group identity representation was significant. The cooperation condition lead to more feelings of a "one group identity" than the competition condition in the one group condition and the two groups condition, and the direct effect of superordinate goals on outgroup liking was no longer significant. The mediation effects of this model are found in Figure 5. In the moderated-mediation analysis for the two groups within one group representation, the interaction effect was not significant for outgroup liking via the two groups within one group representation. The effect of superordinate goals on outgroup liking via the two groups within one group representation was also not significant, and the direct effect of superordinate goals on outgroup liking was no longer significant. When the two separate groups representation was analyzed in the model, neither the moderated-mediation effect nor the indirect effect of superordinate goals on outgroup liking via the two separate groups representation were significant. The previously significant Superordinate Goals × Superordinate Identities–outgroup liking and superordinate goals–outgroup liking links were no longer significant. For the moderated-mediation analysis of the separate individuals representation, neither the interaction effect nor the mediation effect of superordinate goals on outgroup liking via the separate individuals representation were significant. However, there was a conditional direct effect (i.e., superordinate goals–outgroup liking link) in the two groups condition in which participants were more likely to feel the groups were separate individuals in the two groups in cooperation condition than in the two groups in competition condition, *estimate* = -0.47, *SE* = 0.23, *p* = .04.

Moderated-Mediation of Behavioral Aggression

For behavioral aggression, each of the five mediators were again run separately in their own moderated-mediation models. The effects of the moderated-mediation models for behavioral aggression are found in Table 7. For all five mediators, the same effects were found in the moderated-mediation analyses with behavioral aggression. The Superordinate Goals × Superordinate Identities effect on behavioral aggression was not significant via any of the mediators. The indirect effects of superordinate goals on behavioral aggression via each mediator were also not significant. The conditional direct effects of superordinate goals on behavioral aggression were significant. Overall, participants in the one group in cooperation condition behaved less aggressively than in the one group in competition condition, and participants in the two groups in cooperation condition behaved less aggressively than in the two groups in competition condition.

Exploratory Analysis

In addition to running each mediator in its own moderated-mediation model, an exploratory analysis was completed to investigate the outcome variables when the three main mediators (i.e., outgroup trust, one group identity representation, and two separate groups representation) were examined in parallel. A PROCESS macro moderated-mediation was used to evaluate if any of the mediators continued to be significant in the presence of other mediators to help inform if one mediator was stronger than the other mediators. The effects of the exploratory analyses moderated-mediations are found in Table 8. Outgroup trust, one group identity and two separate groups representations were analyzed as parallel mediators in the Superordinate Goals × Superordinate Identities–outgroup liking link. The Superordinate Goals × Superordinate Identities effect on outgroup liking was not significant via trust, one group identity, or two separate groups.

The indirect effect of superordinate goals on outgroup liking was not significant via the one group identity representation for the one group condition and the two groups condition. The indirect effect of superordinate goals on outgroup liking was also not significant through the two separate groups representation for the one group condition and the two groups condition. However, the indirect effect of superordinate goals on outgroup liking via trust was significant. The cooperation condition lead to more outgroup liking than the competition condition for the one group and two groups conditions. The direct effect of superordinate goals on outgroup liking was no longer significant, $B = 0.49$, $SE = 0.52$, $p = .34$. Next, the three mediators were analyzed as parallel mediators in a moderated-mediation of the Superordinate Goals × Superordinate Identities–behavioral aggression link. The Superordinate Goals × Superordinate Identities effect on behavioral aggression was not significant via trust, one group identity, or two separate groups. The mediation effect of superordinate goals on behavioral aggression was not significant via trust for the one group condition or the two groups condition. The mediation effect of superordinate goals on behavioral aggression was also not significant via the one group identity representation for the one group condition or the two groups condition. Finally, the mediation effect was not significant for superordinate goals on behavioral aggression via the two separate groups representation for the one group condition. The direct effect of superordinate goals on behavioral aggression remained significant, $B = 3.93$, $SE = 1.39$, $p = .006$. Participants in the one group in cooperation condition behaved less aggressively than in the one group in competition condition, *estimate* = 3.07, $SE = 0.74$, $p < .001$, and participants in the two groups in cooperation condition behaved less aggressively than in the two groups in competition condition,

estimate = 2.21, *SE* = 0.66, *p* = .001.

DISCUSSION

The goal of the present study was to better understand the effects of superordinate goals and superordinate identities on outgroup liking and behavioral aggression. The cooperation condition led to higher outgroup trust and more participants representing their group as one group identity, which led to higher liking, and vice versa for the competition condition. Furthermore, the competition condition led to more aggressive behavior than the cooperation condition, and this effect was not influenced by outgroup trust or the conceptual representations.

The outcomes indicated that superordinate goals alone had an effect on outgroup liking and behavioral aggression. The results indicate that superordinate identities do not play a strong role in influencing outgroup liking and behavioral aggression in an intergroup setting because there is no main effect of superordinate identities eliciting differences in liking and aggression. These results support the IGFN theory that a superordinate identity is less critical to produce outgroup liking and to reduce aggression, than superordinate goals. Proponents of the IGFN theorize that when a cooperative interdependent relation is established via a superordinate goal it can generate liking between groups and reduce the chances of aggression while allowing groups to maintain their separate identities (Montoya & Pinter, 2016).

The creation of outgroup trust facilitated the superordinate goals–outgroup liking link, which showed strong support for the IGFN. Proponents of the IGFN propose that superordinate goals lead to liking via the development of trust (Montoya & Pinter, 2016). Although trust does not mediate the superordinate goals–behavioral aggression link, it

does mediate the superordinate goals–outgroup liking link. When groups work together in a cooperative interdependent relationship it is important to trust that the outgroup will not fail to help them achieve the goal. The liking forms between groups not solely because the outgroup cooperates but also because they did not betray the trust of the ingroup by cooperating. By telling participants that the other group is giving them extra anagrams and is allowing them to receive help from the researcher, it is confirming that the outgroup is going to cooperate. Therefore, they can trust the outgroup, consequently producing outgroup liking.

The results indicated that the one group identity representation also mediated the superordinate goals–outgroup liking link, which does not show strong support for the CIIM. Proponents of the CIIM propose that antecedents, such as cooperative interdependence and/or a salient superordinate identity, lead to changes in individual's conceptual representations of the outgroup (e.g., one group identity) which then lead to consequences of outgroup liking and aggression prevention (S. L. Gaertner et al., 1993). The key is that by making a superordinate identity salient it should allow people to change their representation into a one group identity making outgroup members ingroup members who people tend to like. So, the combined effect of superordinate goals serving as the antecedent with a salient superordinate identity should lead to even more differences in liking and aggression. However, even though the results do not show support for superordinate identities influencing the on establishment of outgroup liking and preventing aggression, they do to some extent support the CIIM. The results suggest that cooperation as an antecedent leads to individuals cognitively recategorize the groups into a one group identity (e.g., "us") which leads to the affective consequence of liking.

The outcomes of the study add to current literature on intergroup relations by providing insight into the roles of superordinate goals, superordinate identities, and various mediators in producing outgroup liking and reducing behavioral aggression. The study provides a better understanding for how superordinate identities and goals work alone and together. As proponents of the IGFN suggest, superordinate goals alone, through the formation of trust, work toward forming outgroup liking and reducing aggression. Unlike proponents of the CIIM would suggest, superordinate identities and superordinate goals do not work together to help create outgroup liking and reduce aggression. Additionally, although participants tend to select the correct conceptual representation for their group, none of the representations mediate the Superordinate Goals × Superordinate Identities–outgroup liking and aggression links. The study indicates that superordinate identities may not play as important of a role in producing outgroup liking and reducing behavioral aggression as some may suggest (Brown et al., 1999; S. L. Gaertner et al., 1993; Perdue et al., 1990; Yamagishi & Mifune, 2008). The study also indicates that superordinate goals can be crucial in forming outgroup liking and reducing aggression because it helps facilitate outgroup trust formation. Furthermore, the outcomes of the study provide suggestions for real-world interventions. From these results, one could propose that the best way to form liking and prevent aggression between groups in a real-life setting is to create a cooperative interdependent relationship via a superordinate goal, in which working together is the only way to maximize success. By doing so, groups can form trust between them and continue to nurture the trust through continued cooperation via a superordinate goal leading to the establishment of high intergroup liking and low aggressive behavior.

Limitations

The current study presents several limitations that may impact the outcome of the study. The first limitation is that the results are completely determined by the relative strengths of the different manipulations of identities and goals. A weak operationalization of identities could potentially lead to results that indicate that goals alone influence liking and aggression, and vice versa for a weak operationalization of goals. To help combat the limitation the study includes several manipulation check questions to help ensure that the results are reaching outcomes based on the use of goals and identities. The superordinate goals manipulation seemed effective and should not affect the outcome variables. However, even though the superordinate identities manipulations suggest some effectiveness, the results for these questions display differences as a result of a Superordinate Goals × Superordinate Identities interaction and from a main effect of superordinate goals, and not just from a main effect of superordinate identities. A potential reason for why is that for the two groups to see themselves as one group identity there has to be an additional group serving as the outgroup. According to SIT, which the CIIM extends from (S. L. Gaertner et al., 1993), to create an intergroup setting there must be an ingroup and an outgroup. In the one group identity manipulation there was no additional outgroup to create an intergroup setting to help cause a new cohesive ingroup identity with the other group. Without the additional outgroup, it is likely that the participants find it difficult to represent the groups as one group identity in which they are cooperating or competing. The two groups within one group representation is potentially chose more because it allows the other group to slightly remain as an outgroup. However, many find, including proponents of the IGFN, that an outgroup is not

necessary to form an ingroup identity and that group identity comes from intragroup mechanisms rather than intergroup (L. Gaertner et al., 2001). This suggests that the absence of an additional outgroup may not influence the effectiveness of the superordinate identities manipulation. Nevertheless, since it cannot be proven either way, there is the possibility that not having an additional outgroup could impact the superordinate identities manipulation.

Additionally, groups may not believe in the existence of the second lab group impacting participants ability to answer as if they are in an intergroup setting. To create an intergroup setting there must be two groups, and in the study the second group does not exist and is made up to create the intergroup setting. However, because the participants never see or hear the other group there is the potential they do not believe that they exist. If participants do not believe in their existence, then it may impact their answers because they do not represent answers that relate to an intergroup setting. Although the participants do not answer whether they believe the other group exists, the researcher asks at the end of each study if they believe in the other groups existence and if they know the true purpose of the study. Participants who suspect the other group does not exist and/or know the purpose of the study are marked and evaluated for inclusion in the results. However, many participants did not answer and may not believe in the other groups existence, potentially impacting their responses and therefore the results.

Directions for Future Research

According to the results of the study, outgroup trust serves as the strongest mediator for forming outgroup liking, suggesting a plausible next step for future research is to explore the creation of trust. How does outgroup trust form? Is there another

mediator that leads to the formation of trust that then leads to outgroup liking formation or vice versa? One potential additional mediator that could help form outgroup trust is reciprocation. Reciprocation is the practice of exchanging things between individuals and groups for mutual benefit (Doosje & Haslam, 2005). Reciprocity has been studied for playing a role in trust formation and liking production, particularly in individuals (Caliendo et al., 2012; Chaudhuri et al., 2002; Evans & Krueger, 2016; Pillutla et al., 2003; Thielmann & Hilbig, 2015). However, is reciprocation a behavior that causes outgroup trust to form or is reciprocation a behavioral outcome to groups having formed outgroup trust? When individuals and groups are given something by another, they are more likely to reciprocate which could be a behavior that leads to outgroup trust (Doosje & Haslam, 2005; L. Gaertner & Insko, 2000). However, groups reciprocating in a helpful way could be a behavioral consequence because groups already formed outgroup trust. In the present study, before participants respond about their outgroup trust and liking, they are told that the outgroup either gives them extra anagrams to help them succeed (cooperation condition) or takes extra anagrams away to hinder their success (competition condition). The initial willingness of the other group to help or hurt them could be seen as the start of a reciprocal relationship, impacting their ability to form outgroup trust and liking. However, in the cooperation condition, participants may have already formed outgroup trust and when the other group helps them, it potentially reinforces that trust. As a result, the group members would likely reciprocate the action by donating anagrams to the other group, consequently helping the groups to form outgroup liking. The opposite effect would be expected in the competition condition. By investigating the role of reciprocation between groups, more can be understood about the

formation of outgroup trust and therefore the production of outgroup liking.

Conclusion

In conclusion, the results support the IGFN than the CIIM. While the one group identity representation does mediate the superordinate goals–outgroup liking linking, it does not mediate the Superordinate Goals × Superordinate Identities–outgroup liking link, which better supports the CIIM that cooperation helps form a one group identity representation when a superordinate identity is salient. However, trust does influence the superordinate goals–outgroup liking link as the IGFN predicts. Further, while there are no mediations found for the effect on behavioral aggression there is a strong superordinate goals–aggression link. The results suggest that by creating a cooperative interdependence between groups trust forms between them which can lead to liking, and that a cooperative interdependence alone leads to less aggression. Creating a superordinate identity is not necessary for establishing outgroup liking. These results can be used to create useful interventions in the future to help promote peace and reduce violence between groups in conflict.

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Table 1

Predicted Outcomes

Superordinate Identity	Superordinate Goals	
	Cooperation	Competition
1 Group	Highest outgroup liking & low behavioral aggression	Lower outgroup liking & higher behavioral aggression
2 Separate Groups	lower outgroup liking & higher behavioral aggression	Lowest outgroup liking & highest behavioral aggression

Table 2.

Descriptive statistics and correlations between superordinate identities, superordinate goals, outgroup liking, and behavioral aggression.

Variable	*M*	*SD*	1	2	3
1. Superordinate identities [a]	1.48	0.50	–		
2. Superordinate goals [b]	1.47	0.50	0.01	–	
3. Outgroup liking	4.19	0.92	-0.08	-0.25**	–
4. Behavioral aggression	2.41	2.53	0.01	0.52**	-0.18*

[a] 1 = one group and 2 = two groups. [b] 1 = cooperation and 2 = competition.

*$p < .05$. **$p < .001$.

Table 3.

Means, standard deviations for study mediators.

Mediator	Cooperation				Competition			
	One group		Two groups		One group		Two groups	
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Outgroup trust	7.24	1.13	6.44	1.03	4.99	1.47	4.50	1.43
One group identity	5.24	1.52	4.24	1.64	2.50	1.19	2.47	1.41
Two groups within one group	5.35	1.82	4.39	1.84	4.28	1.73	3.57	2.08
Two separate groups	2.71	1.55	4.39	1.84	5.56	1.48	5.90	1.56
Separate individuals	2.71	1.68	2.70	1.55	2.69	1.33	3.47	1.72

Table 4.

Two-way ANOVA statistics for study mediators.

Mediator	Main effects				Interactions [a]	
	Superordinate identities		Superordinate goals			
	F ratio	η^2	*F* ratio	η^2	*F* ratio	η^2
Outgroup trust	8.20*	.06	86.66**	.409	0.47	.004
One group identity	4.02*	.03	77.62**	.383	3.51	.027
Two groups within one group	3.72	.03	11.10**	.082	0.03	.000
Two separate groups	12.68**	.09	58.80**	.320	5.64*	.043
Separate individuals	1.92	.02	1.83	.014	2.01	.016

[a] Superordinate Goals × Superordinate Identities interaction effect.

*$p < .05$. **$p < .001$.

Table 5.

Means, standard deviations, and correlations between mediators, outgroup liking and behavioral aggression.

Variable	*M*	*SD*	1	2	3	4	5	6
1. Outgroup liking	4.19	0.92	–					
2. Behavioral aggression	2.41	1.67	-.18*	–				
3. Outgroup trust	5.84	1.87	.46***	-.34***	–			
4. One group identity representation	3.66	2.01	.31***	-.32***	.58***	–		
5. Two groups within one group representation	4.52	2.03	.14	-.20*	.37***	.33***	–	
6. Two separate groups representation	4.59	1.59	-.22*	.28**	-.53***	-.62***	-.26**	–
7. Separate individuals representation	2.88	2.53	-.07	.06	-.12	-.18*	-.05	.22*

*$p < .05$. **$p < .01$. ***$p < .001$.

Table 6.

Moderated-mediation effects of outgroup liking for each mediator.

Mediators	Direct effects				Conditional indirect effects						Moderated-mediation		
	Superordinate goals				One group condition			Two groups condition					
	est.	*SE*	95% CI	*p*	*est.*	*SE*	95% CI	*est.*	*SE*	95% CI	*est.*	*SE*	95% CI
Outgroup trust	0.37	0.48	[-0.58, 1.32]	.44	-0.64	0.16	[-0.98, -0.35]	-0.55	0.15	[-0.86, -0.28]	0.09	0.13	[-0.17, 0.36]
One group identity	0.10	0.53	[-0.94, 1.14]	.85	-0.34	0.17	[-0.69, -0.03]	0.22	0.11	[-0.47, -0.02]	0.12	0.09	[-0.01, 0.34]
Two groups within one group	-0.33	0.50	[-1.32, 0.66]	.51	-0.03	0.05	[-0.13, 0.06]	-0.03	0.06	[-0.17, 0.06]	-0.003	0.03	[-0.09, 0.06]
Two separate groups	-0.14	0.54	[-1.20, 0.92]	.79	-0.15	0.14	[-0.42, 0.13]	-0.08	0.08	[-0.25, 0.07]	0.07	0.08	[-0.06, 0.24]
Separate individuals	-0.04	0.50	[-1.36, 0.62]	.46	0.00	0.02	[-0.05, 0.03]	-0.01	0.04	[-0.10, 0.06]	-0.01	0.04	[-0.11, 0.08]

Table 7.

Moderated-mediation effects of behavioral aggression for each mediator.

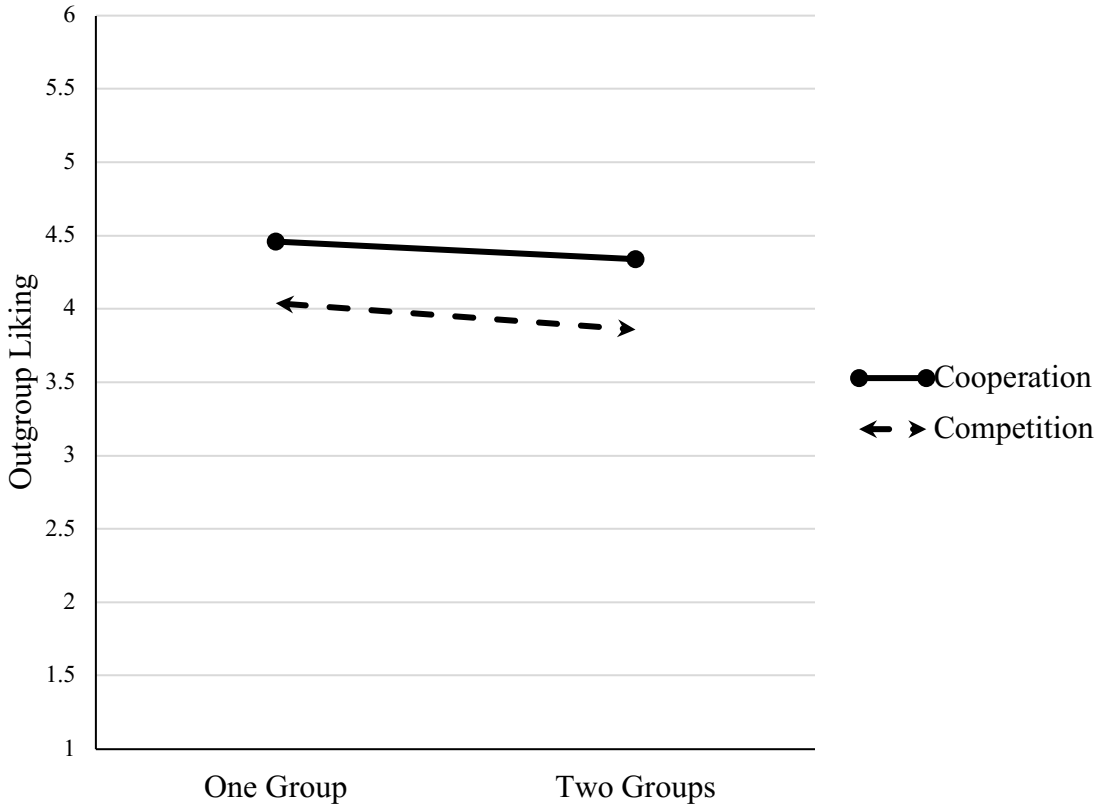
Mediators	Conditional direct effects						Conditional indirect effects						Moderated-mediation		
	One group condition			Two groups condition			One group condition			Two groups condition					
	est.	*SE*	95% CI	*est.*	*SE*	95% CI	*est.*	*SE*	95% CI	*est.*	*SE*	95% CI	*est.*	*SE*	95% CI
Outgroup trust	2.99	0.65	[1.71, 4.27]	2.17	0.63	[0.92, 3.42]	0.04	0.36	[-0.63, 0.80]	0.04	0.31	[-0.59, 0.67]	-0.01	0.09	[-.218, .141]
One group identity	3.05	0.66	[1.75, 4.36]	2.22	0.61	[1.02, 3.43]	-0.03	0.40	[-0.81, 0.78]	-0.02	0.27	[-0.59, 0.47]	0.01	0.16	[-0.37, 0.30]
Two groups within one group	2.95	0.55	[1.85, 4.05]	2.12	0.57	[0.99, 3.25]	0.08	0.13	[-0.16, 0.35]	0.09	0.14	[-0.17, 0.42]	0.01	0.09	[-0.16, 0.21]
Two separate groups	3.12	0.65	[1.84, 4.40]	2.25	0.59	[1.09, 3.42]	-0.09	0.35	[-0.83, 0.56]	-0.05	0.19	[-0.47, .29]	0.04	0.18	[-0.32, 0.41]
Separate individuals	3.03	0.54	[1.95, 4.11]	2.19	0.57	[1.07, 3.31]	0.00 0	0.05	[-0.11, 0.11]	0.01	0.12	[-0.25, 0.24]	0.01	0.13	[-0.28, 0.28]

Table 8.

Moderated-mediation effects for the exploratory analyses.

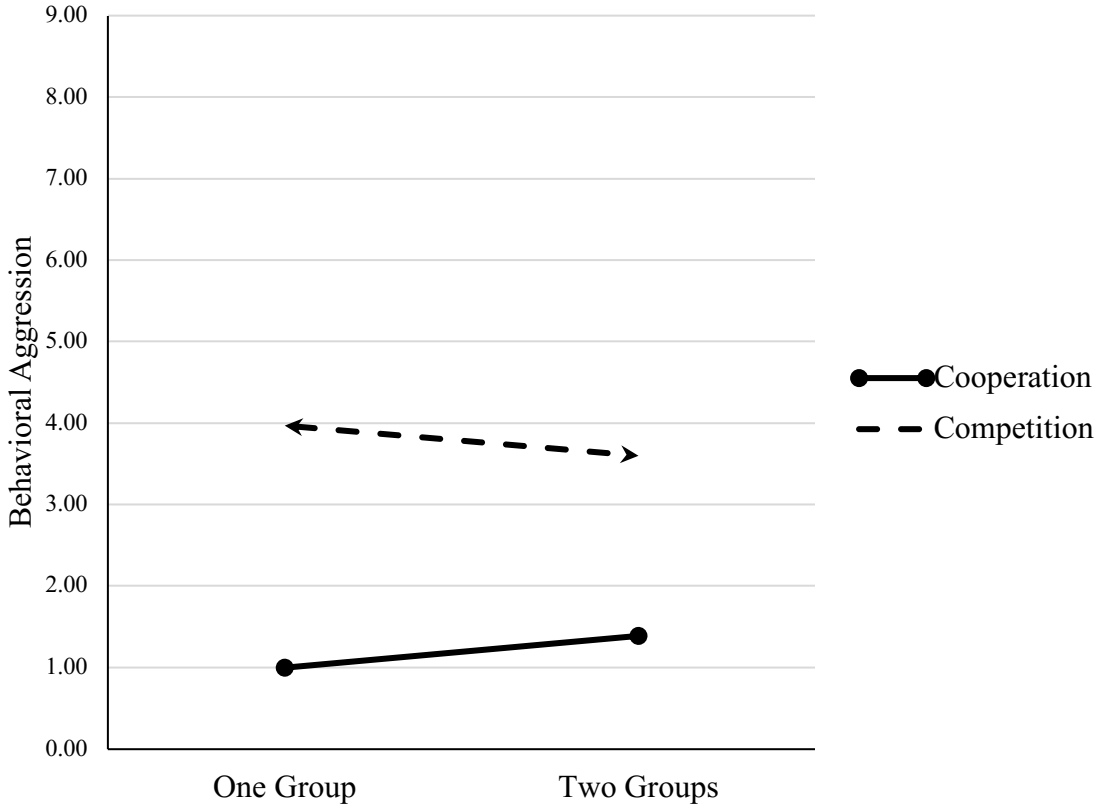
Mediators	Conditional indirect effects						Moderated-mediation		
	One group condition			Two groups condition					
	est.	*SE*	95% CI	*est.*	*SE*	95% CI	*est.*	*SE*	95% CI
				Outgroup liking					
Outgroup trust	-0.60	0.16	[-0.93, -0.31]	-0.52	0.15	[-0.85, -0.25]	0.08	0.13	[-.018, 0.33]
One group identity	-0.18	0.17	[-0.52, 0.14]	-0.12	0.11	[-0.34, 0.09]	0.06	0.08	[-0.04, 0.25]
Two separate groups	0.06	0.13	[-0.21, 0.32]	0.03	0.08	[-0.12, 0.19]	-0.03	0.07	[-0.17, 0.11]
				Behavioral aggression					
Outgroup trust	0.06	0.38	[-0.70, 0.83]	0.06	0.33	[-0.65, 0.69]	0.01	0.09	[-0.23, 0.16]
One group identity	-0.001	0.49	[-0.90, 1.04]	-0.001	0.33	[-0.68, 0.67]	0.00	0.20	[-0.51, 0.32]
Two separate groups	-0.11	0.39	[-0.90, 0.63]	-0.06	0.23	[-0.55, 0.33]	0.05	0.20	[-0.35, 0.46]

Figure 1.



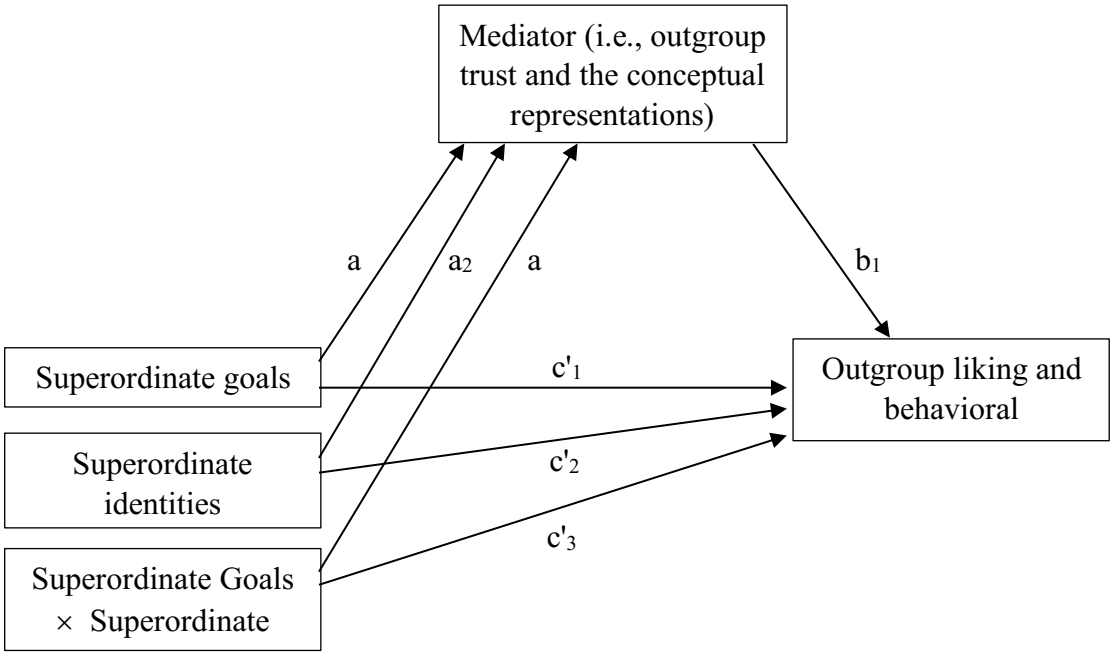
Plot of the ANOVA for outgroup liking between identities and goals.

Figure 2.



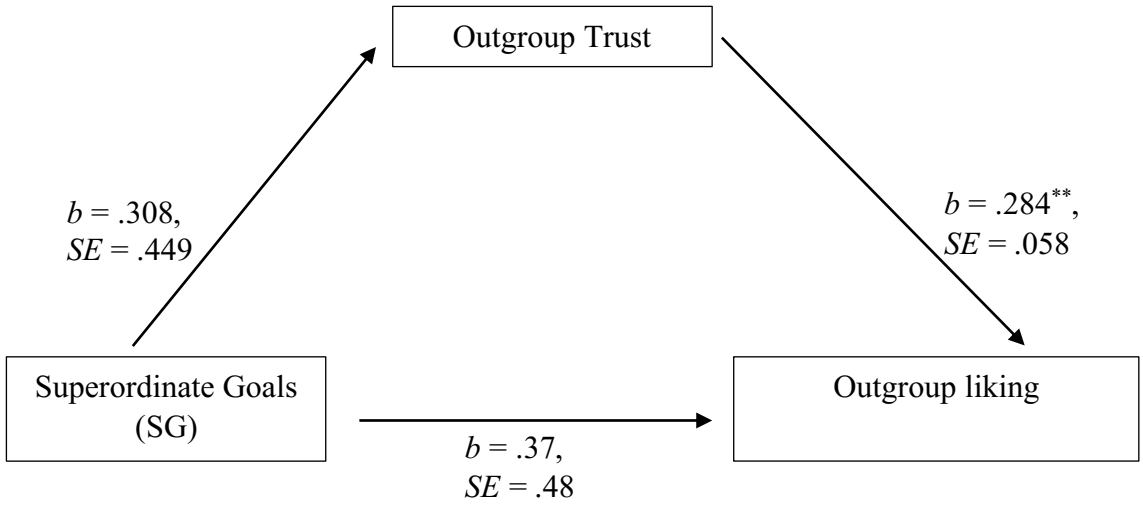
Plot of the ANOVA for behavioral aggression between identities and goals.

Figure 3.



Statistical model of moderated-mediation tested.

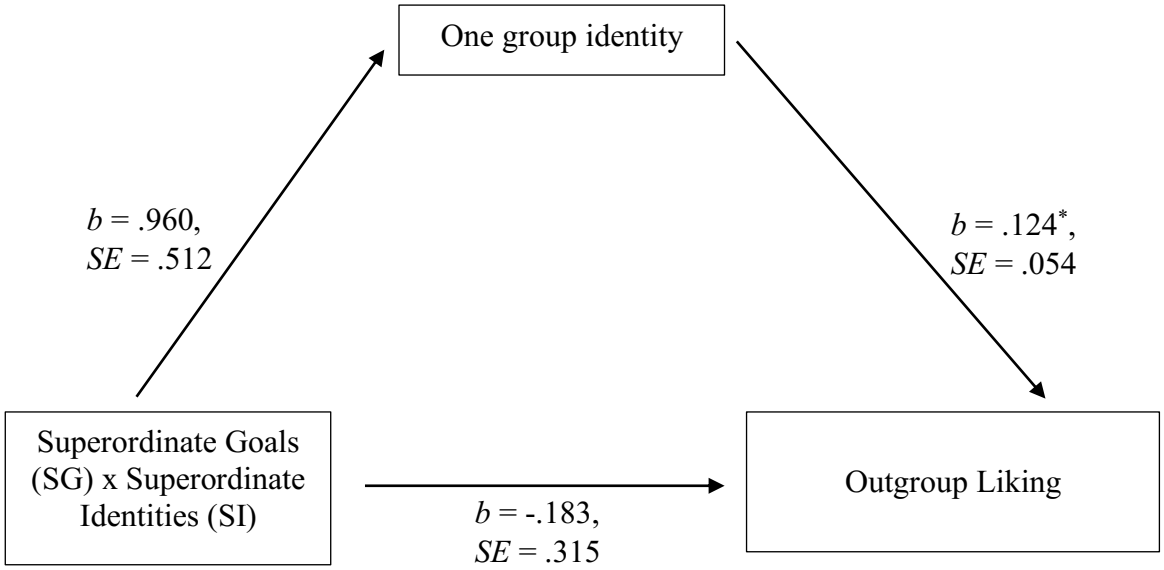
Figure 4.



*$p < .05$. **$p < .001$.

Direct effects of the moderated-mediation model on outgroup liking via outgroup trust.

Figure 5.



*$p < .05$

Direct effects of the moderated-mediation model on outgroup liking via one group identity.

APPENDIX A

Group Interaction

Please indicate the degree to which you agree or disagree with each statement using the following scale:

1	2	3	4	5	6	7	8	9
not at all		a little		moderate		quite a bit		very

Please think about your group's interaction with the other three participants. To what extent does it seem:

_____1. cooperative?

_____2. friendly?

_____3. quarrelsome?

_____4. close?

_____5. pleasant?

_____6. trusting?

_____7. frustrating?

_____8. competitive?

_____9. honest?

_____10. useless?

APPENDIX B

Conceptions of the Aggregate

Which description best characterizes your impression of the six people who participated in today's experiment? (circle one)

One group	Two groups within one group	Two separate groups	Separate individuals

For each of the following questions, circle the number (1-7) that best represents your opinion.

1. To what extent did you feel like the six people who participated in today's experiment were members of one group?

1	2	3	4	5	6	7
Not at all						Very much

2. To what extent did it feel like the six people who participated in today's experiment were members of two groups within one group?

1	2	3	4	5	6	7
Not at all						Very much

3. To what extent did it feel like the six people who participated in today's experiment were members of two separate groups?

1	2	3	4	5	6	7
Not at all						Very much

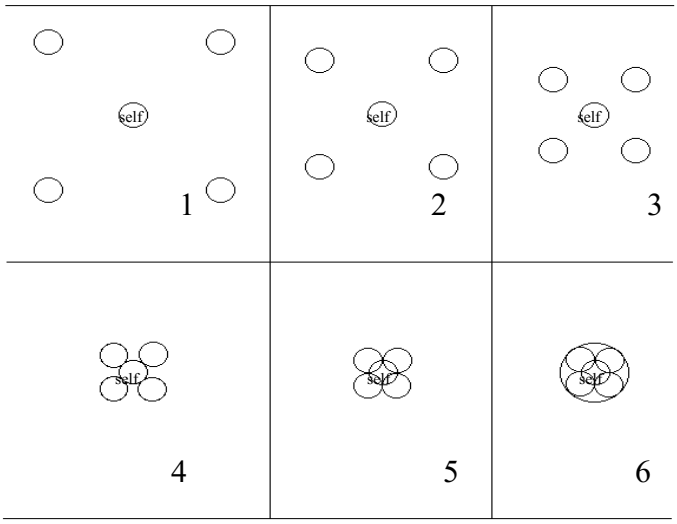
4. To what extent did it feel like the six people who participated in today's experiment were separate individuals?

1	2	3	4	5	6	7
Not at all						Very much

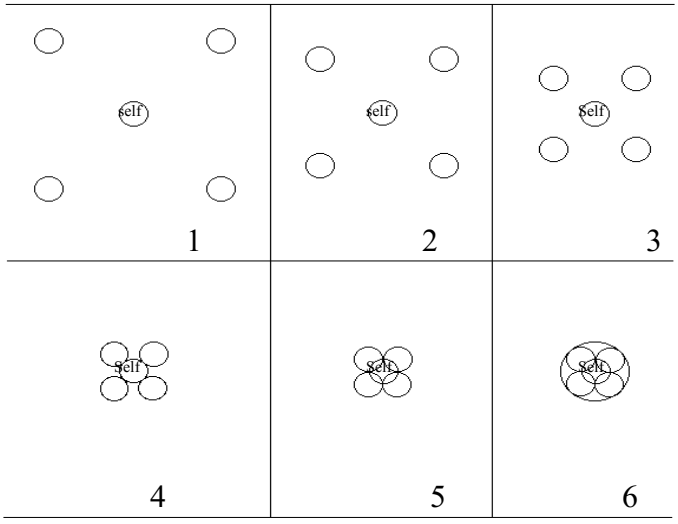
APPENDIX C

Representations of the Self to Others

The following scale contains six diagrams (numbered 1 through 6) which will be used to represent your perception of *your group of three*. In each diagram, the circles labeled "self" represents yourself and the remaining circles represent the other participants in the room with you (do not worry if the number of circles differs from the number of other participants). Circle the number of the diagram which best represents your perception of your group of three.



The following scale contains six diagrams (numbered 1 through 6) which will be used to present your perceptions of *the other participants*. In each diagram, the circles represent the other participants (do not worry if the number of circles differs from the number of group members). Circle the number of the diagram which best represents your perception of the other participants.



APPENDIX D

Outgroup Trust

Please answer each question using the following scale:

1	2	3	4	5	6	7	8	9
not at all		a little		moderately		quite a bit		very

_____1. If given the opportunity, the other participants would probably exploit my trust in them.

_____2. I believe that the other participants will look out for my group's interests.

_____3. During the interaction with the other participants, I believe that the other participants will act benevolently.

_____4. If the other participants were placed in a situation where they could gain at my expense, I believe that they would do so.

_____5. The other participants cannot be trusted.

_____6. I believe that the other participants can do things that benefit my group.

_____7. I believe that the interests of the other participants can benefit my group.

_____8. To what extent do you believe the other participants can help your group?

_____9. The other participants have the ability to help the group of which I am a member.

APPENDIX E

Allophilia Scale

To what extent do you agree or disagree with each of these statements:

1 2 3 4 5 6

strongly disagree *strongly agree*

_____ 1.) In general, I have positive attitudes about the other three participants.

_____ 2.) I respect the other three participants.

_____ 3.) I like the other three participants.

_____ 4.) I feel positively toward the other three participants.

_____ 5.) I am at ease around the other three participants.

_____ 6.) I am comfortable when I hang out with the other three participants.

_____ 7.) I feel like I can be myself around the other three participants.

_____ 8.) I am truly interested in understanding the points of view of the other three participants.

_____ 9.) I am motivated to get to know the other three participants.

_____ 10.) To enrich my life, I would try and make more friends who are members of the other participants.

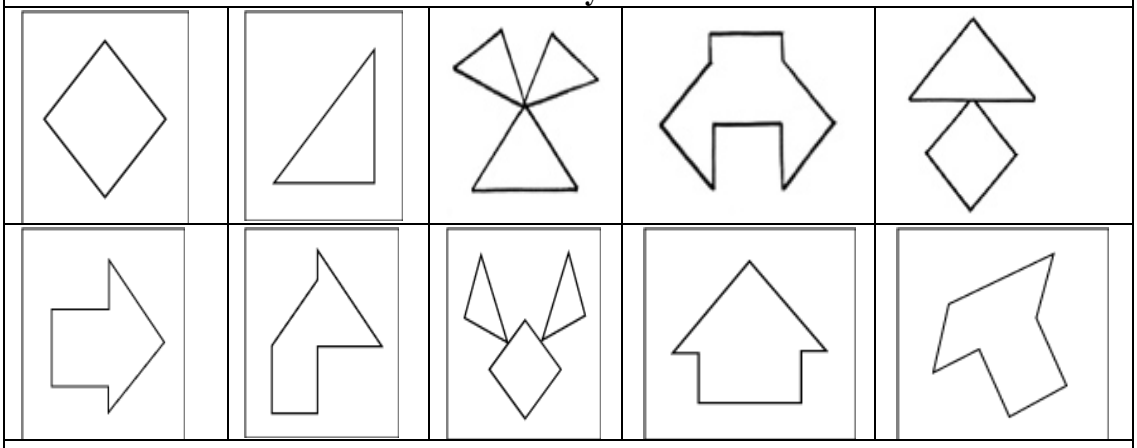
_____ 11.) I am interested in hearing about the experiences of the other three participants.

APPENDIX F

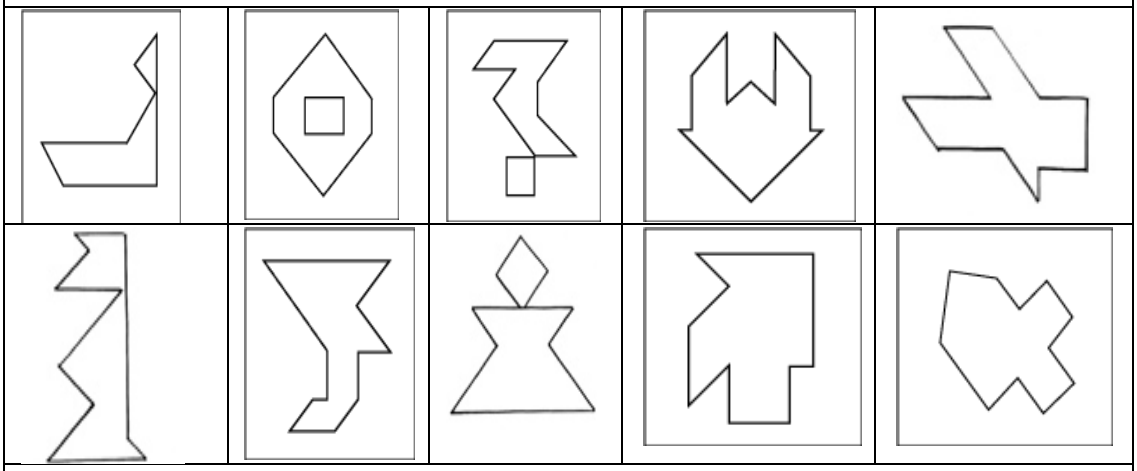
Tangram Puzzle Task

You are now going to assign 11 tangram puzzles to the other participants to solve in 10 minutes. However, please remember that the other participants will not see you or know who you are, so feel free to assign them any tangrams you like. Please circle the 11 tangrams you wish to assign the other participants. Please let the experimenter know once you are done.

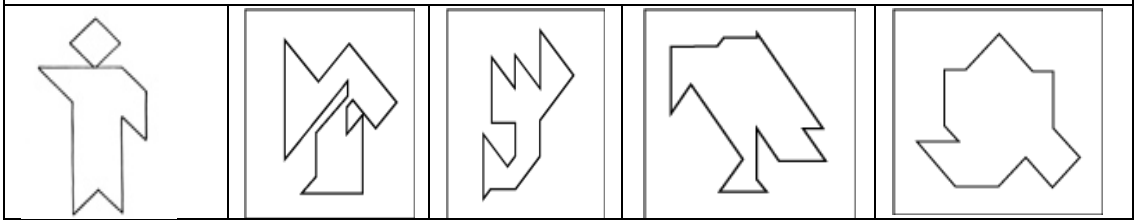
Easy

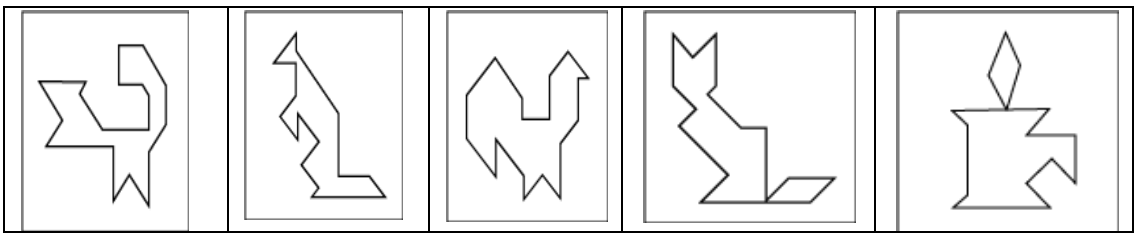


Medium



Hard





Please rate the extent to which each of the following reasons influenced your decisions on which tangrams to choose for the other participants to solve, using the following rating scale:

1	2	3	4	5
not at all	a little bit	Somewhat	quite a lot	a lot

_____ 1. I wanted to provide a range of tangrams.

_____ 2. I wanted to help the other participants win the prize.

_____ 3. I wanted to make it difficult for the other participants to win the prize.

_____ 4. I wanted to hurt the other participants' chances of winning the gift certificate.

_____ 5. I wanted to give the other participants harder puzzles to complete.