Group Information Sharing:

True Advocacy and the Importance and Distribution of Information

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THESIS

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SUMMARY

This dissertation examined the structure of information sharing at the individual and group levels using a hidden profile methodology. The study was designed to examine the relative merits of shared information sampling explanations of information sharing (Stasser & Titus, 1985; 1987; 2003), importance-based preference-consistency explanations of information sharing (e.g., Mojzisch & Schulz-Hardt, 2006; Wittenbaum et al., 2004), and true advocacy explanations of information sharing (Stasser & Titus, 1985; 1987).

This was done by examining the relative predictive power of information with a shared distribution, information that supports a participant’s preferred decision, and the perceived importance of information in a laboratory experiment in which participants discussed a national security scenario involving weapons of mass destruction. To determine whether separate processes occur at different levels of analysis, separate analyses were conducted at the individual level (3432 observations of 264 participants) and at two different conceptions of the group level: low observation collapse (2200 observations of 88 three-person groups) and high observation collapse (172 observations of 88 three-person groups).

At all levels of analysis, support for true advocacy explanations was found. In other words, participants primarily mentioned information that supported his or her preferred decision. Perceived information importance was only an important predictor of mentioning information if information supported his or her preferred decision. Only at the group level was a
shared information distribution an important predictor of mentioning information. At the individual level, the ability of shared information to predict mentioning was caused by the tendency of shared information to support the participant’s preferred decision. Results suggest that the field's focus on shared versus unshared information distributions may have been misplaced. The results also suggest that decreasing advocacy for a preferred decision may play a larger role in decision quality than increasing the amount of unshared information that is mentioned.
I. INTRODUCTION

Group decision making is very common in the everyday world. Group decision making occurs in business, law, politics, academia, medicine, and even in everyday family life. Much of the frequency of group decision making is due to a long standing belief that groups outperform individuals. For example, even the US constitution is based on the belief that groups outperform individuals. Despite this long standing belief that groups outperform individuals, groups frequently fail to make the best possible decision (Larson, 2010; Mojzisch & Shulz-Hardt, 2006; Stasser & Titus, 1985). A major reason for this is that if vital information is spread thinly among the group members, members frequently fail to share this vital information with the other members and instead use group discussions to simply pool preferences (Gigone & Hastie, 1993; Winquist & Larson, 1998). In short, high-quality group discussions are essential if groups are going to outperform individuals at decision making. Therefore, it is very important for researchers to understand how group members decide what information to share.

This dissertation has two main goals. The first is to comprehensively review the literature regarding how an individual decides what to share in group discussion. The second goal is to present the results of a study examining a core issue in the literature: how group members decide what information to share.

This paper will first examine the literature in group decision making with a specific focus on the group information sharing tradition (e.g., Stasser & Titus, 1985; Larson, Christensen, Abbott
& Franz, 1996). Much research has been done examining how the information distribution affects information sharing. However, an analysis of the group information sharing literature will show that relatively little attention has been devoted to the potential role of decision preferences in group information sharing, that is, how a member coming to an initial decision about his or her preferred group decision changes what sort of information he or she shares with other group members. The paper will distinguish two ways that a member’s preferred group decision changes what sort of information he or she shares with other group members, which could be called a preference bias. The first preference bias assumes that a member mentions what he or she sees as important, and that his or her preferred group decision changes what they see as important. The second preference bias is that a member may start to only share information arguing for his or her preferred group decision, which is called advocacy (Stasser & Titus, 1985). The paper will then introduce the results of a study that empirically examines this distinction.
II. CONCEPTUAL FRAMEWORK AND RELATED LITERATURE

Groups frequently must choose from among a variety of alternatives. To make a final decision, groups typically discuss what members know about each of the alternatives (Stasser & Titus, 2003). This essential decision making task can be understood as an information sampling process in which the group samples from each member’s pool of information about each alternative. In other words, the group asks each member for a sampling of his or her information about each alternative.

Two different categories of biases have been shown in group information sharing (Stasser & Titus, 1985; 1987; for a review see Mojzisch & Shulz-Hardt, 2006). The first bias is that information that is held by all, or most, group members (i.e., shared information) is more likely to be discussed than information that is held by only one group member (i.e., unshared information). In short, the more people that hold a piece of information, the more likely it is to be mentioned to the group. The second bias is that individuals will mention information that is in line with their individual positions. In other words, people tend to talk about information that supports their case.

Both of these biases were theorized by Stasser and Titus (1985; 1987) in their Biased Sampling Model at the very beginning of this line of research. Multiple models proposed to
explain both of these biases. However, only the shared information sampling bias has received significant attention.

A. Shared Information Sampling Bias

The term *shared information sampling bias* refers to the well-documented finding (Stasser & Titus, 1985; 1987; 2003) that information that is held by all, or most, group members (i.e., shared information) is more likely to be discussed than information that is held by only one group member (i.e., unshared information). In short, group discussions tend to be biased in favor of shared information.

The shared information sampling bias was discovered in studies using a *hidden profile* methodology (Stasser & Titus, 1985; 1987; 2003). A hidden profile occurs when information favoring the optimal choice is largely or completely unshared and the information concerning a suboptimal choice is largely or completely shared. This means that in a hidden profile study, participants initially will tend to favor a suboptimal choice, and then, ideally, through discussion of their unshared information will attempt to discern the actual optimal choice. In a hidden profile setting, group discussion of unshared information is therefore essential for a group to determine the optimal choice and group discussion of shared information is essentially meaningless, as everyone already knows the shared information (Winquist & Larson, 1998).
For example, in a typical hidden profile study where 3-person groups are asked to decide between choices A and B, each participant might be given 6 pieces of information to share in the group discussion. Four of the 6 pieces of information given to each participant would be shared information favoring suboptimal choice A and 2 of the 6 pieces given to each participant would be unshared information favoring optimal choice B. Because 50% more of their initial items favor choice A (4 favorable items for choice A versus 2 favorable items for choice B), initially it would seem to participants that choice A was actually the optimal choice. However, if all the information would be pooled in group discussion, choice B would be clearly the optimal choice because 50% more of the total item pool favor choice B (6 favorable items for choice B versus 4 favorable items for choice A).

Despite the importance of discussing unshared information in a hidden profile setting, it is well-documented that actual group discussion is dominated by shared information (Stasser & Titus, 1985; 1987; 2003). Therefore, groups in hidden profile settings rarely come to the optimal decision (Stasser & Titus, 2003).

Two compatible explanations have been put forward to account for the shared information sampling bias in studies using a “hidden profile” methodology (Stasser & Titus, 2003). The first explanation is that the sampling advantage that shared information has over unshared information results simply from the fact that the mathematical probability of discussing an item increases for each person that can potentially mention an item. The second explanation
is that shared information is more likely to be mentioned because shared information carries a social benefit and mentioning unshared information carries a social cost.

1. **Mathematical probability models**

   Stasser and Titus (1987) attempted to explain the sampling advantage that shared information has over unshared information through what are sometimes called Collective Information Sharing models (e.g., Stasser & Titus, 2003). The Collective Information Sharing models posit that the probability of discussing, \( p(D) \), a piece of information can be formalized by the following equation:

   \[
   p(D) = 1 - \left[1 - p(R)\right]^n
   \]

   where \( n \) is the number of people who potentially could remember the item and \( p(R) \) is the probability of remembering (and mentioning) a piece of information. Basically, the Collective Information Sharing model states that the more people who have an item, the greater likelihood that that item will be mentioned in the discussion. The implication of the Collective Information Sharing model is that shared information is much more likely to be mentioned than unshared information solely because more people can mention each piece of shared information than can mention each piece of unshared information. The Collective Information Sharing model has received a substantial amount of support (Stasser, Taylor, & Hanna, 1989; Stasser & Titus, 2003).
Larson (1997; Larson, Foster-Fishman & Keys, 1994; Larson, Christensen, Abbott, & Franz, 1996) argued that the Collective Information Sharing model did not recognize that the information pool is finite without replacement over time. In other words, once a piece of information is discussed, it is removed from the information pool. Because, as proposed by the Collective Information Sharing model, shared information is much more likely to be mentioned than unshared information, shared information should be expected to dominate the beginning of discussions with unshared information becoming more common as the discussion progresses as the group runs out of shared information to mention. Larson and colleagues (1994) therefore modified the Collective Information Sharing model to be able to account for the changing composition of the information pool over time and verified this new model through an analysis of medical decision making discussions (Larson et al., 1996).

2. **Mutual Enhancement**

Shared information also could have a sampling bias due to social comparison processes (Festinger, 1954). Because other people can socially validate shared information, shared information can appear to be more important and reliable than unshared information if it is mentioned in discussion (Chernyshenko, Miner, Baumann, & Sniezek, 2003; Van Swol, 2007). Wittenbaum, Hubbell, and Zuckerman (1999; Wittenbaum & Park, 2001) have proposed that the increased perceived importance and reliability of shared information causes group members to subtly reinforce the discussion of shared information, which is a process they term *mutual enhancement*. However, mutual enhancement probably has more effect on the repetition of shared information than the initial mentioning of shared information (Wittenbaum et al., 1999).
Mentioning information also has social implications as well. Group members mentioning shared information are rated as more capable and intelligent relative to those mentioning unshared information (Wittenbaum et al., 1999; Wittenbaum & Park, 2001). Therefore, social cues may encourage the mentioning of shared information over unshared information. However, participants typically do not know what information is shared or unshared until after it is initially mentioned. Therefore, it is currently unclear the extent to which the findings regarding mutual enhancement and initial item mentioning can be extended outside of hidden profile paradigms, in which the sharedness of items is inevitably confounded with argument support.

The costs of discussing unshared information are most evident in studies examining the amount that information is repeated. In a study of medical teams, Larson and colleagues (1996) found that participants were much more likely to repeat shared information than unshared information. However, Larson and colleagues also found that participants with the highest social status and credibility were more likely to repeat unshared information than were participants with lower status. Similarly, leaders (Larson, Foster-Fishman, & Franz, 1998) and members with prior experience (Wittenbaum, 1998) were also more likely to repeat unshared information. All of this research suggests that discussing unshared information has a social cost, and that the people who can bear this cost are the most likely to discuss unshared information.
B. Preference-Consistency Biases

Preference-consistency biases are the second category of explanations for what information is discussed. This category of explanations rests on each group member’s opinion about what decision is best (frequently called, the prediscussion decision), and not on the shared versus unshared nature of information. In other words, preference-consistency explanations posit that people mention items that support their case and avoid those that oppose their case. Preference-consistency biases therefore lead directly to the construction of one-sided arguments. This does not imply however that construction of one-sided arguments is a conscious effort or even an effort to “win” the argument (Mojzisch & Schulz-Hardt, 2006). Although the preference-consistency bias is similar to what Stasser and Titus (1985; 1987) called advocacy, the preference-consistency bias is neutral in relation to mediating causal mechanisms and therefore should not be confused with true advocacy explanations that, as will be discussed later, posit a direct, causal link between preferences and discussion content.

A decent amount of evidence has been collected that suggests a general preference-consistency bias. Dennis (1996) found that participants were more likely to exchange unshared information that supported their position, than unshared information that was neutral or supported another position. Kelly and Karau (1999) similarly found that discussed information was influenced by remembered prediscussion decisions. Schulz-Hardt, Brodbeck, Mojzisch, Kerschreiter, and Frey (2006) found that preference-consistent information was repeated more often than was preference-inconsistent information. Schulz-Hardt, Frey, Luthgens, and
Moscovici (2000; see also Mojzisch, Schulz-Hardt, Kerschreiter, & Frey, 2008) also found that groups tended to request additional information that supported their decisions. Van Swol & Seinfeld (2006) found some evidence that individuals, but not groups, might show a preference-consistency bias. In short, individuals, and perhaps groups as well, appear to exchange, repeat, and seek out information that supports their preferences.

Preference-consistency biases might be able to at least partially explain the shared information bias present in studies using hidden profiles (Mojzisch & Schulz-Hardt, 2006; Wittenbaum, Hollingshead, & Botero, 2004). As discussed previously, shared information in a hidden profile is partly or completely tilted in favor of one suboptimal choice, with unshared information tilting in the favor of the optimal choice. In addition, each participant is given more shared information than unshared information, which is designed to make the participant prefer the suboptimal decision suggested by the shared information. Because information sharedness is confounded with argument support in a hidden profile, based on their preferences for the suboptimal solution alone, people should be more likely to mention shared information.

Two different types of preference-consistency explanations have been posited. The first type of preference-consistency explanation is that people mention information that is important (e.g., Chernyshenko et al., 2003), with information supporting their preference (Greitmeyer & Shulz-Hardt, 2003; Van Swol, 2007) being seen as more important. The second preference-consistency explanation is that people truly advocate their position, and therefore, regardless of
the information’s importance, tend to mention information that supports their case and avoid information that opposes their case.

Before an in-depth analysis of each particular preference-consistency explanation is undertaken, a few weaknesses of the existing literature should be recognized. First, information sharing could be viewed as the construction of a persuasive message. However neither psychology nor communications has closely examined how people decide what goes into a persuasive message. For example, a recent annual review (Crano & Prislin, 2006) on attitudes and persuasion contains a great deal of information on the effects of persuasive messages on attitudes and almost nothing on the effects of attitudes on the creation of persuasive messages outside of the literatures that have already been discussed in this paper. Second, in contrast to the long-standing interest in the shared information sampling bias, only recently (e.g., Schulz-Hardt et al., 2006) has serious theoretical or empirical work been done on preference-consistency biases inside of the group information sharing literature (e.g., Toma et al., 2009). As a result of researchers only recently becoming interested in the topic, many aspects of preference-consistency biases have yet to be fully examined. For example, in a recent meta-analysis, Reimer, Reimer and Czienskowski (2010) state that “it would be helpful to arrive at a better understanding of how group members perceive the relevance of information and choose to contribute to a discussion” (p. 138). Third, virtually all of the research that has been done has not examined importance and reliability ratings at all, or has exclusively examined information importance and reliability ratings made after group discussion (e.g., Greitmeyer & Shultz-Hardt,
Information importance and reliability ratings taken after group discussion have been influenced by the discussion itself, and therefore are probably not a clear reflection of prediscussion information importance and reliability (Chernyshenko et al., 2003). This is a major failing of the literature because prediscussion information importance and reliability ratings are central to examining the accuracy of both importance-based preference-consistency explanations and true advocacy explanations of what will be shared in group discussions. This blind spot in the literature probably is partly caused by the traditional information sharing assumption (Stasser & Titus, 1985; Stasser, 1992) that all pieces of information should be of equal importance prior to discussion (e.g., Greitmeyer & Schulz-Hardt, 2003; Schulz-Hardt et al., 2006; Wittenbaum et al., 2004). All three of these problems with the existing literature make discussion a bit more uncertain and evidence a bit more indirect than was the case with the shared information sampling bias.

1. **Importance-based Preference Biases**

Importance-based preference-consistency explanations (e.g., Mojzisch & Schulz-Hardt, 2006; Wittenbaum et al., 2004) start from the reasonable claim that people will mention information that they personally perceive as important, reliable, and relevant. Chernyshenko and colleagues (2003) found that these importance ratings could predict prediscussion decisions in a linear fashion. Once a person has formed an opinion, information tends to be perceived in a way that favors that opinion (e.g., Asch, 1946; Ditto & Lopez, 1992; Houston & Fazio, 1989). Therefore, information supporting the favored decision will be seen as more important.
(Greitemeyer & Schulz-Hardt, 2003; Van Swol, 2007), and should therefore more likely to be mentioned.

There is also a good deal of support outside of the group information sharing literature for importance-based preference-consistency explanations. Festinger (1954) suggested that information appraisals are restructured in the direction of a committed decision as a result of cognitive dissonance. Janis and Mann (1977) suggested that information appraisals are restructured even before a final decision is made. Svenson’s (1992) Differentiation and Consolidation Theory of decision making suggests that information appraisals will be modified as a decision is being made in the direction of the prevailing decision candidate, with further modifications once a decision is made. The size of these reappraisals appears to be a function of the importance, commitment, personal relevance, and reversibility of the decision (Svenson, 1992). Empirical support for these positions has been quite strong, and has suggested that information reappraisals occur prior to a committed decision, even in conditions where the participants are not asked to make a decision (Russo, Meloy, & Medvec, 1998) or are specifically asked to not make a decision (Simon, Pham, Le, & Holyoak, 2001).

The evidence for importance-based preference-consistency explanations of group information sharing is intriguing, but largely indirect due to the lack of group information studies that have examined prediscussion importance ratings. However, the most vital aspect of importance-based preference-consistency explanations, that prediscussion importance ratings
mediate the relationship between prediscussion preferences and discussion content, has not yet been directly tested.

2. **True Advocacy-Based Preference Bias**

Stasser and Titus (1985; 1987) first hypothesized that individuals make decisions as to what information should be mentioned primarily based on what position they supported, which they termed *advocacy*. In other words, Stasser and Titus (1985; 1987) suggested that individuals used one-sided arguments created by actively choosing information to mention that predominantly supports their prediscussion preferences. Despite the brevity of their comments, it appears that Stasser and Titus (1987) had what could be called *true advocacy* in mind when they proposed that “...even if members' recall of information is not biased... [they] actively edit their contributions in the interest of defending their position” (p.83). True advocacy occurs when the person decides to share information because it supports his or her preferred decision, independent of the information’s importance. True advocacy has not yet been clearly distinguished from the more general preference-consistency bias, which itself can be seen as a form of surface-level or pseudo-advocacy. More formally, true advocacy means that the individual’s decision preferences are directly predicting discussion of information supporting his or her preferences, independent of his or her personal appraisals of the information’s importance. True advocacy therefore represents a true attempt to “win” the discussion or argument. In short, true advocacy is a process in which the decision preference is an explanatory variable for what information is shared even after the explanatory power of the information’s perceived importance is taken into account.
True advocacy explanations have never been empirically analyzed within the literature in a manner that would distinguish them from importance-based preference biases (e.g., Dennis, 1996; Toma & Butera, 2009; Van Swol, 2007). To make matters even more complex, most of the handful of researchers that have mentioned true advocacy explanations have done so extremely briefly. For example, Stasser and Titus (1985; 1987), despite coining the term advocacy in the group information sharing literature, only used the term advocacy once in 1985 and twice in 1987, and never empirically tested for advocacy.

Despite this lack of empirical study of true advocacy explanations, the literature on minority influences in group information sharing has provided some indirect evidence that true advocacy explanations might be at least partially accurate. For example, groups with opinion minorities have been found to introduce more unique information than groups with a consensus (Schulz-Hardt et al., 2000). Although this finding could be explained by the importance-based preference bias, researchers have generally argued that this is a result of minorities actively trying to support their case, i.e., true advocacy (Brodbeck, Kerschreiter, Mojzisch, Frey, & Schulz-Hardt, 2002; Hightower & Sayeed, 1996; Meyers, Brashers, & Hanner, 2000; Stewart & Stasser, 1998; Van Swol & Seinfeld, 2006). For example, Meyers and colleagues (2000) have argued that minorities are frequently forced to actively work to defend their positions.

Another area of research that indirectly supports the existence of true advocacy is the literature on strategic communications (e.g., Berger, 1997). Basically, the prevalence of strategic
argumentation, misrepresentation, and lying suggests that the true advocacy explanation of
information sharing might be accurate at least under certain conditions.

C. The Individual and Group Level

One important issue that runs throughout the group information sharing literature is the
difference between individual level and group level behavior and processes. At the group level,
the group is the primary actor and also is typically the smallest unit of analysis. At the individual
level, which is sometimes called the interindividual level (Krauss, 2008), the individual is the
primary actor and also is typically the smallest unit of analysis.

The distinction between the individual level and the group level is very important,
because the two levels are both theoretically and statistically independent (Boorsboom, 2005).
For example, if a group makes a decision, it does not necessarily mean that each group member
agreed with that decision. In addition, if a process is shown as valid for one level of analysis, it
does not mean that the process is also valid for another level of analysis. For example, Stasser
and Titus (1985; 1987) proposed two completely different processes that explain information
sharing at the individual (advocacy) and group levels (mathematical probability).

The group information sharing literature has traditionally thought of and treated
information sharing as primarily a group level phenomenon to try to better understand group
decision making. For example, the goal of the Collective Information Sharing model (e.g.,
Stasser & Titus, 2003) is to predict the probability that the group discusses a piece of information. As the Collective Information Sharing model treats group information sharing as a mathematical probability issue, the model predicts the sharing of information in a group in a similar fashion to the way a person would predict which balls in bingo are drawn. However, as the Collective Information Sharing model is explicitly a model of group behavior, it should not be assumed that strict mathematical probability is the best predictor of whether an individual mentions a piece of information or not. In short, the group and individual levels are both theoretically and statistically independent.

Despite the fact that individuals share information, the group information sharing literature has only recently developed a significant interest in examining group information sharing from the individual level (e.g., Larson & Harmon, 2007). Examining information sharing at the individual level is important because only by examining the individual level can researchers understand the psychological thought processes involved in information sharing. In other words, only by examining the individual level can a researcher determine what drives a person to share information. In short, both the individual and group levels are important, and researchers need to carefully distinguish between the two levels.

D. Summary

In summary, there are two different kinds of explanations for how information is shared within a group. The first kind of explanation states that the shared or unshared nature of
information is the major predictor of what information will be mention in a group discussion, with shared information being significantly more likely to be mentioned in a group discussion than unshared information. The vast majority of this research has focused on the likelihood that someone in the group will mention an item, which treats information sharing as a group behavior, as opposed to the likelihood that an individual will mention an item. As sharing information is clearly an individual behavior that happens in a group context, this would seem to be a major oversight of the literature.

The second kind of explanation for how information is shared in a group focuses on individuals supporting their preferences regarding what decision the group should make. There are two different explanations that have been put forth regarding how individuals support their preferences by mentioning information, which have not previously been empirically distinguished. The first kind of explanation, importance-based preference-consistency explanations (e.g., Mojzisch & Schulz-Hardt, 2006; Wittenbaum et al., 2004), state that individuals are more likely to mention an item if they perceive it to be important, and that individuals are more likely to perceive an item as important if it supports their preferred group decision. The second kind of explanation, true-advocacy explanations, state that individuals are more likely to mention an item if it supports their group decision, regardless of an item’s perceived importance.

Research to date has largely focused on the shared versus unshared nature of information, and the mathematical probability models that have followed. In contrast, there is relatively little
research focusing on individuals supporting their preferences by sharing information. There has been very little literature comparing the predictive power of the shared or unshared nature of information with the predicative power of whether information supports an individual’s preference. In addition, there has been no research that has empirically examined whether individuals are more likely to mention items based on its perceived importance (i.e., importance-based preference-consistency explanations) or on whether the item supports the individual’s preferred decision (i.e., true-advocacy explanations). In addition, there has been no research that has compared the predictive power of the three major factors highlighted by these explanations: the unshared/shared nature of item, perceived item importance, and whether information supports an individual’s preferences. These are the major goals of study 1.
III. STUDY1

Study 1 has the following goals. First, the study will examine whether true advocacy exists separately from preference-based biases. Second, the study will examine the relative predictive power of the three major factors highlighted by these explanations at the individual level: the unshared/shared nature of item, perceived item importance, and whether information supports an individual’s preferences. Third, the study will examine the relative predictive power of the three major factors highlighted by these explanations at the group level: the unshared/shared nature of items, the perceived importance each item by the group, and whether information supports the group’s preferences. The second and third goal will allow Study 1 to examine whether Stasser and Titus (1985; 1987) were correct when they hypothesized that true advocacy is the primary driving force behind information sharing at the individual level, with mathematical probability being the main predictor of information sharing at the group level. Lastly, Study 1 will examine how people’s worldview affects these processes, both at the individual and group levels.

A. Study 1 Overview

Overall, Study 1 was designed to test predictions involving personal perceptions of information and advocacy using a hidden profile paradigm, which is the dominant method within the group information sharing literature (Mojzisch & Shulz-Hardt, 2006; Stasser & Titus, 2003). Most research using a hidden profile methodology has used information that described hypothetical situations that are probably of little interest to the participants in the study, who are
generally university students in introductory classes with no particular expertise in the domain.
For example, studies have used scenarios and information detailing which hypothetical pilot should be hired by an airline (e.g., Mojcisch & Schulz-Hardt, 2010), which hypothetical teacher should be given an award (e.g., Greitemeyer, Schulz-Hardt, Brodbeck, & Frey, 2006), and which hypothetical cholesterol drug should be adopted as a primary treatment by a hypothetical hospital (e.g., Sargis & Larson, 2002). In an attempt to make the study more personally relevant and important, Study 1 developed a scenario and information detailing a potential national security risk from a hypothetical country, called Country X, and the participants were tasked with determining whether they should recommend to the president that he conduct a limited military invasion or political/economic sanctions. As the methodology used in Study 1 may be relevant to participants’ domain-specific ideological beliefs, and ideology may influence a wide array of beliefs and behavior (e.g., Jost, Glaser, Kruglanski, & Sulloway, 2003), domain-specific ideology was carefully measured at both the individual and group levels.
IV. METHODS

A. Participants

Two hundred and sixty four general psychology students (84 Males and 180 Females) participated as part of 88 three-person groups in return for partial course credit. Participants averaged 19.27 years-old ($SD = 2.45$). Students were only allowed to participate if they did not indicate Middle-Eastern or Arab ethnicity on a mass testing questionnaire, as there was concern that inclusion of these students may bias results due to the topic of the study.

B. Procedure and Materials

1. Ideology Measure

As part of a mass testing packet, participants completed an 8-item measure of attitudes and beliefs about pre-emptive wars (see Appendix A). To control for response sets, there were four pro-trait and four con-trait items. Participants responded on a 7-point scale that was tailored to each individual item. An example pro-trait item is “I believe that US military intervention is an acceptable way to deal with countries that may be selling weapons of mass destruction,” which was responded to a scale ranging from “strongly disagree” to “strongly agree.” An example con-trait item is “If the United States takes military action against countries harboring or equipping terrorists, do you think the threat of terrorism against Americans would be reduced or increased,” which was responded to a scale ranging from “much reduced” to “much increased.” Pilot testing revealed that this scale formed a single factor, and significantly predicted perceived item importance.
To allow the examination of ideology at the group level, a tripartite split was done on the results from the ideology measure to divide potential participants into hawks (more pro-war), moderates, and doves (more anti-war). Participants were asked to attend a session only if their identification number was listed as eligible. However, 12 of the 264 participants showed up to the wrong session, which made 12 of the 88 groups ideologically heterogeneous. Due to the presence of heterogeneous groups, groups were classified as hawks, moderates, or doves if the group consisted of at least 2 participants of the same ideology, and no more than 1 participant with a neighboring ideology. For example, a hawk group could have either 3 hawks or 2 hawks and a moderate. In this manner, 3-person groups of hawks ($n=26$), moderates ($n=29$), and doves were created ($n=31$).

a. **Scenario**

Once all three group members arrived at the laboratory, they were greeted and told that the study was examining how people interpret and discuss national security data. Participants were told that they should imagine being a member of the president's cabinet discussing a potential national security risk from a hypothetical country, called Country X. Participants were told that, after having a group discussion, they would need to make a recommendation to the president, which traditionally he would accept (see Appendix B for the entire script given to study administrators).

At this time participants were given a written scenario describing general information about the fictional national security situation (see Appendix B), and were given as long as they
needed to look it over. In short, this fictional national security situation involved a nation called "Country X." Country X was an African country with a suspected chemical weapons program. Country X had experienced a recent coup that left the government in the hands of Islamic extremists with possible terrorist ties. Although most nations saw Country X as a risk to global security, the United Nations was unable to do anything about the situation due to China's close relationship with Country X. Therefore, the US was now debating whether to start political/economic sanctions or to start a limited military invasion and regime change. Pilot testing revealed that participants believed this to be an understandable and realistic scenario.

After reading the scenario detailing the fictional national security situation, the participants were given 13 additional pieces of information (see Appendix C for one version. Please contact me if you wish to see the other 5 versions). Participants were told that these pieces of information represented the information the participant knew about the situation above and beyond that which was presented in the general scenario, and that this information would form the basis for their upcoming group discussion. Participants were also told that they would be the only ones with knowledge about some pieces of information, but they were not told which pieces of information were uniquely held by them.

Each piece of information had a “Summary” portion that listed what was supposed to be a summary of the raw intelligence or a piece of relevant information. Each piece of information ended with a “Conclusion” section that clearly spelled out what decision the piece of information
supported and briefly why it supported this decision. Through 7 rounds of pilot testing, each piece of information was examined to make sure it was clear, understandable, had a clear conclusion, was realistic, and was of roughly equal importance to other items. An example of a piece of information supporting a military invasion is:

**Summary:** The CIA has recently intercepted an email from a regional Al Qaida leader in Malaysia that talks at length about rejoicing for their powerful brothers in Africa. Followed immediately by a statement that he believes that his prayers for “new overpowering weapons of war” have been answered. However, it is unclear whether he is referring to Country X or sarin gas. Because of the danger Al Qaida poses to the US, the director of the CIA is strongly arguing for a military invasion that would seize the possible stockpiles of sarin gas and eliminate the possibility that large quantities of sarin gas fall into Al Qaida’s hands.

**Conclusion:** A vague email from an al Qaida leader suggests that he may be expecting or has received sarin gas from Country X. Al Qaida is so dangerous that the CIA sees the safest course of action to be an invasion of Country X.
An example of a piece of information supporting political/economic sanctions is:

**Summary:** Brad Jenkins, a noted political scientist, has argued that a regime change risks completely destabilizing the country because of all the competing political and ethnic groups in the nation, most of which have their own militias. Political scientists rate the chance of civil war at 35%, which may greatly increase costs for the US and may create an environment in which terrorists can go freely.

**Conclusion:** Removing the leaders of Country X through a military invasion could result in a civil war, which could create a terrorist haven.

2. **Information Distribution**

Although unknown by the participants, the 13 pieces of information each participant was given contained 7 pieces of information that were the same across all participants in the group (i.e., shared information), and 6 pieces of information that were uniquely held by a single participant (i.e., unshared information). All 7 shared pieces of information supported a single decision. Half the time, the shared information supported a military invasion (the Military Condition) and half the time the shared information supported political/economic sanctions (the Political Sanctions Condition). The unshared information had one piece of information that supported the decision favored by the shared information, and 5 pieces of information that supported the opposite decision. This meant that each participant had 8 pieces of information
supporting one decision, and 5 pieces of information supporting the other decision. It was expected that participants would lean toward the decision favored by the shared information at this point. However, if participants pooled all the information, it was expected that they would recognize that the shared information supported the objectively worst decision (10 pieces of information), and the unshared information primarily supported the best decision (15 pieces of information).

A pilot test with 20 student participants suggested that the information distribution produced the hypothesized pattern of results. In this pilot test, participants first read the 13 pieces of information and were asked to make a decision. Participants were then given the remaining 12 pieces of information and were again asked to make a decision. In the Military Condition, 54.5% of participants originally favored a military invasion, but once they read the remaining 12 pieces of information 72.7% of participants favored political sanctions. In the Political Sanctions Condition, 66.7% of participants originally favored political sanctions, but once they read the remaining 12 pieces of information 88.9% of participants favored a military invasion.

Due to this hidden profile methodology, the number of people that received each of the 30 total pieces of information varied quite dramatically. The 7 shared pieces in the Military Condition (called M1 to M7) and the 7 shared pieces in the Political Sanctions Condition (called P1 to P7) were unshared in the other condition. This meant that everyone in a condition and a
third of the participants in the other condition, or two thirds of the total sample, saw these 14 pieces of information. Six pieces of information were unshared in both conditions (called M8, M9, M10, P8, P9, and P10), which meant a third of the total sample saw these pieces. Ten pieces of information (called M11 to M15 and P11 to P15) were unshared in one condition, and were not presented to the other condition, which meant that a sixth of the total sample saw these pieces. The “M” and “P” in the variable names refer to whether the piece of information supported a military decision or a political sanctions decision.

3. Perceptions of Information

To understand how each individual participant perceived and understood a piece of information, immediately after reading each piece of information each participant answered 7 questions regarding the piece of information (see Appendix C). The most theoretically important of these of these were an item that attempted to measure perceived importance (“How important is this piece of information to the discussion of whether to choose sanctions or a military invasion”) and an item that attempted to measured perceived relevancy (“How relevant is this piece of information to the discussion of whether to choose sanctions or a military invasion”). Both of these items were answered on a seven-point scale ranging from “0” to “6”, with labels ranging from “Not at all Important” to “Extremely Important” and “Not at all Relevant” to “Extremely Relevant.” Together these two items will be used as a measure of the perceived importance of the information.
The other five items served to help make sure participants were reading and comprehending the pieces of information. These items attempted to measure perceived information accuracy, perceived danger to the US, perceived danger to global security, the amount the item supported a military invasion, and the amount the item supported a political/economic sanctions.

4. **Pre-Discussion Questionnaire**

After reading and rating all 13 pieces of information, participants were given a sheet that contained 9 items regarding what decision they were currently supporting and their overall perceptions of the information given to them (see Appendix A). Individual items attempted to measure what decision the participant was currently supporting (“Based on the scenario and the items of information you have just read, if you had to decide right now, which choice would you make?”), how confident they are about the decision, how difficult and important the decision was to them, the participant’s perception of the danger Country X represents to the US and the world, and three items attempting to measure how strong the evidence was for each decision.

5. **Group Discussion**

After everyone had finished with the pre-discussion questionnaire, the three participants had a group discussion that was video recorded. Participants were told that “The goal of this discussion is to give a recommendation to the president about whether the US should conduct a limited military invasion or should pursue political and economic sanctions against Country X… [and to remember that] some pieces of information may only be known to you, so you may want to discuss as much of your information as possible to help the group make the best
decision it can.” Although the groups had at least 20 minutes to discuss information, with some groups taking all the time available, most groups had discussions lasting 3 to 5 minutes. During the discussion, the experimenter was present in room, but would only interact with the participants if asked a direct question.

Once the group had come to a decision, with the group themselves having to decide how to come to a decision, the group completed a questionnaire with 3 items (see Appendix A). To measure what the group decided, the first item asked, “Based on the scenario and the items of information you have just discussed, if the group had to decide right now, which choice would the group make?” This item was worded this way because pilot testing suggested that some groups would try to write in their own unique decision or not make a decision at all. The other two questions asked how confident the group was in their decision, and how difficult it was to come to a decision.

6. Post-Discussion Questionnaire

After the group discussion, participants each individually completed a questionnaire that attempted to measure some demographic variables and some topics that could be of potential interest for future research (see Appendix A). To determine if the discussion had changed any of the participant’s overall views on the hypothetical situation, the participants were asked the same 9 questions as the pre-discussion questionnaire. The participants were then asked 6 questions regarding their views on the group discussion, such as if there was a leader, how much conflict
there was, and how relaxed, peaceful and enjoyable the discussion was. Participants were then asked for their gender, age, political affiliation.

Lastly, participants were asked what they believed the hypothesis of the study was. The vast majority of participants repeated the generic cover story of “how people come to decisions.” Only two participants stated something fairly close to a major goal of the study. One stated they believed the study was examining whether people will argue for a decision regardless of the evidence for it and the other stated that they believed that the study was examining the hypothesis that if someone believed strongly in something, then he or she will argue strongly for it. A look at how these two participants behaved during the discussion suggested they behaved very similarly to other participants. Because these participants looked otherwise similar to other participants and removing them would require also removing four other group members from some analyses, these two participants were not removed from analyses. Overall, it appears that the vast majority of participants did not understand the exact purpose of the study. Participants were then debriefed and left the laboratory.

7. **Coding of the Group Discussion**

A team of three coders watched videos of each group discussion. Two of these three coders were responsible for coding each group and then the team of 3 coders worked until they came to universal agreement as to which items were mentioned (and by whom) (Cohen’s Kappa= .76), what order the items were mentioned in (ICC = .97, 95% CI .96–.97), whether they used the correct (or given) decision (Cohen’s Kappa= .90), if the participant stated that they
disagreed with the decision the item supported (Cohen Kappa’s = .87), and whether the participant added in additional false information (Cohen Kappa’s = .66). Two of the three raters also rated the amount of information the participant mentioned on a 0 (in passing) to a 3 (virtually complete) scale (ICC = .85, 95% CI .83-.88). Using the benchmarks laid out by Fleiss (1981), Cohen’s Kappa above .75 indicate excellent agreement, and the Cohen’s Kappa of .66 would indicate intermediate to good agreement.

In addition to simply mentioning information, arguing for a decision also involves agreement and disagreement with other group members, and making global statements about types of information. As such, an additional round of coding was conducted to incorporate these more implicit aspects of conversations. Specifically, two coders counted the number of times each participant agreed or disagreed with each piece of information that was mentioned. For this coding, agreement was defined as nodding, making affirmative statements (like saying, “Yes” or “That is important”), adding on additional information, and saying that he or she had that information as well. For this coding, disagreement was defined as shaking their head, and making statements that express negativity (such as, “No” or “I don’t buy that”). Because agreement and disagreement with specific information occurs after the information is mentioned, these counts were then summed to create a global agreement and disagreement with information supporting a military decision and information supporting political sanctions. Disagreements in ratings were resolved by an independent third-party.
Inter-rater agreement was calculated using average measure intraclass correlation coefficients (ICC) with a one-way random effects model. Agreement with information supporting a military decision had an ICC of .85 (95% CI .81–.88). Agreement with information supporting political sanctions had an ICC of .78 (95% CI .72–.83). Disagreement with information supporting a military decision had an ICC of .53 (95% CI .41–.63). Disagreement with information supporting political sanctions had an ICC of .76 (95% CI .69–.81).

Two coders also counted the number of times each participant made statements expressing agreement or disagreement with a global type of information, such as “items supporting an invasion seemed overly ambiguous” and “items supporting sanctions had a clear interpretation.” Disagreements in ratings were resolved by an independent third-party.

Inter-rater agreement was calculated using average measure intraclass correlation coefficients (ICC) with a one-way random effects model. General agreement with information supporting a military decision had an ICC of .55 (95% CI .43–.65). General agreement with information supporting political sanctions had an ICC of .89 (95% CI .86–.91). General disagreement with information supporting a military decision had an ICC of .84 (95% CI .79–.87). General disagreement with information supporting political sanctions had an ICC of .78 (95% CI .72–.83).
Statements about preferred group decisions (e.g., “I think we should invade”) also were counted for each decision. Disagreements in ratings were resolved by an independent third-party. Statements about preferring a military group decision had an ICC of .88 (95% CI .85–.91). Statements about preferring a political sanctions group decision had an ICC of .84 (95% CI .80–.88).
V. RESULTS

The results section is broken down into three major sections. First, preliminary analyses are conducted to examine whether the data collected in Study 1 was useable to examine the key hypotheses. Second, the primary analyses are shown. Third, supplementary analyses are discussed.

A. Preliminary Analyses

1. Manipulation Checks

To check if the information distribution significantly affected participant perceptions of the situation, two analyses were run. First, a chi-square analysis was conducted on prediscussion decisions, which revealed a significant difference by condition, $\chi^2 (1, N = 262) = 26.96, p < .001$. Seventy eight percent of participants in the Political Sanctions condition chose sanctions before the discussion. In contrast, 53% of the participants in the Military condition chose the military invasion before the discussion. Second, a t-test was conducted on overall perceptions of evidence for each decision, which revealed that participants in the Military condition tended to see significantly more evidence, $t (261) = -5.58, p < .001$, for a military invasion ($M = .25, SD = 1.75$) than participants in the Political Sanctions condition ($M = -.92, SD = 1.63$). Both of these analyses support the conclusion that the conditions successfully manipulated perceptions of information.
2. Perceived Importance

To create a reliable scale of perceived importance for each piece of information, the items for perceived importance and perceived relevancy were averaged. The reliabilities and descriptive statistics for this scale are shown in Table I. As can be seen, each piece of information was seen as quite important for the group discussion. In addition, the measure had good to very good reliability for each piece of information.
<table>
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<th>SD</th>
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</tr>
<tr>
<td>P4</td>
<td>169</td>
<td>4.41</td>
<td>1.32</td>
<td>0.82</td>
</tr>
<tr>
<td>P5</td>
<td>169</td>
<td>4.43</td>
<td>1.40</td>
<td>0.9</td>
</tr>
<tr>
<td>P6</td>
<td>169</td>
<td>4.89</td>
<td>1.16</td>
<td>0.88</td>
</tr>
<tr>
<td>P7</td>
<td>167</td>
<td>4.99</td>
<td>1.07</td>
<td>0.93</td>
</tr>
<tr>
<td>P8</td>
<td>87</td>
<td>3.82</td>
<td>1.57</td>
<td>0.91</td>
</tr>
<tr>
<td>P9</td>
<td>87</td>
<td>4.39</td>
<td>1.42</td>
<td>0.83</td>
</tr>
<tr>
<td>P10</td>
<td>88</td>
<td>4.35</td>
<td>1.15</td>
<td>0.84</td>
</tr>
<tr>
<td>P11</td>
<td>47</td>
<td>3.85</td>
<td>1.44</td>
<td>0.92</td>
</tr>
<tr>
<td>P12</td>
<td>47</td>
<td>3.93</td>
<td>1.72</td>
<td>0.95</td>
</tr>
<tr>
<td>P13</td>
<td>47</td>
<td>5.05</td>
<td>.95</td>
<td>0.89</td>
</tr>
<tr>
<td>P14</td>
<td>47</td>
<td>4.39</td>
<td>1.29</td>
<td>0.91</td>
</tr>
<tr>
<td>P15</td>
<td>47</td>
<td>4.12</td>
<td>1.48</td>
<td>0.96</td>
</tr>
</tbody>
</table>

\(^{a}\)M refers to a piece of information supporting a military decision and P refers to a piece of information supporting a political sanctions decision.
3. **Mentioning Each Piece of Information**

Whether or not a participant mentioned a piece of information is the primary dependent variable in the study, therefore it is important to determine whether there was significant variation to conduct analyses. These descriptive statistics are displayed in Table II. Participants mentioned any given piece of information 20% of the time. Only three pieces of information (M11, P11, and P15) were mentioned by less than 10% of the participants that could mention that piece of information. In short, it appears there is enough variation to conduct analyses.
<table>
<thead>
<tr>
<th>Piece of Information&lt;sup&gt;a&lt;/sup&gt;</th>
<th>N</th>
<th>Percent Mentioning</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>M1</td>
<td>182</td>
<td>26%</td>
<td>.44</td>
</tr>
<tr>
<td>M2</td>
<td>182</td>
<td>30%</td>
<td>.46</td>
</tr>
<tr>
<td>M3</td>
<td>182</td>
<td>19%</td>
<td>.40</td>
</tr>
<tr>
<td>M4</td>
<td>182</td>
<td>21%</td>
<td>.41</td>
</tr>
<tr>
<td>M5</td>
<td>182</td>
<td>17%</td>
<td>.38</td>
</tr>
<tr>
<td>M6</td>
<td>181</td>
<td>27%</td>
<td>.45</td>
</tr>
<tr>
<td>M7</td>
<td>182</td>
<td>27%</td>
<td>.45</td>
</tr>
<tr>
<td>M8</td>
<td>88</td>
<td>23%</td>
<td>.42</td>
</tr>
<tr>
<td>M9</td>
<td>88</td>
<td>17%</td>
<td>.38</td>
</tr>
<tr>
<td>M10</td>
<td>88</td>
<td>15%</td>
<td>.36</td>
</tr>
<tr>
<td>M11</td>
<td>41</td>
<td>12%</td>
<td>.33</td>
</tr>
<tr>
<td>M12</td>
<td>41</td>
<td>7%</td>
<td>.26</td>
</tr>
<tr>
<td>M13</td>
<td>41</td>
<td>17%</td>
<td>.38</td>
</tr>
<tr>
<td>M14</td>
<td>41</td>
<td>37%</td>
<td>.49</td>
</tr>
<tr>
<td>M15</td>
<td>41</td>
<td>12%</td>
<td>.33</td>
</tr>
<tr>
<td>P1</td>
<td>170</td>
<td>26%</td>
<td>.44</td>
</tr>
<tr>
<td>P2</td>
<td>170</td>
<td>23%</td>
<td>.42</td>
</tr>
<tr>
<td>P3</td>
<td>170</td>
<td>24%</td>
<td>.43</td>
</tr>
<tr>
<td>P4</td>
<td>168</td>
<td>30%</td>
<td>.46</td>
</tr>
<tr>
<td>P5</td>
<td>170</td>
<td>14%</td>
<td>.35</td>
</tr>
<tr>
<td>P6</td>
<td>170</td>
<td>25%</td>
<td>.43</td>
</tr>
<tr>
<td>P7</td>
<td>170</td>
<td>33%</td>
<td>.47</td>
</tr>
<tr>
<td>P8</td>
<td>88</td>
<td>14%</td>
<td>.35</td>
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<tr>
<td>P9</td>
<td>88</td>
<td>14%</td>
<td>.35</td>
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<tr>
<td>P10</td>
<td>88</td>
<td>14%</td>
<td>.35</td>
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<tr>
<td>P11</td>
<td>47</td>
<td>4%</td>
<td>.20</td>
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<tr>
<td>P12</td>
<td>47</td>
<td>15%</td>
<td>.36</td>
</tr>
<tr>
<td>P13</td>
<td>47</td>
<td>26%</td>
<td>.44</td>
</tr>
<tr>
<td>P14</td>
<td>47</td>
<td>21%</td>
<td>.41</td>
</tr>
<tr>
<td>P15</td>
<td>47</td>
<td>6%</td>
<td>.25</td>
</tr>
</tbody>
</table>

<sup>a</sup> M refers to a piece of information supporting a military decision and P refers to a piece of information supporting a political sanctions decision.
B. Primary Analyses

1. True Advocacy and Perceived Importance

The first goal of the study was to examine whether true advocacy exists separately from importance-based biases. To examine this question, a multilevel random intercept logistic regression was conducted on whether or not a piece of information was mentioned in the group discussion, with perceived importance and whether or not a piece of information supported the participant’s preferred decision as predictors. In this analysis, piece of information and participant were treated as crossed random factors. Participant group was excluded from this analysis as it did not add much to model fit, especially once parsimony was considered: deviance \( (1)= 1.53 \), \( \Delta \text{AIC} = 1.06 \), \( \Delta \text{BIC} = -5.07 \). Inclusion of random slopes, which would give each participant their own coefficients for the predictors, did not increase model fit, deviance\( (4) = .35 \), \( \Delta \text{AIC} = -3.30 \), \( \Delta \text{BIC} = -15.57 \). This meant the mathematical model for the analysis was as follows:

\[
\text{Logit}\{Pr(y_{ij} = 1|x_{1ij}, x_{2ij}, \tau_{1i}, \tau_{2j})\} = \beta_0 + \beta_1 x_{1ij} + \beta_2 x_{2ij} + \tau_{1i} + \tau_{2j}
\]

where

- \( i \) - Participants (1...n)
- \( j \) - Piece of Information (1...m)
- \( y_{ij} \) - 1 if the information was mentioned, 0 otherwise
- \( x_{1ij} \) - perceived importance for participant \( i \) for information \( j \)
\( x_{2ij} \) - decision agreement for participant \( i \) for information \( j \)

\( \tau_{1i} \) - random intercept for participant \( i \)

\( \tau_{2j} \) - random intercept for information \( j \)

\( \beta_0 \) – intercept

\( \beta_1 \) - fixed regression parameter for the effect of perceived information

\( \beta_2 \) – fixed regression parameter for the effect of decision agreement

The random intercepts were assumed to be distributed as \( \tau_{1i} \sim N(0, \psi_1) \) and \( \tau_{2j} \sim N(0, \psi_2) \), to be independent of each other, and to be independent of the covariates \( x_{1ij} \) and \( x_{2ij} \). In this study design each participant was exposed to some different pieces of information and some of the same pieces of information. Hence, participant and information effects are considered crossed effects.

The analysis showed that both perceived importance (Odds ratio = 1.17, \( p < .001 \), 95% CI [1.08, 1.26]) and support for preferred decision (Odds ratio = 1.76, \( p < .001 \), 95% CI [1.46, 2.12]) were significant predictors of mentioning a piece of information. Thus, both the perceived importance of information and the information’s support for a preferred decision directly increased the probably that a given piece of information would be mentioned. This supports both true advocacy explanations and importance-based explanations of information sharing. This also shows that true advocacy exists separately from importance-based biases.
An additional analysis revealed that the direct effects results were qualified by a two-way interaction between perceived importance and support for preferred decision. This model is shown in Table III.

### TABLE III

PERCEIVED IMPORTANCE OF INFORMATION AND SUPPORT FOR PREFERRED DECISION AS PREDICTORS OF MENTIONING INFORMATION

<table>
<thead>
<tr>
<th></th>
<th>Odds Ratio</th>
<th>SE</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perceived Importance</td>
<td>1.019</td>
<td>.056</td>
<td>0.916 - 1.135</td>
</tr>
<tr>
<td>Information Supports Preferred Decision</td>
<td>0.557</td>
<td>.192</td>
<td>0.284 - 1.097</td>
</tr>
<tr>
<td>Perceived Importance by Supports Preferred Decision</td>
<td>1.286**</td>
<td>.093</td>
<td>1.115 - 1.482</td>
</tr>
</tbody>
</table>

*a Results are from a multilevel random intercept logistic regression with piece of information and participant as crossed random factors with 3413 observations of 264 participants. *p < .05. **p < .01

To interpret the interaction between perceived importance and support for the participant’s preferred decision, the model was rerun separately for information that did and did not support the participant’s preferred decision. With information that did support a participant’s preferred decision, perceived importance of that information was a strong predictor of mentioning that piece of information (Odds ratio = 1.33, p < .001, 95% CI [1.20, 1.48]). With information that did not support a participant’s preferred decision, perceived importance does not predict mentioning at all (Odds ratio = 1.00, p = .94, 95% CI [.88, 1.12]). In other words, perceived importance of a piece of information only predicted whether that piece of information
would be mentioned if that piece of information supported a participant’s preferred decision. To put it in laymen terms, if a piece of information supported the person’s preferred decision that piece of information was 198% more likely to be mentioned if it was perceived to be extremely important than if it was perceived as not at all important. In contrast, if a piece of information did not support the person’s preferred decision, it was no more likely to be mentioned if it was perceived as extremely important than if it was perceived to be not at all important.

This pattern of results strongly support the idea that true advocacy exists separately from importance-based biases. In fact, these results suggest that importance-based biases may only serve to determine how a participant can best argue for a preferred decision.

2. **Shared versus Non-Shared Information Distributions**

The second goal of this study is to examine the relative predictive power of the unshared/shared information distributions and then to determine how this predictive power is related to perceived item importance and whether information supports an individual’s preferences. To examine these questions, a multilevel random intercept logistic regression was conducted on whether or not an item was mentioned, with whether or not a piece of information was given to all group members (i.e., had a shared distribution in the group) as the single predictor. Piece of information and participant were treated as crossed random factors.

A shared information distribution was a significant predictor of whether a piece of information was mentioned, (Odds ratio = 1.40, p = .002, 95% CI [1.13, 1.72]). In other words,
a shared piece of information was 40% more likely than an unshared piece of information to be mentioned by a participant.

Because all shared pieces of information (in each condition) support the same decision, it is likely that the shared information’s prediction of mentioning information is caused by shared information tending to support the participant’s preferred decision. To test this hypothesis about mediation, a series of regression analyses were run. First, support for the participant’s preferred decision was regressed onto shared information using the same model specifications as before. This revealed that shared information was 277% more likely to support a participant’s preferred decision than unshared information, (Odds ratio = 3.77, \( p < .001 \), 95% CI [3.11, 4.57]). Second, whether information tending to support the participant’s preferred decision was treated as the sole predictor of mentioning information. This revealed that information that supported a participant’s preferred decision was 81% more likely to be mentioned, (Odds ratio = 1.82, \( p < .001 \), 95% CI [1.51, 2.18]). Lastly, shared information and support for a participant’s preferred decision were simultaneously added to the model. Once shared information and support for a participant’s preferred decision were simultaneously added to the model, a shared information distribution was no longer a significant predictor of mentioning, (Odds ratio = 1.18, \( p = .14 \), 95% CI [.94, 1.48]). This supported the hypothesis that shared information predicting a given person mentioning a given piece of information was caused by the tendency of shared information to support the participant’s preferred decision. In other words, shared information’s prediction of
mentioning information was mediated by whether the information supported the participant’s preferred decision.

As shown in Table IV, adding perceived information importance and the interaction between perceived information importance and whether information supports an individual’s preferences to the model shows no change in whether a shared information distribution predicted the mentioning of information. In other words, only the interaction between the perceived importance of information and support for the participant’s preferred outcome was a significant predictor of mentioning information. For simplicity, this model will be termed the “Base Individual Model” throughout this paper.

### TABLE IV
THE BASE INDIVIDUAL MODEL: SHARED INFORMATION DISTRIBUTION, PERCEIVED IMPORTANCE OF INFORMATION, AND SUPPORT FOR PREFERRED DECISION AS PREDICTORS OF MENTIONING INFORMATION

<table>
<thead>
<tr>
<th></th>
<th>Odds Ratio</th>
<th>SE</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shared Information</td>
<td>1.165</td>
<td>.133</td>
<td>0.932 - 1.457</td>
</tr>
<tr>
<td>Perceived Importance</td>
<td>1.023</td>
<td>.056</td>
<td>0.919 - 1.139</td>
</tr>
<tr>
<td>Information Supports Preferred Decision</td>
<td>0.554</td>
<td>.191</td>
<td>0.282 - 1.090</td>
</tr>
<tr>
<td>Perceived Importance by Supports Preferred Decision</td>
<td>1.278**</td>
<td>.093</td>
<td>1.108 - 1.475</td>
</tr>
</tbody>
</table>

*Results are from a multilevel random intercept logistic regression with piece of Information and participant as crossed random factors with 3413 observations of 264 participants.

*p < .05. **p < .01
The residuals from the Base Individual Model were normally distributed with no outliers (i.e., no z-scores above absolute value of 3). Skewness of the residuals from Base Individual Model was .273 and kurtosis is -.052.

3. Implicit Aspects of Group Discussion

To better understand how behavior in the group discussion influences mentioning of information, generalized agreement and disagreement with specific information, global agreement and disagreement with information supporting each decision, and statements about preferred group decisions were analyzed. To simplify the number of dimensions in the analysis, all 10 ratings of implicit aspects of the group discussion were included in a maximum likelihood factor analysis with varimax rotation. The scree plot indicated a clear 2-factor solution. These factors appeared to represent pro-military decision behaviors and pro-political sanction decision behaviors. As a result, the ratings were summed to get separate measures of pro-military decision behaviors ($M = 1.25, SD = 1.60$) and pro-sanction decision behaviors ($M = 1.92, SD = 2.17$) for each participant. To get an understanding of group climate, the rating of the two other group members were summed to create indicators of group pro-military decision behaviors ($M = 2.5, SD = 2.65$) and group pro-sanction decision behaviors ($M = 3.84, SD = 3.65$).

The most basic theoretical model for how behavior in the group discussion influences mentioning information is that individual and group behaviors that imply support for a given decision will lead to more information being mentioned that supports that position. In terms of
this study, this suggests that there will be an interaction between whether information supported a military or political decision and individual and group behaviors.

To test this hypothesis, a multilevel random intercept logistic regression was conducted on whether or not an item was mentioned. Predictors in the model were whether or not information supports a military decision, pro-military behaviors, pro-sanction behaviors, group pro-military behaviors, group pro-sanction behaviors, and the interactions between whether or not information supports a military decision and military behaviors and pro-sanction behaviors. All interactions with group behaviors, both pro-military and pro-sanction, were not significant and were thus excluded from this analysis and subsequent analyses. Piece of information and participant were treated as crossed random factors.

Results from the analysis are shown in Table V. The hypothesis that there will be a significant interaction between information supporting a military decision and behaviors that imply support for a given decision only received partial support in that only one of the two predicted interactions was significant. The interaction between information supporting military decisions and pro-sanction behaviors was in the correct direction, but was not significant (Odds ratio = .94, p = .13, 95% CI [.87, 1.02]). However, there was a significant interaction between information supporting military decisions and pro-military behaviors (Odds ratio = 1.23, p < .001, 95% CI [1.10, 1.37]). This interaction means that for each behavior that a participant did
that implied support for a military decision, they had a 23% increased chance of mentioning a
given piece of information that supported a military decision.

The analysis also revealed significant main effects of individual and group behaviors on
whether information was mentioned in general. In particular, each behavior that implies support
for political sanctions gave participants a 13% increased likelihood of mentioning any given
piece of information, regardless of the decision that the information supports. In essence, pro-
sanction behaviors acted as a talkativeness variable.

The behaviors of other group members, regardless of what decisions the behaviors
indicated the other group members preferred, reduced the likelihood of a participant mentioning

<table>
<thead>
<tr>
<th>TABLE V</th>
<th>INDIVIDUAL AND GROUP BEHAVIORS AS PREDICTORS OF MENTIONING⁵</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Odds Ratio</td>
</tr>
<tr>
<td>Information Supports Military</td>
<td>0.944</td>
</tr>
<tr>
<td>Pro-Military Behaviors</td>
<td>1.036</td>
</tr>
<tr>
<td>Pro-Sanction Behaviors</td>
<td>1.131**</td>
</tr>
<tr>
<td>Information Supports Military by Pro-Military Behaviors</td>
<td>1.229**</td>
</tr>
<tr>
<td>Information Supports Military by Pro-Sanction Behaviors</td>
<td>0.940</td>
</tr>
<tr>
<td>Group Pro-Military Behaviors</td>
<td>0.920**</td>
</tr>
<tr>
<td>Group Pro-Sanction Behaviors</td>
<td>0.956*</td>
</tr>
</tbody>
</table>

⁵Results are from a multilevel random intercept logistic regression with piece of information and participant as crossed random factors with 3432 observations of 264 participants.

*p < .05. **p < .01
information in general. Each behavior conducted by other group members that implied support for a military intervention reduced the probability that a participant would mention any given piece of information by 8.5%. Each behavior that supported political sanctions reduced the probability that a participant would mention any given piece of information by 4.7%. In contrast, group behaviors that suggested a preference for a given decision were positively correlated with individual behaviors that suggested preferences for that decision. Group behaviors of other group members that support a military decision correlated significantly with the participant’s behaviors that support a military decision, $r = .45, p < .001$. Group behaviors of other group members that supported sanctions correlated significantly with the participant’s behaviors that supported sanctions, $r = .51, p < .001$. In short, the behaviors of other group members increased a participant’s behaviors that supported the same decision, but decreased the likelihood that the participant would mention information. In other words, the behaviors of other group members increased the amount of talking, nodding, etc. that a participant did, but decreased the quality of conversation.

As shown in Table VI, the theoretically important interactions with participant behavior (along with all other interactions) become non-significant once whether a piece of information supports the participant’s preferred decision was controlled. The inability of the behavior of other group members to predict what kinds of information were mentioned supports a true advocacy model of information sharing.
TABLE VI
INDIVIDUAL AND GROUP BEHAVIORS AS PREDICTORS OF MENTIONING CONTROLLING FOR INFORMATION THAT SUPPORTS ONE’S PREFERRED DECISION

<table>
<thead>
<tr>
<th></th>
<th>Odds Ratio</th>
<th>SE</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information Supports Military</td>
<td>1.104</td>
<td>0.233</td>
<td>0.729 - 1.670</td>
</tr>
<tr>
<td>Pro-Military Behaviors</td>
<td>1.142*</td>
<td>0.070</td>
<td>1.011 - 1.289</td>
</tr>
<tr>
<td>Pro-Sanction Behaviors</td>
<td>1.082</td>
<td>0.046</td>
<td>0.995 - 1.175</td>
</tr>
<tr>
<td>Information Supports Military by Pro-Military Behaviors</td>
<td>1.029</td>
<td>0.069</td>
<td>0.902 - 1.173</td>
</tr>
<tr>
<td>Information Supports Military by Pro-Sanction Behaviors</td>
<td>1.041</td>
<td>0.047</td>
<td>0.953 - 1.138</td>
</tr>
<tr>
<td>Group Pro-Military Behaviors</td>
<td>0.919*</td>
<td>0.026</td>
<td>0.869 - 0.972</td>
</tr>
<tr>
<td>Group Pro-Sanction Behaviors</td>
<td>0.956**</td>
<td>0.021</td>
<td>0.916 - 0.997</td>
</tr>
<tr>
<td>Supports Preferred Decision</td>
<td>1.858**</td>
<td>0.232</td>
<td>1.455 - 2.372</td>
</tr>
</tbody>
</table>

*a Results are from a multilevel random intercept logistic regression with piece of information and participant as crossed random factors with 3432 observations of # participants.

*p < .05. **p < .01

4. **Conflict Over the Group Decision**

Group members do not always agree, which creates conflict in the group. However, it is currently unclear how this conflict influences group information sharing, as most research suggests that conflict impairs group performance (De Dreu & Weingart, 2003) but some research suggests conflict may improve group performance (e.g., Schulz-Hardt, Mayer, & Frey, 2002) and create less bias in information searches (e.g., Schultz-Hardt et al., 2000). In this study, conflict was examined in three ways: whether there was a participant in the group who disagreed with the eventual group decision, whether personal perceptions of conflict in the group, and group perceptions of difficult coming to a group decision.
5. Disagreement in the Group

When there is a participant in a group that does not agree with the eventual group decision, who are commonly called a decision-based minority (e.g., Lu, Yuan, & McLeod, 2012), the group members may feel increased pressure to defend their point of view. This would argue for the possibility of increased true advocacy in groups with a decision-based minority.

In contrast, Moscovici (1980) contended that decision-based minorities should lead to more systematic information processing, at least in the group majority. Supporting this idea, decision-based minorities has been shown to improve group decisions (Schulz-Hardt et al., 2006) and create less bias in information searches (Schulz-Hardt et al., 2000).

To examine the effect of decision-based minorities, whether or not a group contained a decision-based minority was added to a regression model combining the Base Individual Model shown in Table 4 with the individual and group behaviors shown in Table V. This revealed that participants in groups with a decision-based minority were 50% more likely to mention a given piece of information (Odds ratio = 1.50, p = .004, 95% CI [1.14, 1.97]). The two-way interactions between whether a minority was present, whether the information agrees with the preferred decision, and perceived importance of information were not significant. However, the three-way interaction between the presence of a minority, whether the information agreed with the preferred decision, and perceived importance of information was significant, (Odds ratio =
1.36, p = .04, 95% CI [1.01, 1.83]). This suggested that true advocacy may be different in groups with and without a decision-based minority.

To interpret the three-way interaction between the presence of a minority, whether the information agreed with the preferred decision, and perceived importance of information, the model was rerun separately for participants in groups with a minority and participants in groups without a minority. For participants in groups with a minority, the interaction between perceived importance of that information and whether the information agrees with the preferred decision was a significant predictor of mentioning that piece of information (Odds ratio = 1.44, p < .001, 95% CI [1.21, 1.73]). However, for participants in groups without a minority, the interaction between perceived importance of that information and whether the information agrees with the preferred decision was not a significant predictor of mentioning that piece of information (Odds ratio = 1.08, p = .53, 95% CI [.85, 1.38]). Because of this non-significant interaction, the model was rerun without the interaction term for participants in groups without a minority. This analysis revealed that the perceived importance of information was not a significant predictor of mentioning information in groups without a minority (Odds ratio = 1.11, p = .10, 95% CI [.98, 1.27]). However, whether information agreed with the preferred decision was a significant predictor of mentioning information in groups without a minority (Odds ratio = 1.70, p = .02, 95% CI [1.11, 2.60]).
In short, true advocacy was present in groups with and without decision based minorities. The presence of a decision-based minority in the group did however change how true advocacy manifested itself. If everyone in the group agreed on the eventual group decision, participants simply mentioned information that supported their preferred decision, regardless of the importance of that information. However, if someone in the group disagreed with the eventual group decision, participants started making better arguments by taking the importance of information that supported their decision into account.

Researchers have frequently argued that decision-based minorities need to actively work to defend their positions (e.g., Brodbeck et al., 2002; Meyers et al., 2000; Stewart & Stasser, 1998; Van Swol & Seinfeld, 2006), which would suggest that decision-based minorities might be responsible for the observed changes in true advocacy. However, no evidence of this was found in the current study. Decision-based minorities were no more likely than majorities to mention information in general (Odds ratio = .93, p = .66, 95% CI [.67, 1.28]). The two-way and three-way interactions between disagreeing with the eventual group decision, whether the information agrees with the preferred decision and perceived importance of information were also not significant. Thus, there was no evidence that decision-based minorities shared information in a different manner than participants who agreed with the eventual group decision.

6. Perceptions of Group Conflict

To analyze how a participant’s perceptions of the group influenced group information sharing, the four questions regarding qualitative perceptions of group (i.e., how much conflict
there was and how relaxed, peaceful and enjoyable the discussion was) were first subjected to a maximum likelihood factor analysis. The scree plot and the Eigenvalues-Over-One rule both indicated that there was a single factor. The questions regarding how relaxed, peaceful and enjoyable the discussion was were then recoded into a 0 to 6 scale with 6 indicating higher perceptions of group conflict. The four questions were then averaged to create an indicator of personal perceptions of group conflict ($M = 1.38$, $SD = 1.14$) with adequate reliability (Cronbach’s Alpha = .78).

To analyze how a participant’s perceptions of the group influenced group information sharing, the indicator of personal perceptions of group conflict was added to a regression model combining the Base Individual Model shown in Table IV with the individual and group behaviors shown in Table V.

The results are shown Table VII. When personal perceptions of group conflict were included in the regression model, there was a significant effect of personal perceptions of group conflict information (Odds ratio = 1.21, $p = .001$, 95% CI [1.08, 1.37]). This meant that if a person perceived extreme conflict in the group he or she was 126% more likely to mention any given piece of information than someone who perceived no conflict in the group. This effect was qualified by a significant interaction with the perceived importance of information, (Odds ratio = 1.10, $p = .01$, 95% CI [1.02, 1.18]). This meant that if a person perceived extreme conflict and that the information was extremely important, they were 360% more likely to mention the
information than someone who perceived no conflict and that a piece of information was not at all important. No other interactions with personal perceptions of group conflict were significant. As there has been some evidence for a curvilinear relationship between conflict and performance (Carnevale & Probst, 1998), perceived conflict was also tested as a quadratic effect, but no evidence of a quadric effect was found ($p$’s > .92). These effects did not interact with the presence of decision-based minorities in the group and were not lowered by controlling for the presence of decision-based minorities in the group.

**TABLE VII**
PERSONAL PERCEPTIONS OF GROUP CONFLICT AS PREDICTORS OF MENTIONING INFORMATION

<table>
<thead>
<tr>
<th></th>
<th>Odds Ratio</th>
<th>SE</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shared Information</td>
<td>1.180</td>
<td>0.148</td>
<td>0.923 - 1.508</td>
</tr>
<tr>
<td>Perceived Importance</td>
<td>0.879</td>
<td>0.069</td>
<td>0.754 - 1.025</td>
</tr>
<tr>
<td>Information Supports Preferred Decision</td>
<td>0.498</td>
<td>0.190</td>
<td>0.236 - 1.050</td>
</tr>
<tr>
<td>Perceived Importance by Supports Preferred Decision</td>
<td>1.306**</td>
<td>0.105</td>
<td>1.115 - 1.529</td>
</tr>
<tr>
<td>Pro-Military Behaviors</td>
<td>1.164**</td>
<td>0.065</td>
<td>1.044 - 1.299</td>
</tr>
<tr>
<td>Pro- Sanction Behaviors</td>
<td>1.076</td>
<td>0.043</td>
<td>0.996 - 1.163</td>
</tr>
<tr>
<td>Group Pro-Military Behaviors</td>
<td>0.912**</td>
<td>0.029</td>
<td>0.856 - 0.971</td>
</tr>
<tr>
<td>Group Pro-Sanction Behaviors</td>
<td>0.956</td>
<td>0.022</td>
<td>0.914 - 1.001</td>
</tr>
<tr>
<td>Personal Perceived Group Conflict</td>
<td>0.778</td>
<td>0.142</td>
<td>0.545 - 1.112</td>
</tr>
<tr>
<td>Personal Perceived Group Conflict by Perceived Importance</td>
<td>1.100**</td>
<td>0.040</td>
<td>1.024 - 1.181</td>
</tr>
</tbody>
</table>

*a Results are from a multilevel random intercept logistic regression with piece of information and participant as crossed random factors and 2765 observations of 214 participants.

*p < .05. **p < .01
In short, it appears that as group conflict increased, perceived importance of information becomes more important. This finding is important because it shows the existence of preference-based biases influencing the mentioning of information apart from true advocacy effects.

7. **Group Perceptions of Difficulty Coming to a Group Decision**

On the group decision sheet, the group as a whole indicated how difficult it was for the group to make a decision. When this item was added to the existing model, both personal perceptions of group conflict and group perceptions of difficulty coming to a group decision became non-significant. This indicates that both measures of perceptions shared a significant amount of variance. As a result, personal perceptions of group conflict were removed from the model to examine the effects of group perceptions of difficulty coming to a group decision.

As expected from the amount of variance shared between the two measures of perceptions, group perceptions of difficulty coming to a group decision showed a pattern of results similar to that of personal perceptions of group conflict. In other words, group perceptions of difficulty coming to a group decision predicted mentioning of information in general (Odds ratio = 1.14, \( p = .001 \), 95% CI [1.07, 1.22]) and this effect was qualified by an interaction with perceived importance of information (Odds ratio = 1.05, \( p = .03 \), 95% CI [1.01, 1.09]). An examination of model fit revealed that the regression model including group perceptions of difficulty coming to a group decision (Deviance = -1672.28, AIC = 3370.56, BIC = 3450.17) was not as good a predictor of mentioning information as the regression model including personal perceptions of group conflict (Deviance = -1362.47, AIC = 2750.93, BIC =
Controlling for error introduced by post-selection inferences (Berk, Brown, Buja, Zheng & Zhao, 2013) revealed that neither measure of conflict met the 3.63 critical t-value necessary. No additional variables met the levels of significance required for valid post-selection inferences and thus no final individual model was constructed. However, valid post-selection inferences have not yet been generalized to mixed models, so these findings must be interpreted with caution (Berk et al., 2013).

8. Misrepresentation of Mentioned Information

Information that was mentioned was not always shared with the group in an accurate manner. In other words, information was also misrepresented or simply misunderstood. From true advocacy explanations of information sharing, it would follow that information is mentioned to serve a strategic goal, which is to get the group to adopt his or her preferred decision. Because in true advocacy explanations, information sharing is strategic, true advocacy models would predict that participants would be more likely to misrepresent information as supporting his or her preferred decision even when they knew it did not.

This hypothesis was examined in two different ways. First, using a piece of mentioned information to support an incorrect solution was examined. Second, adding in false information into mentioned information was examined.
9. **Misrepresenting Mentioned Information**

Participants misrepresented information he or she mentioned by incorrectly stating which decision it supported 7.4 percent of the time. This makes misrepresenting information into a group discussion an infrequent, but theoretically important event.

To examine whether a participant used a piece of mentioned information to support an incorrect solution, a multilevel random intercept logistic regression with piece of information and participant as crossed random factors was conducted on using mentioned information to support an incorrect solution. The main predictors were perceived information importance, a shared information distribution, and if a piece of information did not support the participant’s preferred decisions To control for whether a participant misunderstood what decision a piece of information supported the following variables were included in the model: whether a piece of information supports a military invasion; the participant’s perceptions of that particular piece of information regarding its support for a military invasion and political sanctions, along with interactions with what decision the information was intended to support. In an attempt to control for whether a participant forgot what decision a piece of information supported, the order in which a piece of information was mentioned was controlled.

The results are shown in Table VIII. The results showed that some participants uniquely perceived some information as supporting a non-intended decision. This was indicated by the significant interaction between perceived support for political sanctions and whether the
information was intended to support a military decision, \( \text{Odds ratio} = 3.39, p = .02, 95\% \text{ CI} [1.25, 9.17] \). This interaction meant that a piece of information that was intended to support a military decision was 239\% more likely to be mentioned as supporting political sanctions for every unit increase in a participant’s perception that the information supports political sanctions. The results also showed that, after controlling for a participant’s understanding of a piece of information, shared information was significantly more likely to be used to support the incorrect decision, \( \text{Odds ratio} = 6.96, p = .008, 95\% \text{ CI} [1.67, 28.93] \). This meant that shared information was 695\% more likely than unshared information to be misrepresented as supporting an incorrect decision. The results also showed that, after controlling for a participant’s understanding of a piece of information, information that did not support the participant’s preferred decision was significantly more likely to be used to support the incorrect decision, \( \text{Odds ratio} = 169.14, p < .001, 95\% \text{ CI} [21.85, 1309.25] \). In layman’s terms, this meant that a participant was 169.14 times as likely, or 16,814\% more likely, to misrepresent a piece of information as supporting his or her preferred decision as to misrepresent a piece of information that supports his or her preferred decision. This finding strongly supports a true advocacy model of group information sharing.
### TABLE VIII
PREDICTORS OF MISREPRESENTING MENTIONED INFORMATIONa

<table>
<thead>
<tr>
<th>Predictor</th>
<th>Odds Ratio</th>
<th>SE</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shared Information</td>
<td>6.965**</td>
<td>5.061</td>
<td>1.677 - 28.93</td>
</tr>
<tr>
<td>Perceived Importance</td>
<td>0.790</td>
<td>.226</td>
<td>.451 - 1.384</td>
</tr>
<tr>
<td>Information Does Not Support Preferred Decision</td>
<td>169.149**</td>
<td>176.6</td>
<td>21.85 - 1309</td>
</tr>
<tr>
<td>Order in which Information was Mentioned</td>
<td>1.016</td>
<td>.0806</td>
<td>.870 - 1.187</td>
</tr>
<tr>
<td>Information Supports Military Decision</td>
<td>0.209</td>
<td>.228</td>
<td>.0246 - 1.776</td>
</tr>
<tr>
<td>Perceived as Supporting Military</td>
<td>1.149</td>
<td>.327</td>
<td>.658 - 2.006</td>
</tr>
<tr>
<td>Perceived as Supporting Political Sanctions</td>
<td>1.069</td>
<td>.315</td>
<td>.600 - 1.904</td>
</tr>
<tr>
<td>Perceived as Supporting Military by Information</td>
<td>0.717</td>
<td>.368</td>
<td>.262 - 1.963</td>
</tr>
<tr>
<td>Supports Military</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perceived as Supporting Political Sanctions by Information Supports Military</td>
<td>3.390*</td>
<td>1.721</td>
<td>1.254 - 9.167</td>
</tr>
</tbody>
</table>

aResults are from a multilevel random intercept logistic regression with piece of information and participant as crossed random factors and 754 observations of 233 participants.

*p < .05. **p < .01

Additional predictors were tested, such as the presence of a decision-based minority, perceived group conflict, disagreeing with the group decision, as well as their interactions with other predictors. However, no additional theoretically relevant predictors were found. Residuals were normally distributed with no outliers.

10. **Adding False Information into Mentioned Information**

Participants added false information into information he or she mentioned 2.9 percent of the time. This makes adding false information into a group discussion an uncommon, but theoretically important event.

To examine whether a participant added false information into a piece of mentioned information, a multilevel random intercept logistic regression with piece of information and
participant as crossed random factors was conducted on adding false information into a piece of mentioned information. The main predictors were information importance, a shared information distribution, and if a piece of information does not support the participant’s preferred decision. The main predictors were information importance, a shared information distribution, and if a piece of information does not support the participant’s preferred decision. In an attempt to control for whether a participant forgot parts of a piece of information, the order in which a piece of information was mentioned was controlled.

The results are shown in Table IX. The only significant predictor of a participant adding false information into a piece of mentioned information was if the piece of information did not support the participant’s preferred decision, (Odds ratio = 10.01, \( p = .03 \), 95% CI [1.31, 76.52]). In other words, participants were 10 times more likely to add in false information if a piece of information did not support his or her preferred decision. This finding supports the true advocacy model, as it suggests that participants were strategically building arguments for his or her preferred decision. Residuals were normally distributed with no outliers.
### TABLE IX
PREDICTORS OF ADDING FALSE INFORMATION INTO MENTIONED INFORMATION

<table>
<thead>
<tr>
<th>Predictor</th>
<th>Odds Ratio</th>
<th>SE</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shared Information</td>
<td>0.889</td>
<td>0.828</td>
<td>0.143 - 5.519</td>
</tr>
<tr>
<td>Perceived Importance</td>
<td>1.176</td>
<td>0.429</td>
<td>0.575 - 2.402</td>
</tr>
<tr>
<td>Information Does Not Support Preferred Decision</td>
<td>10.01*</td>
<td>1.390</td>
<td>1.308 - 76.520</td>
</tr>
<tr>
<td>Order in which Information was Mentioned</td>
<td>0.961</td>
<td>0.102</td>
<td>0.780 - 1.185</td>
</tr>
</tbody>
</table>

*a Results are from a multilevel random intercept logistic regression with piece of information and participant as crossed random factors and 754 observations of 233 participants.

*p < .05. **p < .01

Additional predictors were tested, such as the presence of a decision-based minority, perceived group conflict, implicit group behavior, as well as their interactions with other predictors. However, no additional predictors were found. Residuals were normally distributed with no outliers.

The third major goal of the study is to examine the relative predictive power of the three major factors highlighted by the literature at the group level: the unshared/shared nature of pieces of information, the perceived importance of each piece by the group, and whether information supports the group’s preferences. As is typical in the literature (e.g., Reimer et al., 2010; Toma & Butera, 2009), data from the 264 participants was collapsed into 88 groups. To do this, a vertical file was created in which the variables for each of the three group members were averaged into a single group score. In this file, each row represented a particular group’s pieces of information.
The current approach differs from traditional treatments of group information sharing in that the current approach treats each piece of information held by the group as an observation of the group. Traditional approaches (e.g., Reimer et al., 2010; Toma & Butera, 2009) would collapse the 25 observations of the group in the current study into 2 observations of the group: one for unshared information and one for shared information. Thus, traditional approaches lose a great deal of the variability in the data that is preserved by the current approach. The traditional approach is examined later in the paper.

A logistic mixed regression with a random intercept was first conducted in which whether the group mentions a piece of information will be regressed onto the unshared/shared nature of pieces of information, the perceived importance of each piece by the group, and whether information supports the group’s overall preferences. In this analysis, piece of information and group were treated as crossed random factors. Inclusion of random slopes, which would give each group their own coefficients for the predictors, did not increase model fit, all deviances (2) < .21, p’s > .40. The mathematical model for the analysis was as follows:

\[
\text{Logit}\{Pr(y_{gj} = 1|x_{1gj}, x_{2gj}, x_{3gj}, \tau_{1g}, \tau_{2j})\} = \beta_0 + \beta_1 x_{1gj} + \beta_2 x_{2gj} + \beta_3 x_{3gj} + \tau_{1g} + \tau_{2j}
\]

where

- \( g \) - Group (1...n)
- \( j \) - Piece of Information (1...m)
$y_{gj}$ - 1 if the information was mentioned, 0 otherwise

$x_{1gj}$ – averaged perceived importance for group $g$ for information $j$

$x_{2gj}$ - group decision agreement for group $g$ for information $j$

$x_{3gj}$ - shared information distribution for group $g$ for information $j$

$\tau_{1g}$ - random intercept for group $g$

$\tau_{2j}$ - random intercept for information $j$

$\beta_0$ – intercept

$\beta_1$ - fixed regression parameter for the effect of average perceived information

$\beta_2$ – fixed regression parameter for the effect of group decision agreement

$\beta_3$ – fixed regression parameter for the effect of shared information distribution

The results from the analysis are shown in Table X. Shared information, average perceived importance of information, and support for the group’s preferred decision were all significant predictors of mentioning information at the group level. In this analysis, shared information was 549% more likely to be mentioned than unshared information. Information perceived as extremely important by every group member was 150% more likely to be mentioned than information perceived as not at all important by every group member. If a piece of information supported the group’s preferred decision, it was 27% more likely to be mentioned than a piece of information that did not support the group’s preferred decision. However, all of these effects were qualified by interactions, which will be discussed shortly.
TABLE X
SHARED INFORMATION, AVERAGE PERCEIVED IMPORTANCE OF INFORMATION, AND SUPPORT FOR GROUP’S PREFERRED DECISION AS PREDICTORS OF MENTIONING INFORMATION AT GROUP LEVEL

<table>
<thead>
<tr>
<th>Information</th>
<th>Odds Ratio</th>
<th>SE</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shared Information</td>
<td>6.485**</td>
<td>0.864</td>
<td>4.995 - 8.419</td>
</tr>
<tr>
<td>Average Perceived Importance</td>
<td>1.253**</td>
<td>0.067</td>
<td>1.131 - 1.388</td>
</tr>
<tr>
<td>Information Supports Group’s Preferred Decision</td>
<td>1.269*</td>
<td>0.146</td>
<td>1.013 - 1.591</td>
</tr>
</tbody>
</table>

a Results are from a multilevel random intercept logistic regression with piece of information and group as crossed random factors with 2191 observations of 88 groups.
*p < .05. **p < .01

The effect of information that supports a group’s preferred decision on whether a piece of information was mentioned was completely mediated by the proportion of group members whose preferred decision was supported by the piece of information. In other words, whether or not the information supported the group’s preferred decision significantly predicted the proportion of group members whose preferred decision was supported by the piece of information, \( \beta = .50, p < .001, 95\% \text{ CI } [.46, .53] \). Once the proportion of group members whose preferred decision was supported by the piece of information was entered into the model shown in Table X, information that supports a group’s preferred decision no longer predicted whether a piece of information was mentioned, (Odds ratio = 1.00, \( p = .98, 95\% \text{ CI } [.77, 1.31] \)). In contrast, the proportion of group members whose preferred decision was supported by the piece of information was a significant predictor of whether a piece of information was mentioned (Odds ratio = 1.68, \( p = .001, 95\% \text{ CI } [1.25, 2.24] \)). As a result, in all subsequent models, whether information supports a group’s preferred decision was replaced by the proportion of group members whose preferred
decision was supported by the piece of information. For the sake of simplicity, the proportion of group members whose preferred decision was supported by the piece of information will be subsequently referred to as the proportion whose decision was supported.

Table XI shows the degree to which shared information, average perceived importance, the proportion whose decision was supported, and their interactions predicted the mentioning of information in the group. This model will subsequently be termed the “Base Group Model.” The residuals of the Base Group Model were normally distributed with no outliers.

<table>
<thead>
<tr>
<th></th>
<th>Odds Ratio</th>
<th>SE</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shared Information</td>
<td>1.583</td>
<td>1.997</td>
<td>0.134 - 18.770</td>
</tr>
<tr>
<td>Average Perceived Importance</td>
<td>1.105</td>
<td>0.079</td>
<td>0.961 - 1.272</td>
</tr>
<tr>
<td>Proportion Whose Decision was Supported</td>
<td>0.282*</td>
<td>0.164</td>
<td>0.099 - 0.883</td>
</tr>
<tr>
<td>Shared Information by Average Perceived Importance</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Proportion Whose Decision was Supported by Perceived Importance</td>
<td>1.467**</td>
<td>0.175</td>
<td>1.161 - 1.854</td>
</tr>
<tr>
<td>Shared Information by Proportion Whose Decision was Supported</td>
<td>58.88*</td>
<td>108.800</td>
<td>1.574 - 2.203</td>
</tr>
<tr>
<td>Shared Information by Proportion Whose Decision was Supported by Perceived Importance</td>
<td>0.407*</td>
<td>0.163</td>
<td>0.186 - 0.892</td>
</tr>
</tbody>
</table>

*Results are from a multilevel random intercept logistic regression with piece of information and group as crossed random factors with 2191 observations of 88 groups.
*p < .05. **p < .01
11. **Main Effects in the Base Group Model**

In the Base Group Model, shared information no longer was a significant predictor of mentioning information, (Odds ratio = 1.58, \(p = .72\), 95% CI [.13, 18.76]). This indicates that the main effect of shared information distribution was accounted for by the subsequent interactions between predictors.

Average perceived importance was also no longer a predictor of mentioning information, (Odds ratio = 1.11, \(p = .16\), 95% CI [.96, 1.27]). This indicates that the main effect of average perceived importance was also accounted for by the subsequent interactions between predictors.

In the Base Group Model, the proportion whose decision was supported reversed directions, (Odds ratio = .28, \(p = .03\), 95% CI [.09, .88]). This meant that a group was 255% more likely to mention a piece of information if all the group members did not support that decision. This effect probably reflects the propensity of some groups to intentionally discuss information that did not support their preferred decision to double check the group’s decision.

12. **Interactions in the Base Group Model**

In the Base Group Model, there was a significant interaction between the average perceived importance and the proportion whose decision was supported, (Odds ratio = 1.47, \(p = .001\), 95% CI [1.16, 1.85]). This meant that if every group member’s decision was supported by the piece of information and the information was as seen as extremely important, the information was 276% more likely to be mentioned than information that was perceived as not all important.
In the Based Group Model, there was also a significant interaction between shared information and the proportion whose decision was supported, (Odds ratio = 58.87, \( p = .03 \), 95% CI [1.57, 2202.43]). This meant that if every group member’s preferred decision was supported by the piece of information, mentioning shared information was 58.87 times, or 5787% more likely, than mentioning unshared information.

In the Based Group Model, there was also a 3-way interaction between information with a shared distribution, the average perceived importance of information, and the proportion whose decision was supported, (Odds ratio = 0.41 \( p = .03 \), 95% CI [.19, .89]). To explain the interaction, the Base Group Model was rerun separately for shared and unshared information. With shared information, the interaction between average perceived importance of information and the proportion whose decision was supported was not significant, (Odds ratio = 0.59 \( p = .20 \), 95% CI [.26, 1.31]). However, with unshared information the interaction between average perceived importance of information and the proportion whose decision was supported was significant, (Odds ratio = 1.49 \( p = .001 \), 95% CI [1.17, 1.88]). This meant that the only role that average perceived importance played in whether a group mentioned information was in predicting the mention of unshared information that supported their preferred decision.

13. **Summary of the Base Model of Group Information Sharing**

In summary, the Base Model of Group Information Sharing showed that the shared distribution of information in and of itself was not an important predictor of mentioning information at the group level. What was important was that, due to the collapsing of individual-
level predictors into a single group mean for each piece of shared information, whether or not information had a shared distribution only indicated which other predictors would be important.

With shared information, the proportion of group members whose preferred decision was supported by that piece of information played a more direct role than with unshared information in whether the information was mentioned by the group. With shared information, average perceived importance did not play a role in whether or not a piece of information was mentioned.

In contrast, with unshared information, the Base Individual Model was still predictive at the group level. In other words, when deciding whether to mention unshared information, group members appeared to use the perceived importance of information that supported their preferred decision as a reference to determine what information should be mentioned.

The inability of perceived importance to predict the mentioning of shared information appears to be the result of averaging perceived importance of information across group members for shared information but not averaging it across group members for unshared information (unshared information was only held by a single group member). In short, averaging the perceived importance of information across group members caused the loss of so much variation that perceived importance no longer appears to be predictive of mentioning shared information.
This pattern of results largely supported a true advocacy explanation of group information sharing at the group level. In other words, even at the group level, what information was shared appeared to be the result of strategic decisions by group members to try to get the group to adopt his or her own preferred decision.

Because shared information did not predict whether information was mentioned in the Base Group Model, the results do not support mathematical probability explanations of group level information sharing (e.g., Stasser & Titus, 1985; 1987). Thus, the results did not support the hypothesis laid out by Stasser and Titus (1985; 1987) that true advocacy is the primary driving force behind information sharing at the individual level, with mathematical probability being the main predictor of information sharing at the group level.

14. Additional Variables

As was done with the individual level model, additional variables were tested to see if they could add predictive value to the Base Group Model. The final group model is shown in Table XII.
<table>
<thead>
<tr>
<th>Table XII: The Final Group Model</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td>Shared Information</td>
</tr>
<tr>
<td>Average Perceived Importance</td>
</tr>
<tr>
<td>Proportion Whose Decision was</td>
</tr>
<tr>
<td>Supported</td>
</tr>
<tr>
<td>Shared Information by Average</td>
</tr>
<tr>
<td>Perceived Importance</td>
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<tr>
<td>Proportion Whose Decision was</td>
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<tr>
<td>Supported by Perceived</td>
</tr>
<tr>
<td>Importance</td>
</tr>
<tr>
<td>Shared Information by Proportion</td>
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<tr>
<td>Whose Decision was Supported</td>
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<tr>
<td>Shared Information by Proportion</td>
</tr>
<tr>
<td>Whose Decision was Supported</td>
</tr>
<tr>
<td>by Perceived Importance</td>
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<tr>
<td>Average Pro-Military Behaviors</td>
</tr>
<tr>
<td>Average Pro-Sanction Behaviors</td>
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<tr>
<td>Average Group Pro-Military</td>
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<tr>
<td>Behaviors</td>
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<tr>
<td>Average Group Pro-Sanction</td>
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<tr>
<td>Behaviors</td>
</tr>
<tr>
<td>Group Perceived Difficulty in</td>
</tr>
<tr>
<td>Coming to a Decision</td>
</tr>
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</table>

*Results are from a multilevel random intercept logistic regression with piece of information and group as crossed random factors with 1866 observations of 86 groups.

*p < .05. **p < .01

Only variables relating to the group climate and group perceived difficulty coming to a decision were found that could add predictive value to the Base Group Model. No other variables, such as presence of a decision-based minority, condition, gender, ideology, or average perceived group conflict, were predictive of mentioning information.

Variables relating to the group climate were significant predictors of mentioning information. Average individual pro-military decision behaviors significantly predicted mentioning (Odds ratio = 1.15, p =.01, 95% CI [1.03, 1.28]), but pro-sanction decision behaviors did not predict mentioning (Odds ratio = 1.06, p =.14, 95% CI [.98, 1.15]). Averaged group pro-
military decision behaviors significantly predicted less mentioning (Odds ratio = .91, \( p = .009 \), 95% CI [.85, .98]), but average group pro-sanction decision behaviors did not predict mentioning (Odds ratio = .98, \( p = .35 \), 95% CI [.93, 1.03]).

Group perceived difficulty in coming to a decision, which was indicated by the group rating of the difficulty they had coming to a decision, also predicted mentioning of information (Odds ratio = 1.16, \( p = .002 \), 95% CI [1.05, 1.28]). This means that groups who found it extremely difficult to come to a decision were 96% more likely to mention a given piece of information than groups who found it not at all difficult to make a decision. However, unlike in the individual model, group perceived difficulty in coming to a decision did not interact with other predictors, such as average perceived importance (Odds ratio = 1.03, \( p = .28 \), 95% CI [.98, 1.09]). This again most likely reflects the decreased importance of perceived information importance in the prediction of mentioning at the group level, as does the lack of a decision-based minority effect.

15. Other Ways of Thinking about Group Level Information Sharing.

In the group information sharing literature, researchers commonly have treated information as varying along a single dimension: shared versus unshared information. As such, researchers (e.g., Larson, et al., 1998; Toma & Butera, 2009) have commonly treated all pieces of shared information as providing one observation of a group and all pieces of unshared information as providing a second observation of a group.
As previously shown, information always varies along more than a single shared versus unshared dimension. For example, information always differs in which decision the information supports. Thus, the data from a group information sharing study could be structured in a variety of theoretically important ways. This means that the structure of group information sharing may depend not only on how information is manipulated by researchers, but also on how researchers conceive of the data.

To examine this possibility, two different data sets of group information sharing were constructed from the individual-level data. Each data set treated the study as providing 2 observations of each group.

The first data set, which will be called the Traditional Data Set, treated each group as having two observations: shared and unshared information. As Lu, Yuan, and McLeod (2012) recommend, the number of shared and unshared pieces of information were divided by the total number of shared and unshared pieces available in the group. The second data set, which will be called the Advocacy Data Set, treated each group as having two observations: information that agreed with the preferred decision of the member who shared it and information that did not agree with the preferred decision of the member who shared it.

Because mentioning information was a linear variable in the Traditional Data Set, a linear mixed regression was conducted on the data set. Because mentioning information was treated as
a count variable in the Advocacy Data Set, a Poisson mixed regressions was conducted on the data set. Goodness of fit statistics from both analyses suggested that the best fitting model allowed each group to have its own intercept. The predictors examined in both analyses were the same: the proportion of the information that had a shared distribution, the proportion of the group members agreed with the information, the average importance of the information, and the interactions between these three variables.

In the Traditional Data Set, this analysis revealed that a shared information distribution was a significant predictor of information being mentioned ($\beta = .54, p < .001, 95\% CI [.47, .62]$). The proportion of group members whose preferred was supported by the piece of information was marginally significant ($\beta = .12, p = .09, 95\% CI [-.02, .26]$). No interactions were significant. These finding supports mathematical probability explanations of group level information sharing (e.g., Stasser & Titus, 1985; 1987), but only provides marginal support for true advocacy explanations of group level information sharing.

In the Advocacy Data Set, a richer set of findings was obtained. Both the proportion of the information that had a shared distribution ($\beta = .60, p < .001, 95\% CI [.30, .89]$) and the proportion of the group members that agreed with the information ($\beta = .43, p < .001, 95\% CI [.26, .60]$) were direct predictors of mentioning information. These effects were qualified by a significant interaction between the proportion of the group members that agreed with the information and the average importance of the information ($\beta = .40, p = .01, 95\% CI [.10, .71]$).
This interaction meant that more important information that supported the group member’s preferred decision was more likely to be mentioned. This pattern of findings provides support for both true advocacy explanations and mathematical probability explanations of group level information sharing, which contradicts the notion that true advocacy is not a major predictor at the group level (Stasser & Titus, 1985; 1987).

In short, the structure of group information sharing was dependent on how the data is structured. The structure of the data in turn determined the type of variation that was lost through the collapsing of (potential) observations. The structure of the data therefore at least partially determined whether a hypothesis would be supported.

C. Supplementary Analyses

1. Ideology

Ideology did not appear to be a direct predictor of mentioning information at either the individual or group level in this study. However, there is good reason to believe that ideology was playing a role in information sharing. Ideology is known to influence a wide array of beliefs and behavior (e.g., Jost, Glaser, Kruglanski, & Sulloway, 2003). This means that ideology may have influenced the perceived importance of information, what decision a participant originally prefers, and therefore what information supports the participant’s decision.
To test whether ideology influenced the perceived importance of information, a mixed regression was conducted in which perceived information importance was regressed onto ideology, whether the information supported a military decision, and the interaction between ideology and whether the information supported a military decision. In this analysis, piece of information and participant were treated as crossed random factors. In this analysis, each person was allowed to have their own coefficient for whether the information supported a military decision as doing so significantly improved model fit, deviance(2) = 3.988, \( p = .009 \). This analysis revealed that there was a significant interaction between ideology and whether the information supported a military decision, \( \beta = .08, p = .01, 95\% \text{ CI} [.02, .14] \). In short, ideology did have an impact on how participants viewed a given piece of information.

To test whether ideology influenced participants’ prediscussion decisions, a logistic regression was conducted in which prediscussion decision was regressed onto ideology, condition, the perceived evidence for a decision, and the interaction between ideology and the perceived evidence for a decision. The results are shown in Table XIII. As can be seen, all the variables significantly predicted participant prediscussion decisions.
TABLE XIII  
CONDITION, IDEOLOGY, AND PERCEPTIONS OF EVIDENCE AS PREDICTORS OF  
PREDISCUSION DECISION

<table>
<thead>
<tr>
<th></th>
<th>Odds Ratio</th>
<th>SE</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Condition</td>
<td>2.900**</td>
<td>1.000</td>
<td>1.476 - 5.700</td>
</tr>
<tr>
<td>Ideology</td>
<td>1.464**</td>
<td>0.209</td>
<td>1.106 - 1.937</td>
</tr>
<tr>
<td>Overall Perception of Evidence</td>
<td>2.514**</td>
<td>0.356</td>
<td>1.904 - 3.319</td>
</tr>
<tr>
<td>Overall Perception of Evidence by Ideology</td>
<td>1.274*</td>
<td>0.126</td>
<td>1.049 - 1.547</td>
</tr>
</tbody>
</table>

*a Results are from a logistic regression with 261 participants.  
*p < .05.  **p < .01

Ideology appeared to have two different effects on prediscussion decisions. First, even after controlling for perceptions of evidence and condition, participants with a more militaristic ideology were significantly more likely to prefer a military decision (Odds ratio = 1.46, *p* = .008, 95% CI [1.11, 1.94]). In other words, participants who had the most militaristic ideologies were 276% more likely to prefer a military solution than participants with the most dovish ideologies. In addition, the impact of ideology was larger the more the participant saw the evidence as favoring one solution over another (Odds ratio = 1.27, *p* = .02, 95% CI [1.05, 1.55]). In other words, in addition to the direct effects of ideology and perceived evidence, a participant who saw the evidence as completely favoring a military decision and also had the most militaristic attitude would be 1296% more likely to prefer a military solution than a participant who saw the evidence as most favoring political sanctions and had the most dovish ideology.

2. Understanding the Order in Which Information is Mentioned

To fully understand the dynamics of information sharing, the order in which information is shared with the group is important to understand at both the individual and group
levels. To examine the order in which information is mentioned at the individual level, separate rank-ordered logistic regressions were run on the individual level data and the group level data. The predictors examined in all analyses were the same: information that had a shared distribution, information that supported the participant’s preferred decision, and the perceived importance of the information. However, the interactions were not significant in any analysis and were subsequently dropped.

At the individual level, the rank-ordered logistic regression revealed that information that supported the participant’s preferred decision was mentioned significantly earlier in the discussion than information that did not support the participant’s preferred decision ($\beta = -.28, p = .01, 95\% \text{ CI } [-.50, -.07]$). In contrast, information that had a shared distribution was not a significant predictor of the order in which information was mentioned ($\beta = -.01, p = .95, 95\% \text{ CI } [-.20, .19]$). Perceived importance of information was also not a significant predictor of the order in which information was mentioned ($\beta = .01, p = .79, 95\% \text{ CI } [.08, .10]$). Subsequent interactions between the three predictors were also not significant, all $p$’s > .96.

This pattern of results at the individual level support the True Advocacy explanations of information sharing, as the results suggest that participants were defending their preferred decision first in the discussion before they discussed information that did not support their preferred decision. The Mathematical Probability explanations were not supported by these results, as these models suggest that shared information should be mentioned before unshared
information due to the probability advantage that shared information has over unshared information.

To examine the order in which information was shared at the group level, rank-ordered logistic regression analyses were run on the Traditional Data Set and the Advocacy Data Set. With the Traditional Data Set, which treated each group as having two observations: shared and unshared information, no variable was able to significantly predict the order in which information was mentioned, all p’s >.20. To control for the possibility of covariation between the predictors, in a subsequent analysis shared information was entered as the sole predictor of order but was still not significant (β = -.259, p =.29, 95% CI [-.72, .21]). However, with the Advocacy Data Set, which treated each group as having two observations: information that agreed with the preferred decision of the member who shared it and information that did not agree with the preferred decision of the member who shared it, information that agreed with the preferred decision of the member who shared it was mentioned significantly earlier in the discussion than information that did not agree with the preferred decision of the member who shared it (β = -1.08, p =.003, 95% CI [-1.80, -.36]).

The pattern of results at the group level from the Advocacy Data Set support the True Advocacy explanations of information sharing, as the results suggest that participants were defending their preferred decision first in the discussion before they discussed information that did not support their preferred decision. The Mathematical Probability explanations were not
supported by these results, as these models suggest that shared information should be mentioned before unshared information due to the probability advantage that shared information has over unshared information.

The lack of results at the group level from the Traditional Data Set suggest that the traditional manner of collapsing data from groups into shared and unshared observations results in losing important variation. Despite the Traditional Data Set being set up to capture variation between shared and unshared information at the group level, Mathematical Probability explanations were not supported by these results.

3. Decision Quality

As the amount of unshared information has been indicated to be a significant predictor of decision quality, whether or not the group adopted the correct decision was regressed, using logistical regression, onto condition and the amount of shared and unshared information mentioned divided by the total amount of shared and unshared information. This analysis revealed that more groups made the correct decision if the shared information supported a military decision than if the shared information supported a political decision (Odds ratio = 4.42, \( p = .004 \), 95% CI [1.61, 12.11]). This analysis revealed that neither the amount of unshared information that was mentioned (Odds ratio = 14.33, \( p = .20 \), 95% CI [.24, 864.47]), nor the amount of shared information that was mentioned (Odds ratio = .85, \( p = .81 \), 95% CI [.21, 3.43]) were significant predictors of decision quality. This model explained relatively little of the data, \( pseudo R^2 = .10 \).
To determine how advocacy affected decision quality, whether or not the group adopted the correct decision was regressed, using logistical regression, onto condition and the amount of information mentioned that supported and did not support the participant's preferred decision. This analysis revealed that more groups made the correct decision if the shared information supported a military decision than if the shared information supported a political decision (Odds ratio = 4.20, \( p = .007, 95\% \text{ CI} [1.48, 11.89] \)). This analysis also revealed that the amount of information a participant mentioned that did not support his or her preferred decision was a significant predictor of group decision quality (Odds ratio = 1.32, \( p = .015, 95\% \text{ CI} [1.06, 1.64] \)). In contrast, the amount of information a participant mentioned that did support his or her preferred decision was not a significant predictor of group decision quality (Odds ratio = .90, \( p = .24, 95\% \text{ CI} [.74, 1.08] \)). This model explained relatively little of the data, \( \text{pseudo}R^2 = .14 \).

To determine overall how information sharing impacted decision quality, whether or not the group adopted the correct decision was regressed, using logistical regression, onto the proportion of group members who initially preferred the correct decision, and the number of pieces of information that were mentioned that supported and did not support the correct decision. This revealed that the proportion of group members who initially preferred the correct decision was a major predictor of the group eventually choosing the correct decision (Odds ratio = 5057.42, \( p = .001, 95\% \text{ CI} [39.05, 655245.40] \)). The number of pieces of information that were mentioned that supported the correct decision was also a significant predictor of the group eventually choosing that decision (Odds ratio = 1.70, \( p = .006, 95\% \text{ CI} [1.16, 2.50] \)). However,
the number of pieces of information that were mentioned that did not support the correct decision was not a significant predictor of the group eventually choosing that decision (Odds ratio = 1.01, \( p = .92, 95\% \text{ CI } [.79, 1.29] \)). This model had good fit, \( \text{pseudo}R^2 = .61 \).
VI. DISCUSSION

This study examined the structure of information sharing at the individual and group levels using a hidden profile methodology. The study was designed to examine the relative merits of shared information sampling explanations of information sharing (Stasser & Titus, 1985; 1987; 2003), importance-based preference-consistency explanations of information sharing (e.g., Mojzisch & Schulz-Hardt, 2006; Wittenbaum et al., 2004), and true advocacy explanations of information sharing (Stasser & Titus, 1985; 1987). This was done by examining the relative predictive power of information with a shared distribution, information that supports a participant’s preferred decision, and the perceived importance of information.

A. Shared Information Sampling Explanations

At the individual level, the results suggested that shared information was more likely to be mentioned. However, once whether or not a piece of information supported the participant's preferred decision was included in regression models, it became clear that the effect of a shared information distribution was an artifact of the hidden profile methodology in which shared information favors one decision and unshared information favors another decision. In other words, the ability of shared information to predict mentioning at the individual level was caused by the tendency of shared information to support the participant’s preferred decision. Therefore, the results did not support shared information sampling explanations of information sharing at the individual level. This is actually supportive of Stasser and Titus’s (1985; 1987) contention that shared information was not a major determinant of individual level information sharing.
At the group level, the effect of shared information depended on how mentioning information was examined. When a shared information distribution was used to predict which particular pieces of information were likely to be mentioned, shared information served only as an indicator of the impact of other predictors. When a shared information distribution was used to predict the total number of pieces of information mentioned in a group discussion, a shared information distribution was predictive of increased mentioning of information. This pattern of findings thus provides only limited support for shared information sampling explanations at the group level.

In the current study, it was unclear what was causing the shared information sampling bias in the group level analyses. A shared information distribution was unable to predict the order in which information entered group discussion, which does not support mathematical probability explanations (Larson 1997; Larson et al., 1996). Participants also showed little sensitivity to the implicit behavior and preferences of other group members, which does not support mutual enhancement explanations (Wittenbaum et al., 1999). As the shared information sampling bias was only clear once observations of the group were sufficiently collapsed, it is a possibility that the observed shared information sampling bias was a byproduct of collapsing observations of group behavior.

As a result, more research is needed that examines the effects of shared information distributions separated from support for the participant’s preferred decision. For example, a
researcher might elect to not use a hidden profile methodology (e.g., Von Swol, 2007) or might control for the participant’s preferred decision, such as by measuring the participant’s prediscussion decision as was done in the current study.

The results from the group level analysis show that how the data is conceived at least partially determines the structure of group information sharing. For example, conceiving the data in the current study as providing 2 observations of each group (shared and unshared information) suggested a very different structure than if the data was conceived of providing 2 different observations of the group (information that does and does not support the group member’s preferences) or if data was conceived as providing 25 observations of the group (pieces of information given to the group). Thus, researchers should carefully consider how observations are collapsed when analyzing information sharing at the group level.

B. Importance-Based Preference-Consistency Explanations

The key hypothesis drawn from importance-based preference-consistency explanations (Greitemeyer & Schulz-Hardt, 2003; Van Swol, 2007) is that prediscussion importance ratings mediate the relationship between prediscussion preferences and mentioning information. Prediscussion importance ratings were higher for information that supported the participant’s preferred decision, which is similar to what previous researchers have found for post-discussion importance ratings (e.g., Van Swol, 2007). However, both at the individual and group levels, the current study found no evidence that the perceived importance of information was responsible
for the relationship between prediscussion preferences and mentioning information. Thus, the current study provided no support for importance-based preference-consistency explanations of group information sharing.

C. True Advocacy Explanations

True advocacy explanations (Stasser & Titus, 1985; 1987) state that people decide to share information because it supports his or her preferred decision, independent of the information’s importance. The current study provides strong support for true advocacy explanations at both the individual and group levels. Specifically, true advocacy was found at the individual level both in the presence of someone with an opposing decision preference and when every group member agreed. True advocacy at the group level was found to play a role in which particular pieces of information entered group discussion and also the overall number and type of information that entered group discussion. True advocacy, and not information distribution or the importance of the information, also predicted the order in which information entered group discussion. Thus, the current study contradicts Stasser and Titus’s (1985; 1987) hypothesis that two completely different processes explain information sharing at the individual (true advocacy) and group levels (mathematical probability). However, Stasser and Titus (1985; 1987) never directly tested this particular hypothesis. In addition, despite a growing body of research examining preference-based biases (e.g., Faulmuller, Mojzisch, Kerschreiter, & Schulz-Hardt, 2012; Steinel et al, 2010) this appears to be the first time that true advocacy has clearly been demonstrated in the literature.
The current study suggests that true advocacy at both the individual and group levels is best thought of as person trying to make the best argument for his or her preferred decision. This was shown by prediscussion preferences completely moderating the general effect of perceived importance of information on mentioning information at the individual and the group levels.

The current study also provided some evidence that people only made the best argument that they believed the situation required. This was shown by the moderating role of conflict within the group at the individual level. If, at the start of a discussion, no one disagreed with the eventual group decision, people simply mentioned information that supported their preferred decision, regardless of the importance of that information. If someone in the group disagreed with the eventual group decision, people started making better arguments. This was shown by people in these groups mentioning important information that supported their preferred decision. In short, perceived importance of information was only important if the information supported the participant’s preferred decision and someone disagreed with them.

Some participant’s efforts at trying to make the best argument for their preferred decision did not appear to be limited by the truth. This was shown by participants spontaneously misrepresenting information as supporting their preferred decision as well as including false information in information that did not support their decision. These results were similar to Steinel and colleagues (2010) finding that participants would distort information and lie about
information. However, unlike Steinel and colleagues (2010), the lying and distortion of information in the current study was spontaneous, as no instructions were given stating that this misrepresentation was permissible. Also, unlike Steinel and colleagues (2010), this lying and distortion was no more common in the presence of group conflict.

1. **Effects that Increase and Decrease True Advocacy**

Researchers have frequently argued that decision-based minorities need to actively work to defend their positions (e.g., Brodbeck et al., 2002; Meyers et al., 2000; Stewart & Stasser, 1998; Van Swol & Seinfeld, 2006), which would suggest that decision-based minorities show higher levels of true advocacy. The current study showed no support for this hypothesis. In groups where someone initially disagreed with the eventual group decision, both decision-based majorities and minorities tried to make the best arguments they could for their preferred decision. In other words, the same true advocacy effect was present in both participants who agreed with the eventual group decision and participants who disagreed with the eventual group decision.

Perceived group conflict also seemed likely to increase true advocacy, as perceiving conflict, as with decision-based minorities, seemed likely to make people try harder to defend their positions. However, the current study showed no support for this hypothesis. Instead, using two separate measures of perceived group conflict, the study suggests that perceiving higher levels of conflict made people try to discuss better and not argue harder. In other words, as perceived group conflict rose, people increasingly relied on the perceived importance of
information to determine what information to mention regardless of what decision that information supported. Apart from true advocacy, this appeared to be the only role that perceived importance of information played in the current study. As previous research examining conflict in information sharing setting (e.g., Devine, 1999) did not examine the role of perceived importance of information, more research on the topic is needed.

D. Decision Quality

The results showed that the mentioning of unshared information did not increase group decision quality, which is contrary to most research in the field (Lu et al., 2012). In contrast, the results showed that mentioning information that does not support the participant's preferred decision was predictive of decision quality. In short, the results suggest that decreasing true advocacy may play a larger role in decision quality than increasing the amount of unshared information that is mentioned.

E. Limitations

The current study was trying to compare the empirical merits of three different explanations for why information is shared in a group and clearly show the existence of true advocacy effects. Thus, a major limitation of the current study is that it did not directly manipulate true advocacy. Instead, the study manipulated the preconditions of true advocacy: prediscussion decisions and the perceived importance of information.
The generalizability of the current findings are limited by the college student sample, and the fact that the group members had equal status, no history together, and no expected future together. The nature of the task, such as its low demonstrability and simulationist nature, also may limit its generalizability. With that said, the task used in the study was similar to others used in group information sharing studies (e.g., Van Swol & Seinfeld, 2006). In addition, participants who changed their mind about their preferred decision during the discussion shared information in a similar manner to those participants who did not change their mind. This suggests that the findings can be generalized beyond settings in which individuals take principled stances prior to discussion.

The current study showed that the importance of information played a limited role in information sharing. This may have resulted from the fact that perceived importance of information was only measured before an individual was asked to make a decision, so any potential changes that resulted from making a decision, or the group discussion, could not be examined. In addition, pieces of information were designed to be of approximately equal importance prior to the discussion, which is standard practice in this line of research (e.g., Greitmeyer & Shulz-Hardt, 2003; Schulz-Hardt et al., 2006; Wittenbaum et al., 2004). The relative homogeneity of importance ratings may have decreased the impact of importance in the current study, at least at the group level of analysis. With that said, importance ratings of each piece of information did vary significant between individuals, which may at least partially
explain the decreased impact of importance ratings at the group level. Thus, future research may find it beneficial to use information with a wider range of importance ratings.

The current study did not measure or manipulate motivation, such as desired levels of accuracy. As recent research (e.g., Toma & Butera, 2009; Faulmuller et al., 2012) has shown that motivation plays an important role in information sharing, future research may find it beneficial to examine how motivation impacts information sharing.

Most of the findings from the current study come from logistic mixed regression models. As a result, two untested assumptions about the structure of the data were made. First, logistic regression models assume that the inverse-link function is defined by a logistic (0,1)cumulative distribution function. Future research may find it beneficial to assume a more flexible inverse-link function that can be estimated through the data. Second, mixed regression models assume that the random effects (i.e., within person/group effects) are normally distributed and independent of the predictors. Future research may find it beneficial to use more advanced statistical techniques that allows for potential violations of these assumptions.
VII. CONCLUSION

Overall, the current study suggests that true advocacy is an important and understudied phenomenon at both the individual and group levels of analysis. Similarly, the current study suggests that the field's focus on shared versus unshared information distributions may have been misplaced. Lastly, the study suggests that paying more attention to levels of analysis and to how data is conceived may help resolve many of the questions that remain in the group information sharing literature.
VIII. CITED LITERATURE


Steinel, W., Utz, S., & Koning, L. (2010). The good, the bad and the ugly thing to do when sharing information: Revealing, concealing and lying depend on social motivation, distribution and importance of information. Organizational Behavior and Human Decision Processes, 113, 85-96.


APPENDICES
Appendix A: Questionnaires

Ideology Questionnaire
Pin Number_______

Race/Ethnicity_________
Please answer the following questions by circling the numbers below. There are no right or wrong answers so please just state what you really think

1. The president of the United States has an obligation to militarily attack any country that may be providing terrorists with weapons of mass destruction.

   -3   -2   -1   0   1   2   3
   Strongly Disagree   Unsure   Strongly Agree

2. I believe that US military intervention is an acceptable way to deal with countries that may be selling weapons of mass destruction.

   -3   -2   -1   0   1   2   3
   Strongly Disagree   Unsure   Strongly Agree

3. Even with United Nations approval, preemptive or preventative attacks by the United States are NEVER justified.

   -3   -2   -1   0   1   2   3
   Strongly Disagree   Unsure   Strongly Agree

4. The United States is justified in taking preventative military action against possible threats from countries harboring or equipping terrorists, even if the country does not attack the United States or its allies first.

   -3   -2   -1   0   1   2   3
   Strongly Disagree   Unsure   Strongly Agree

5. The United States is NEVER justified to commit “regime change” and forcibly change the leaders of a nation.

   -3   -2   -1   0   1   2   3
   Strongly Disagree   Unsure   Strongly Agree

6. If the United States would take military action against countries harboring or equipping terrorists, do you think it would stabilize the situation in the Middle East or do you think it would make the situation in the Middle East more unstable.

   -3   -2   -1   0   1   2   3
   Much More Unstable   About the Same   Much More Stable

7. If the United States takes military action against countries harboring or equipping terrorists, do you think the threat of terrorism against Americans would be reduced or increased?

   -3   -2   -1   0   1   2   3
   Much Reduced   About the Same   Much Increased
8. If the United States takes military action against countries harboring or equipping terrorists, do you think it would further American interests in the Middle East, or do you think it would generate more problems for America in the long run?

<table>
<thead>
<tr>
<th>Further American Interests</th>
<th>Unsure</th>
<th>Generate More Problems</th>
</tr>
</thead>
<tbody>
<tr>
<td>-3</td>
<td>-2</td>
<td>-1</td>
</tr>
</tbody>
</table>
APPENDIX A (continued)

Decision Sheet

1. Pin Number___________

2. Based on the scenario and the items of information you have just read, if you had to
decide right now, which choice would you make

A
Political/Economic Sanctions

B
Limited Military Invasion

3. How confident are you about whether this is the best decision?

0 1 2 3 4 5 6

Not at All Moderately Extremely Confident

4. How difficult was it to make this decision?

0 1 2 3 4 5 6

Not at All Moderately Extremely Difficult

5. How important was it for you to make the best decision?

0 1 2 3 4 5 6

Not at All Moderately Extremely Important

6. Based on the evidence you have seen, how much danger does Country X pose to the US?

0 1 2 3 4 5 6

Not at All Dangerous Moderately Extremely Dangerous

7. Based on the evidence you have seen, how much danger to global security does Country
X represent?

0 1 2 3 4 5 6

Not at All Dangerous Moderately Extremely Dangerous

8. How strong did you find the evidence for political/economic sanctions?

0 1 2 3 4 5 6

Not at All Moderately Extremely Strong

9. How strong did you find the evidence for a limited military invasion?

0 1 2 3 4 5 6

Not at All Moderately Extremely Strong

10. Which choice do you think had stronger evidence for it?

-3 -2 -1 0 1 2 3

Political/Economic Sanctions Unsure Limited Military Invasion
APPENDIX A (continued)

Group Decision Sheet

11. Based on the scenario and the items of information you have just discussed, if the group had to decide right now, which choice would the group make?

A  B
Political/Economic Sanctions  Limited Military Invasion

12. How confident is the group about whether this is the best decision?

0  1  2  3  4  5  6
Not at All  Moderately  Extremely Confident

13. How difficult was it for the group to make this decision?

0  1  2  3  4  5  6
Not at All  Moderately  Extremely Difficult
APPENDIX A (continued)

Post-Discussion Decision Sheet

<table>
<thead>
<tr>
<th>Pin Number</th>
<th>Post-Discussion Decision Sheet</th>
</tr>
</thead>
</table>

1. What was your group’s decision?
   
   A  
   Political/Economic Sanctions  
   B  
   Limited Military Invasion

2. People do not always agree with the group’s decision. If you had to make your choice independently, what decision would you make?
   
   A  
   Political/Economic Sanctions  
   B  
   Limited Military Invasion

3. How confident are you about whether this is the best decision?
   
   0 1 2 3 4 5 6
   Not at All  Moderately  Extremely Confident

4. How difficult was it for you to make this decision?
   
   0 1 2 3 4 5 6
   Not at All  Moderately  Extremely Difficult

5. Based on the evidence you have seen, how much danger does Country X pose to the US?
   
   0 1 2 3 4 5 6
   Not at All Dangerous  Moderately  Extremely Dangerous

6. Based on the evidence you have seen, how much danger to global security does Country X represent?
   
   0 1 2 3 4 5 6
   Not at All Dangerous  Moderately  Extremely Dangerous

7. How strong did you find the evidence for political/economic sanctions?
   
   0 1 2 3 4 5 6
   Not at All  Moderately  Extremely Strong

8. How strong did you find the evidence for a limited military invasion?
   
   0 1 2 3 4 5 6
   Not at All  Moderately  Extremely Strong

9. Which choice do you think had stronger evidence for it?
   
   -3 -2 -1 0 1 2 3
   Political/Economic Sanctions  Unsure  Limited Military Invasion
Regarding the group discussion:

10. During the discussion, what percentage of the talking did you do?
   0%  10%  20%  30%  40%  50%  60%  70%  80%  90%  100%

11. Was there someone in the discussion who you would classify as a discussion leader?
   Yes  No

   If Yes, who was it (please describe them)_______________________
   ____________________________________________________________

12. How much conflict did your group have while coming to a decision?
   0  1  2  3  4  5  6
   Not at All  Moderate  Extreme Conflict

13. How would you characterize the discussion?
   a.  -3  -2  -1  0  1  2  3
      Tense  Relaxed
   b.  -3  -2  -1  0  1  2  3
      Argumentative  Peaceful
   c.  -3  -2  -1  0  1  2  3
      Unpleasant  Enjoyable

What is your gender?
   A  B  
   Female  Male

What is your age?________

What is your political affiliation? (for example, democrat, republican)______________

What do you believe was the research hypothesis?

______________________________________________________________________________
______________________________________________________________________________
Appendix B: Script and Scenario

Script Given to Study Administrators

1. Wait until EVERYONE has arrived.
2. Give debriefing forms.

Give directions:

We are conducting a study examining how people interpret and discuss information about intelligence data. Because scientists know so very little about how intelligence data is interpreted and discussed, this study could potentially have an impact on how government and intelligence committees handle and discuss information, so please take this study seriously.

In this study, we would like you to image being a member of the president’s cabinet discussing a potential national security risk from a hypothetical country. The president is relying on YOU to make a recommendation to him, which traditionally he will accept.

This study has three parts:
1) You will be given a scenario detailing a potential national security risk from a hypothetical country called Country X.

2) Then you will be given 13 pieces of information that represents the information that you know over and above that given in the scenario. You be asked to rate this information and make some preliminary decisions based on this information.

3) Then we will have a group discussion about this information, some of which may only be known to a single person in the group, and the group will then make a decision about whether to have a limited military invasion or use political or economic sanctions. You will have some pieces of information that no one else in the group has, and therefore, to make a good decision, you may want to discuss as much of your information as possible.

Also please remember that this study is examining how intelligence data is interpreted and discussed, which scientists know very little about, so it potential could have an impact on how government and intelligence committees handle and discuss information, so please take this study seriously.

Do you have any questions?
APPENDIX B (continued)

3. Give scenario
   Ask them to study the scenario for several minutes because the rest of the information and discussion will involve it (give them about 5-7 minutes or until everyone stops studying it).

4. Give Information pieces-These pieces are in two conditions (A, B and C) and (D, E, and F) MAKE SURE TO GIVE ALL THREE OF THESE
   Ask them to study each piece of information, and rate each piece of information.

   Explain that:
   *These pieces of information will be discussed in the group discussion following this. Please make sure that you know and can remember these pieces of information, because after the discussion starts, you will no longer have access to these pieces.*

   *You may be the only person who knows of some pieces of information in the discussion, while other pieces of information may be commonly known, so please study the pieces until you know them pretty well.*

   *Remember you are part of the president's cabinet, and the president is counting on you, so please study these pieces of information well so that you can remember them during the discussion. Also remember that some of these pieces of information may only be known to you.*

5. Take information packets

6. Position the subjects for the discussion and make sure that you can see everyone in the camera viewfinder.

7. Ask them to please start discussing the information and restate that:
   *The goal of this discussion is give a recommendation to the president about whether the US should conduct a limited military invasion or should pursue political and economic sanctions against Country X.*
   *Remember, because so little is known about how people discuss intelligence data, this study potentially may have an impact the government’s decision making process, so please take this study seriously and try to make the best decision possible.*
   *You are part of the president’s cabinet, and the president is counting on you.*
   *Remember during the discussion that you may have information that other people don’t, so you may want to discuss as much of your information as possible. In other words, some of these pieces of information may only be known to you, so you may want to discuss as much of your information as possible to help the group make the best decision it can.*
APPENDIX B (continued)

8. Give the group decision sheet and explain that they should fill this in after they have come to a decision, as a group on whether a limited military invasion or political/economic sanctions is a better choice.

9. Take the group decision sheet

10. Give them the post-decision questionnaire

11. Debrief them all together. Remember to tell them to not discuss the study.
APPENDIX B (continued)

Scenario

The following scenario is a hypothetical scenario that is being used to examine how people talk about and attempt to solve political issues. You will first be asked to study this scenario carefully, and then you will be asked to rate pieces of information that simulate knowledge that each individual person will know in the discussion.

An African nation, called Country X, has recently experienced a violent change of leadership in which the previous president was overthrown and lynched by a mob. A previous military advisor to the ex-president has set himself as the new leader. There is some evidence showing that the new leader ordered the ex-president’s death, and the government has shown no indication of prosecuting those involved in the murder. Although shocking, the international community has shown little interest in this because violent takeovers happen frequently in this part of the world.

The new leader’s advisors are mostly Islamic extremists, some of which have ties to terrorist organizations. In addition, the previous government was thought to be conducting research on how to produce chemical weapons such as sarin gas, a fatal nerve gas.

Though the country has no history of using chemical weapons such as sarin gas, it is unknown whether the new leader will use or sell sarin gas. Fueling international fears, the new leader has openly talked about the possibility that he could sell the sarin gas to encourage “Western imperialist forces” to leave the Middle East. A US led group of nations have demanded UN inspectors have access to the suspected sarin gas factory, but the new government of Country X has refused over and over again for the last six months.

The issue has been brought before the UN security council six times in the last three months. However, China has very close economic ties with Country X and as a result has vetoed all six resolutions, three authorizing military intervention and three authorizing political and economic sanctions. Last week the president of China issued a strongly worded speech in which he blasted the rest of the security counsel members, including Russia and France, for attempting to penalize Country X. Because of China’s seat as a permanent, veto-wielding member of the UN security counsel, no UN action can be taken without China’s approval. After this speech, Kofi Annan, the Secretary-General of the United Nations, stated in frustration that despite so much of the world’s support for action against Country X, China has almost single-handedly made it impossible to gain UN approval.

As a result, the US government is now debating whether sanctions (political and economic) or military intervention should be used without UN approval.

A sanction is a penalty imposed by one or more nations that acts to ensure a nation follows
APPENDIX B (continued)

international desires and law. There are two types of sanctions: political and economic. Political sanctions reduce or end diplomatic ties between two countries. For example, the withdrawal of one country’s embassy from another country is a type of sanction. Economic sanctions make trade between two or more countries difficult or impossible through embargos or tariffs (a tax on imported or exported goods). In some cases, economic sanctions can be as extreme as a naval blockade on the ports of a target country to prevent the country from exporting goods. In this scenario, the United States is considering the use of a naval and land blockade, along with reduced diplomatic ties and the freezing of all of Country X’s assets.

Military intervention usually includes the use of armed forces of one country against another. This could range from a carefully planned assault against a specific site to invasion and occupation of a target country. In this scenario, the United States is considering taking over the suspected sarin gas factory and, because of the leadership’s ties with terrorist organizations, a regime change.

The suspected sarin gas factory is located in an old cold-war era command center next to a major river. The factory is so deep underground that conventional bombing may not be effective, and if it is effective, the river is likely to be polluted and destroy the water supply for most of the nation and many of its neighbors. As a result, the only military option that is being considered is a limited military invasion involving a ground assault on the factory followed by a regime change.
Appendix C: Sample Informational Form

FORM A

1. **Summary:** A news reporter has reported seeing a small village of an ethnic minority where most of the people were dying or dead. The people’s symptoms were reported to be similar to those caused by sarin gas, but were also quite similar to the symptoms of some tropical diseases that occasionally strike in this region of Africa. However, no independent investigation has taken place and the military of Country X has blocked access to the region. If this does turn out to be a sarin gas attack, analysts believe that a military invasion would be the only way to save a large number of lives.

**Conclusion:** The government may be using the sarin gas on its own people, making a military invasion more justified.

1. What do you think the probability that the piece of information is (or will be) accurate or true

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<thead>
<tr>
<th>0%</th>
<th>10%</th>
<th>20%</th>
<th>30%</th>
<th>40%</th>
<th>50%</th>
<th>60%</th>
<th>70%</th>
<th>80%</th>
<th>90%</th>
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<tbody>
<tr>
<td>Definitely Inaccurate</td>
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<td></td>
<td></td>
<td></td>
<td>Definitely Accurate</td>
</tr>
</tbody>
</table>

2. How important is this piece of information to the discussion of whether to choose sanctions or a military invasion

<table>
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<tr>
<th>0</th>
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<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
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<tbody>
<tr>
<td>Not at All Important</td>
<td>Moderately</td>
<td>Extremely Important</td>
<td></td>
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</tbody>
</table>

3. How relevant is this piece of information to the discussion of whether to choose sanctions or a military invasion

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<thead>
<tr>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
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</tr>
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<tbody>
<tr>
<td>Not at All Relevant</td>
<td>Moderately</td>
<td>Extremely Relevant</td>
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4. How much potential danger to the US does this represent?

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<tr>
<td>Not at All Dangerous</td>
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<td>Extremely Dangerous</td>
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5. How much danger to global security does this represent?

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<th>3</th>
<th>4</th>
<th>5</th>
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<tr>
<td>Not at All Dangerous</td>
<td>Moderately</td>
<td>Extremely Dangerous</td>
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</table>

6. How much does this piece of information, by itself, support or oppose the choice of political/economic sanctions.

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<tr>
<th>-3</th>
<th>-2</th>
<th>-1</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly Opposes</td>
<td>Slightly Opposes</td>
<td>Slightly Supports</td>
<td>Supports</td>
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7. How much does this piece of information, by itself, support or oppose the choice of a limited military invasion

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<th>0</th>
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APPENDIX C (continued)

1. **Summary:** Brad Jenkins, a noted political scientist, has argued that a regime change risks completely destabilizing the country because of all the competing political and ethnic groups in the nation, most of which have their own militias. Political scientists rate the chance of civil war at 35%, which may greatly increase costs for the US and may create an environment in which terrorists can go freely.

**Conclusion:** Removing the leaders of Country X through a military invasion could result in a civil war, which could create a terrorist haven.

1. What do you think the probability that the piece of information is (or will be) accurate or true
   - Definitely Inaccurate
   - Definitely Accurate

2. How important is this piece of information to the discussion of whether to choose sanctions or a military invasion
   - Not at All Important
   - Moderately Important
   - Extremely Important

3. How relevant is this piece of information to the discussion of whether to choose sanctions or a military invasion
   - Not at All Relevant
   - Moderately Relevant
   - Extremely Relevant

4. How much potential danger to the US does this represent?
   - Not at All Dangerous
   - Moderately Dangerous
   - Extremely Dangerous

5. How much danger to global security does this represent?
   - Not at All Dangerous
   - Moderately Dangerous
   - Extremely Dangerous

6. How much does this piece of information, by itself, support or oppose the choice of political/economic sanctions.
   - Strongly Opposes
   - Slightly Opposes
   - Slightly Supports
   - Strongly Supports

7. How much does this piece of information, by itself, support or oppose the choice of a limited military invasion.
   - Strongly Opposes
   - Slightly Opposes
   - Slightly Supports
   - Strongly Supports
APPENDIX C (continued)

1. Summary: Country X has a moderately pro-Western opposition party that a recent poll suggests is supported by about a 65% of the population. A new study by the CIA suggests that, if the US provides the opposition party with funds and place economic sanctions on Country X, there is about a 75% chance that the opposition party could force elections within the next two years. In the meantime, the US would have to put a trade embargo in place to try to ensure that sarin gas does not leave Country X.

Conclusion: The is about a 75% chance that Country X may hold elections within the next two years if the US provides money to the new leader’s political opposition and places Country X under economic sanctions. This new government probably would be much more friendly toward the West.

1. What do you think the probability that the piece of information is (or will be) accurate or true is?
0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%
Definitely Inaccurate Definitely Accurate

2. How important is this piece of information to the discussion of whether to choose sanctions or a military invasion?
0 1 2 3 4 5 6
Not at All Important Moderately Extremely Important

3. How relevant is this piece of information to the discussion of whether to choose sanctions or a military invasion?
0 1 2 3 4 5 6
Not at All Relevant Moderately Extremely Relevant

4. How much potential danger to the US does this represent?
0 1 2 3 4 5 6
Not at All Dangerous Moderately Extremely Dangerous

5. How much danger to global security does this represent?
0 1 2 3 4 5 6
Not at All Dangerous Moderately Extremely Dangerous

6. How much does this piece of information, by itself, support or oppose the choice of political/economic sanctions?
-3 -2 -1 0 1 2 3
Strongly Opposes Slightly Opposes Supports Supports

7. How much does this piece of information, by itself, support or oppose the choice of a limited military invasion?
-3 -2 -1 0 1 2 3
Strongly Opposes Slightly Opposes Supports Supports
APPENDIX C (continued)

1. **Summary:** Noted psychologist, Rebecca Griggs, has compared Country X’s leader to an early Adolf Hitler in a recent article in the New York Times. She is quoted as saying: 

   *The US would be mistaken if it did not take military action toward Country X. The leader of Country X is psychologically very similar to a young Adolf Hitler and is quite violent and mentally unstable. He is known to have shot several people for offenses as minor as waking him up too early in the morning. Thinking of what this type of man may do with chemical weapons keeps me up at night.*

**Conclusion:** The leader of Country X may be mentally unstable and is extremely violent. Because of this, military action may be necessary to deal with him.

1. What do you think the probability that the piece of information is (or will be) accurate or true?
   - 0% Definitely Inaccurate
   - 10% 20% 30% 40% 50% 60% 70% 80% 90% 100% Definitely Accurate

2. How important is this piece of information to the discussion of whether to choose sanctions or a military invasion?
   - 0 Not at All Important
   - 1 Moderately
   - 2 Extremely Important

3. How relevant is this piece of information to the discussion of whether to choose sanctions or a military invasion?
   - 0 Not at All Relevant
   - 1 Moderately
   - 2 Extremely Relevant

4. How much potential danger to the US does this represent?
   - 0 Not at All Dangerous
   - 1 Moderately
   - 2 Extremely Dangerous

5. How much danger to global security does this represent?
   - 0 Not at All Dangerous
   - 1 Moderately
   - 2 Extremely Dangerous

6. How much does this piece of information, by itself, support or oppose the choice of political/economic sanctions?
   - -3 Strongly
   - -2 Slightly
   - -1 Slightly
   - 0 Strongly
   - 1 Opposes
   - 2 Supports
   - 3 Supports

7. How much does this piece of information, by itself, support or oppose the choice of a limited military invasion?
   - -3 Strongly
   - -2 Slightly
   - -1 Slightly
   - 0 Strongly
   - 1 Opposes
   - 2 Supports
   - 3 Supports
1. **Summary:** The CIA has recently received some unverified reports that a cabinet member of Country X has been in contact with Libya, inquiring whether the Libyans’ may be interested in buying sarin gas in the near future. A Libyan reporter has provided this information to Spanish intelligence along with some apparent correspondence between the cabinet member and the Libyan official. The pieces, along with photos of the two were shown to the President in a briefing. Because it is unknown whether other countries or groups may have been approached, CIA analysts believe that military action may necessary to determine if anyone was sold sarin gas and to try to recover the gas before it is too late.

**Conclusion:** There are some reports that Country X may be trying to sell sarin gas to other countries. Analysts believe military action may necessary to determine if anyone was sold sarin gas and to try to recover the gas before it is too late.

1. What do you think the probability that the piece of information is (or will be) accurate or true
   - 0% Definitely Inaccurate
   - 10% 20% 30% 40% 50% 60% 70% 80% 90% 100% Definitely Accurate

2. How important is this piece of information to the discussion of whether to choose sanctions or a military invasion
   - 0 Not at All Important
   - 1 2 3 4 5 6 Moderately Extremely Important

3. How relevant is this piece of information to the discussion of whether to choose sanctions or a military invasion
   - 0 Not at All Relevant
   - 1 2 3 4 5 6 Moderately Extremely Relevant

4. How much potential danger to the US does this represent?
   - 0 Not at All Dangerous
   - 1 2 3 4 5 6 Moderately Extremely Dangerous

5. How much danger to global security does this represent?
   - 0 Not at All Dangerous
   - 1 2 3 4 5 6 Moderately Extremely Dangerous
APPENDIX C (continued)

6. How much does this piece of information, by itself, support or oppose the choice of political/economic sanctions.

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7. How much does this piece of information, by itself, support or oppose the choice of a limited military invasion.

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1. **Summary:** The CIA has recently intercepted an email from a regional Al Qaida leader in Malaysia that talks at length about rejoicing for their powerful brothers in Africa. Followed immediately by a statement that he believes that his prayers for “new over powering weapons of war” have been answered. However, it is unclear whether he is referring to Country X or sarin gas. Because of the danger Al Qaida poses to the US, the director of the CIA is strongly arguing for a military invasion that would seize possible stockpiles of sarin gas and eliminate possibility that large quantities of sarin gas fall into Al Qaida’s hands.

**Conclusion:** A vague email from an al Qaida leader suggests that he may be expecting or has received sarin gas from Country X. Al Qaida is so dangerous that the CIA sees the safest course of action to be an invasion of Country X.

1. What do you think the probability that the piece of information is (or will be) accurate or true?

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<th>10%</th>
<th>20%</th>
<th>30%</th>
<th>40%</th>
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<tr>
<td>Definitely Inaccurate</td>
<td>Definitely Accurate</td>
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2. How important is this piece of information to the discussion of whether to choose sanctions or a military invasion?

   | 0 | 1 | 2 | 3 | 4 | 5 | 6 |
   | Not at All Important | Moderately Important |

3. How relevant is this piece of information to the discussion of whether to choose sanctions or a military invasion?

   | 0 | 1 | 2 | 3 | 4 | 5 | 6 |
   | Not at All Relevant | Moderately Relevant |

4. How much potential danger to the US does this represent?

   | 0 | 1 | 2 | 3 | 4 | 5 | 6 |
   | Not at All Dangerous | Moderately Dangerous |

5. How much danger to global security does this represent?

   | 0 | 1 | 2 | 3 | 4 | 5 | 6 |
   | Not at All Dangerous | Moderately Dangerous |

6. How much does this piece of information, by itself, support or oppose the choice of political/economic sanctions.

   | -3 | -2 | -1 | 0 | 1 | 2 | 3 |
   | Strongly Opposes | Slightly Opposes | Slightly Supports | Strongly Supports |

7. How much does this piece of information, by itself, support or oppose the choice of a limited military invasion.

   | -3 | -2 | -1 | 0 | 1 | 2 | 3 |
   | Strongly Opposes | Slightly Opposes | Slightly Supports | Strongly Supports |
APPENDIX C (continued)

1. Summary: A new CIA study suggests that because the economy has been so bad since the new leader of Country X seized power, there is a 45% chance that a rebellion or civil would start if economic sanctions were put in place. In other words, citizens of Country X are already upset about the economy, and if the US makes the economy worse by economic sanctions, a rebellion or civil war could start. If this happens, it is virtually assures that thousands of civilians would die due to famine and lawlessness.

Conclusion: The CIA believes that economic sanctions have a 45% chance of causing a rebellion or civil war in Country X. This would kill thousands of civilians.

1. What do you think the probability that the piece of information is (or will be) accurate or true  
   0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%  
   Definitely Inaccurate  Definitely Accurate

2. How important is this piece of information to the discussion of whether to choose sanctions or a military invasion  
   0 1 2 3 4 5 6  
   Not at All Important  Moderately  Extremely Important

3. How relevant is this piece of information to the discussion of whether to choose sanctions or a military invasion  
   0 1 2 3 4 5 6  
   Not at All Relevant  Moderately  Extremely Relevant

4. How much potential danger to the US does this represent?  
   0 1 2 3 4 5 6  
   Not at All Dangerous  Moderately  Extremely Dangerous

5. How much danger to global security does this represent?  
   0 1 2 3 4 5 6  
   Not at All Dangerous  Moderately  Extremely Dangerous

6. How much does this piece of information, by itself, support or oppose the choice of political/economic sanctions.  
   -3 -2 -1 0 1 2 3  
   Strongly Opposes  Slightly Slightly Strongly  
   Opposes  Supports  Supports

7. How much does this piece of information, by itself, support or oppose the choice of a limited military invasion  
   -3 -2 -1 0 1 2 3  
   Strongly Opposes  Slightly Slightly Strongly  
   Opposes  Supports  Supports
APPENDIX C (continued)

1. **Summary:** Country X has a large timber industry that provides raw wood to neighboring African countries. Sanctions creating a land blockade could be put in place that would severely cripple this industry. Economic analysts believe that shutting down this industry would create civil unrest and cause a good amount of pressure on the government to do what the international community wants.

**Conclusion:** A large section of Country X’s economy is based on the export of wood. This could be shut down through economic sanctions to put pressure on the government.

1. What do you think the probability that the piece of information is (or will be) accurate or true
   
   0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%
   
   Definitely Inaccurate Definitely Accurate

2. How important is this piece of information to the discussion of whether to choose sanctions or a military invasion
   
   0 1 2 3 4 5 6
   
   Not at All Important Moderately Extremely Important

3. How relevant is this piece of information to the discussion of whether to choose sanctions or a military invasion
   
   0 1 2 3 4 5 6
   
   Not at All Relevant Moderately Extremely Relevant

4. How much potential danger to the US does this represent?
   
   0 1 2 3 4 5 6
   
   Not at All Dangerous Moderately Extremely Dangerous

5. How much danger to global security does this represent?
   
   0 1 2 3 4 5 6
   
   Not at All Dangerous Moderately Extremely Dangerous

6. How much does this piece of information, by itself, support or oppose the choice of political/economic sanctions.
   
   -3 -2 -1 0 1 2 3
   
   Strongly Slightly Slightly Strongly
   
   Opposes Opposes Supports Supports

7. How much does this piece of information, by itself, support or oppose the choice of a limited military invasion
   
   -3 -2 -1 0 1 2 3
   
   Strongly Slightly Slightly Strongly
   
   Opposes Opposes Supports Supports
APPENDIX C (continued)

1. **Summary:** Because the current leader of Country X was a trusted advisor to the previous government, we have recently gathered some insight into his negotiation tactics. Based on documents gathered by Angolan and Namibian intelligence, in heated negotiations with the Congolese government over Country X’s support for rebel groups in 1998, the current leader suggested that the previous government of Country X “tell the Congolese what they want to hear and then give them a signed document so they can go home proud. *Words are much easier than real change.*” These documents suggest that the current leader of Country X may not be trustworthy and that any eventual disarmament pact gained through sanctions might be quickly broken.

**Conclusion:** The new leader of Country X has advocated blatant lying in negotiations before. Because any pact gained might be quickly broken, it is believed that political or economic sanctions may be ineffective.

1. What do you think the probability that the piece of information is (or will be) accurate or true
   - 0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%
   - Definitely Inaccurate
   - Definitely Accurate

2. How important is this piece of information to the discussion of whether to choose sanctions or a military invasion
   - 0 1 2 3 4 5 6
   - Not at All Important
   - Moderately
   - Extremely Important

3. How relevant is this piece of information to the discussion of whether to choose sanctions or a military invasion
   - 0 1 2 3 4 5 6
   - Not at All Relevant
   - Moderately
   - Extremely Relevant

4. How much potential danger to the US does this represent?
   - 0 1 2 3 4 5 6
   - Not at All Dangerous
   - Moderately
   - Extremely Dangerous

5. How much danger to global security does this represent?
   - 0 1 2 3 4 5 6
   - Not at All Dangerous
   - Moderately
   - Extremely Dangerous

6. How much does this piece of information, by itself, support or oppose the choice of political/economic sanctions.
   - -3 -2 -1 0 1 2 3
   - Strongly
   - Slightly
   - Slightly
   - Strongly
   - Opposes
   - Opposes
   - Supports
   - Supports
7. How much does this piece of information, by itself, support or oppose the choice of a limited military invasion

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APPENDIX C (continued)
APPENDIX C (continued)

1. **Summary:** A recent survey conducted by Granger-Thompson showed that the majority (56%) of citizens of Country X have negative or wary sentiments of the United States government. Several political analysts have used this evidence to argue against military intervention. A prominent political analyst has argued, “[Military intervention] would increase the perception that US is openly hostile, and, worse, it would increase the intensity of their anger. This could potentially create more terrorists aimed at the US.”

**Conclusion:** Because of current wary sentiments, military intervention by the US could result in more anger and possibly more terrorist attacks aimed at the US.

1. What do you think the probability that the piece of information is (or will be) accurate or true

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   Definitely Inaccurate     Definitely Accurate

2. How important is this piece of information to the discussion of whether to choose sanctions or a military invasion

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   Not at All Important    Moderately    Extremely Important

3. How relevant is this piece of information to the discussion of whether to choose sanctions or a military invasion

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4. How much potential danger to the US does this represent?

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   Not at All Dangerous    Moderately    Extremely Dangerous

5. How much danger to global security does this represent?

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   Not at All Dangerous    Moderately    Extremely Dangerous

6. How much does this piece of information, by itself, support or oppose the choice of political/economic sanctions.

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   Strongly    Slightly    Slightly    Strongly
   Opposes    Opposes    Supports    Supports

7. How much does this piece of information, by itself, support or oppose the choice of a limited military invasion

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   Strongly    Slightly    Slightly    Strongly
   Opposes    Opposes    Supports    Supports
1. **Summary:** In the past, countries under economic sanctions, such as Country X may be, require large quantities of international food and medical aid to prevent large scale famine. Because of the governments’ requirement of hard cash, the governments have frequently seized these aid shipments and sold them for hard currency. Thus, little of the food aid provided under economic sanctions may reach the people it was intended for, meaning that thousands may starve and the government may still have some money.

**Conclusion:** The government of Country X may sell off the international food aid, meaning that thousands would starve as a result of economic sanctions.

1. What do you think the probability that the piece of information is (or will be) accurate or true
   
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2. How important is this piece of information to the discussion of whether to choose sanctions or a military invasion
   
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4. How much potential danger to the US does this represent?
   
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5. How much danger to global security does this represent?
   
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6. How much does this piece of information, by itself, support or oppose the choice of political/economic sanctions.
   
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7. How much does this piece of information, by itself, support or oppose the choice of a limited military invasion
   
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1. **Summary:** A nation, currently believed to be Pakistan, has reported to UN officials investigating Country X that a company under investigation for tax evasion has received an order to ship large quantities of several key chemicals used to make sarin gas to Country X in the last 3 months. These chemicals also have industrial uses in Country X, but this company only recently has started doing business with companies in Country X. Most suspiciously, one of these shipments was requested by a company that had shut down a week before the order was placed. An economic trade embargo would stop these shipments and would probably slow or eliminate the production of sarin gas.

**Conclusion:** Country X appears to be buying chemicals internationally that are used to make sarin gas. These chemical shipments could be stopped by economic sanctions, which would slow or stop the production of sarin gas.

1. What do you think the probability that the piece of information is (or will be) accurate or true
   - Definitely Inaccurate
   - Definitely Accurate
2. How important is this piece of information to the discussion of whether to choose sanctions or a military invasion
   - Not at All Important
   - Moderately Important
   - Extremely Important
3. How relevant is this piece of information to the discussion of whether to choose sanctions or a military invasion
   - Not at All Relevant
   - Moderately Relevant
   - Extremely Relevant
4. How much potential danger to the US does this represent?
   - Not at All Dangerous
   - Moderately Dangerous
   - Extremely Dangerous
5. How much danger to global security does this represent?
   - Not at All Dangerous
   - Moderately Dangerous
   - Extremely Dangerous
6. How much does this piece of information, by itself, support or oppose the choice of political/economic sanctions?
   - Strongly Opposes
   - Slightly Opposes
   - Slightly Supports
   - Strongly Supports
APPENDIX C (continued)

7. How much does this piece of information, by itself, support or oppose the choice of a limited military invasion

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2. Summary: Based on past humanitarian efforts in Somalia, North Korea and other countries, the State department has just released a report suggesting that the government of Country X, and not international humanitarian organizations, will probably be in charge of administering international food aid to its people. The new leader of Country X, as was the case in these other counties, is too afraid of spying to let international aid workers in the country. In the most likely scenario, the international aid workers will leave the food aid at the airport and leave the government of Country X to distribute the food to the people in whatever manner it chooses. This may mean that many common people will starve if Country X is placed under economic sanctions. The government of Country X will probably not allow international aid workers to distribute the international food aid that would keep the common people from starving due to the economic sanctions. Instead, the government of Country X will distribute the food aid as it chooses, meaning that many common people may starve because of the economic sanctions.

Conclusion:

1. What do you think the probability that the piece of information is (or will be) accurate or true is?

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2. How important is this piece of information to the discussion of whether to choose sanctions or a military invasion?

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3. How relevant is this piece of information to the discussion of whether to choose sanctions or a military invasion?

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4. How much potential danger to the US does this represent?

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APPENDIX C (continued)

6. How much does this piece of information, by itself, support or oppose the choice of political/economic sanctions.

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7. How much does this piece of information, by itself, support or oppose the choice of a limited military invasion

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VITA

Education
University of Illinois at Chicago
   PhD (2013) in Social and Personality Psychology
   Dissertation Title: *Group information sharing: True advocacy and the importance and distribution of information*
   Chair: Daniel Cervone
   Minor: Statistics, Methods, and Measurement
University of Tennessee at Chattanooga
   M.S. (2003) in Research Psychology
Baker University
   B.A. (1999) in Religion, French, and Philosophy (Summa Cum Laude)
   B.S. (1999) in Psychology (Summa Cum Laude)

Recent Employment
Teaching Assistant (August, 2012-May, 2013)
Department of Psychology
University of Illinois at Chicago

   Lead Evaluator (June, 2011 until end of grant in September, 2012)
Center of Excellence in the Elimination of Disparities (CEED@Chicago),
Midwest Latino Health Research, Training, and Policy Center
University of Illinois at Chicago

Publications
Books
Articles


**Policy Briefs**
CEED@Chicago Coalition (2011). In support of urban agriculture: Recommendations to the Chicago city council- Signed by Lt. Governor Sheila Simon.

**Papers in Preparation**
Krauss, S. Preference-based biases in group information sharing: A social cognitive account.
Krauss, S. Motivation in group information sharing.
Invited Lectures


Presentations


Grants
Research Award ($1000 Grant) - University of Tennessee at Chattanooga (2001).

Awards and Achievements
Sigma X Award, Best Masters in University – University of Tennessee at Chattanooga (2003).
Best in Division Award -Great Plains Psychological Conference (1998).
French Departmental Scholarship (1998)-Central College.
Cokesbury Award for Achievement in Religious Studies (1997).
Outstanding Progress in French Award (1997).

Teaching Experience
Statistics - University of Illinois at Chicago (2010).
Writing in Psychology - University of Illinois at Chicago (2006).
Research Methods- Loyola University-Chicago (2005).
Personality- University of Illinois at Chicago (2003).
Statistics -University of Tennessee at Chattanooga (2002).

Ad Hoc Reviewing

Languages Spoken
English, Romanian, and French