Collaborative Group Memory: Processes, Performance, and Techniques for Improvement

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Abstract

Groups are often asked to perform important tasks that require them to remember and report accurate information. A review of research on memory processes in groups suggests that collaboration enhances select performance outcomes. Collaboration allows group members to pool their memories and correct one another's memory errors. Nonetheless, there are opportunities for improvement in the memory performance of collaborative groups. Collaborative groups typically do not recall as much information as the same number of individuals working alone and sometimes fail to correct the memory errors of their members. In this article, we integrate research findings to present an account of collaborative group memory processes and performance. We present a cognitive-social-motivational framework for viewing collaborative group memory processes, emphasize the value of collaboration on memory tasks, and suggest ways in which collaborative group memory performance may be improved.

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In the film *12 Angry Men* (Fonda, Justin, Rose, & Lumet, 1957), a jury must judge the guilt or innocence of a teenage boy on trial for the murder of his father. With an initial vote of 11–1 in favor of guilty, the fate of the teenager seems sealed from the start. Nonetheless, the lone juror voting not guilty encourages the men to discuss the case in more depth. The discussion soon leads to a new poll, and a new distribution of votes at 8–4 in favor of not guilty. The remaining jurors voting guilty base their vote largely on the testimony of a lady who claims she saw the murder through the windows of a passing train. As some of the jurors begin to discuss the possibility of a hung jury, a juror recalls an important fact. The lady who claimed she saw the murder had indentations on her nose, suggesting that she wore glasses. This recalled information, along with reasonable doubt that she had been wearing glasses at the time of the murder, eventually influenced the jury to discount the validity of her testimony and issue a verdict of not guilty.

As with the jury in *12 Angry Men*, all juries must remember presented evidence and case details before reaching a verdict (Pritchard & Keenan, 2002). Likewise, other collaborative groups often need to remember critical information. For example, management teams recollect the successes of previous endeavors before initiating similar ones (Klein, 1999), and human resource teams recall employee strengths and weaknesses when conducting performance appraisals (Martell & Leavitt, 2002). The outcomes of group tasks such as these often rely heavily on the accurate memory of group members and their ability to combine their memories into an accurate consensus account. By collaborating, group members can pool their memories, fill in one another's memory gaps, and correct

one another's memory errors to achieve effective group memory performance (Hinsz, 1990).

This article has three primary objectives. First, we show that collaborative group memory processes can be viewed from a cognitive-social-motivational framework. We describe how cognitive, social, and motivational processes independently and collectively influence collaborative group memory performance. Second, we show that collaboration is important for productive and accurate group memory performance. We review research concerning information pooling and error correction in groups, describe strengths and limitations associated with collaboration on memory tasks, and emphasize the importance of collaboration for accurate group memory performance. Third, we describe techniques by which collaborative group memory performance may be improved.

A Cognitive–Social–Motivational Framework

When collaborative groups attempt to remember information, several processes are involved. Paulus and Brown (2007) argue that a cognitive-social–motivational framework summarizes group brainstorming processes. Group memory research suggests that cognitive, social, and motivational processes influence memory performance as well. This is not surprising because group memory and brainstorming are similar generation-type tasks (McGrath, 1984). Groups coming together to generate ideas and remember information involve both sharing and evaluating information. Yet, group memory tasks and brainstorming exercises have important differences. For example, group memory tasks tend to emphasize the importance of accuracy (Hartwick, Sheppard, & Davis, 1982), whereas brainstorming tasks tend to emphasize the importance of creativity (Paulus & Nijstad, 2003). Nonetheless, the extensive similarities of these generation-type tasks allow connections to be drawn between the processes involved in group brainstorming and those in group memory tasks.

Cognitively, members must recollect and monitor their own memories, determine the validity of these memories, decide whether these memories should be presented to the group, and assess the validity of memories presented by other members. Socially, members must defend the memories that they present to the group, argue for or against the memories presented by other members, and arrive at a consensus account of the material remembered. Hinsz (1990) argued that cognitive and social processes play important roles in group memory contexts. He asked participants to watch a simulated job interview and then work either as part of a six-person group or alone on a true/false recognition test. He showed that collaborative groups tended to arrive at a correct memory response when at least half of their members were correct. The tendency of groups to choose the correct response when only half of their members were correct required that members engage in cognitive processes such as making judgments about the validity of remembered information and social processes such as arriving at a consensus account of the material remembered.

Motivation also appears to influence collaborative group memory performance. The vigor with which members participate in the above-mentioned activities varies as a function of how motivated they are to remember. For example, Weldon, Blair, and Huebsch (2000) showed that collaborative groups recall more items in a word–list paradigm when they are presented with an opportunity to gain a monetary award than when they are not. Motivation may play a large role in many natural group contexts. For example, juries are fully aware that the verdicts they reach directly influence the fate of the defendant.

Consequently, the validity of juror memories may receive special scrutiny from other jurors because of perceived accountability.

Although cognitive, social, and motivational processes can be discussed independently, they have a combined impact on the memory performance of collaborative groups. Throughout this article, we consider collaborative group memory processes and performance from a cognitive-social–motivational framework. Figure 1 represents a summary diagram of a cognitive-social-motivational framework for viewing collaborative group memory processes. This diagram depicts direct influences of cognitive, social, and motivational processes, as well as interactions between these processes on collaborative group memory performance. Also included are example processes related to the framework. The next section examines the processes that influence collaborative group memory in terms of quantity and accuracy of remembered information.

Collaborative Group Memory Processes and Performance

Traditionally, comparisons of group and individual memory performance have focused on the quantity and quality of information remembered (Hartwick et al., 1982; Hinsz, 1990). Do groups or individuals remember more presented information? Do groups or individuals remember information more accurately? How do groups perform relative to nominal groups whose memory consists of the pooled, nonredundant memories of individuals working alone? This last question is methodologically important because it allows one to draw conclusions about the effects of collaboration on memory performance. Members of collaborative groups interact and can discuss their memories, whereas nominal groups cannot. Research indicates that collaborative groups outperform individuals, and nominal groups often outperform collaborative groups, in terms of the quantity of presented information remembered. In terms of accuracy of remembered material,
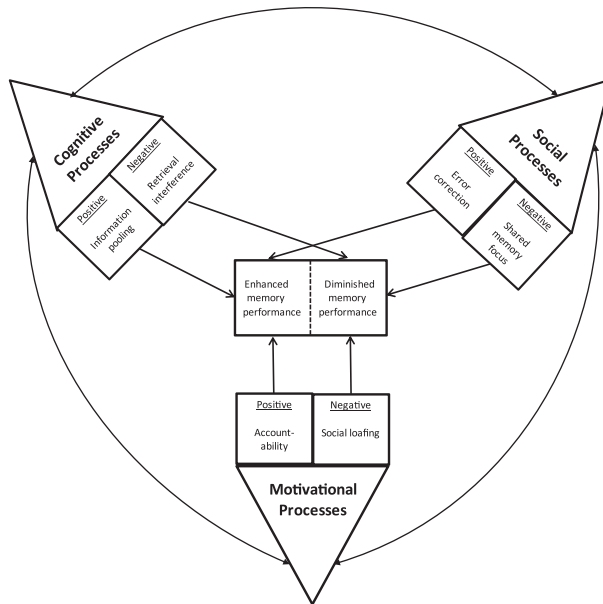
Figure 1 A cognitive-social-motivational framework for viewing collaborative group memory processes with examples of related processes.

collaborative groups outperform both individuals and nominal groups. We next address how research concerning information pooling and error correction in collaborative groups helps us understand these patterns of memory outcomes.

Information pooling

Collaboration on memory tasks allows group members to combine their memories and fill in one another's memory gaps. In the film *12 Angry Men*, the jurors combined their recollections about presented evidence and case details. This allowed the jury to consider and discuss multiple aspects of the case, many of which a lone juror may not have remembered. Groups have been shown to remember more information than individuals for both simple (e.g., Maki, Weigold, & Arellano, 2008) and complex materials (e.g. Pritchard & Keenan, 2002; Van Swol, 2008). When group members attempt to remember the large amounts of information by themselves, they remember only a limited subset of the information presented to them. When group members collaborate with others in their group, they can combine their memories and remember larger subsets of presented information.

Members of collaborative groups also tend to remember information better than individuals at later points in time (e.g., Hartwick et al., 1982). For example, Rajaram and Pereira-Pasarin (2007) found that participants performed better on a recognition test when they initially responded to the same recognition test in collaboration with two others than when they initially worked alone. This effect was found to be significant even when the second test was delayed up to 1 week. Although Rajaram and Pereira-Pasarin do not identify mechanisms underlying the later improvement in the memory of group members compared to persons who were not previously group members, this effect may result from the greater exposure to presented information that group members receive when they discuss their recollections.

Although collaborative groups consistently recall more information than individuals (Vollrath, Sheppard, Hinsz, & Davis, 1989), they often fail to recall as much presented information as nominal groups.[1] For example, Maki et al. (2008) presented groups and individuals with lists of associatively related words and tested them on their recall. Collaborative groups forming consensus responses recalled fewer presented words than nominal groups. The failure of collaborative groups to recall as much presented information as nominal groups has been termed 'collaborative inhibition' (Weldon & Bellinger, 1997). The primary concern arising from collaborative inhibition is that the pooling of information that occurs in collaborative groups does not reach the performance levels of that achieved by pooling the memories of an equal number of individuals working alone.

Cognitive, social, and motivational explanations for collaborative inhibition have been tested. From a cognitive perspective, Basden, Basden, Bryner, and Thomas (1997) provide evidence that retrieval interference may lead to collaborative inhibition. Retrieval interference occurs when hearing other group members' recall disrupts one's own subjective organization and retrieval strategies. For example, if group members initially attempt to organize their recall by a specific category, this retrieval strategy may be disrupted when they listen to and attempt to help other group members recall words from other categories. Basden et al. (1997) employed noninteracting groups in their study, so it is not clear that retrieval interference entirely explains collaborative inhibition in interacting groups. Interacting groups may develop strategies to recall information distinct from those of noninteracting groups. For example, members of interacting groups may encourage one another to focus their recall on specific information. Nonetheless, retrieval interference should at least in part explain collaborative inhibition among interacting groups.

Collaborative recall can be conceived of as a divided attention task in which cognitive resources are devoted not only to recalling information but also to listening to and critiquing the recall of others (Pavitt, 2003). Cognitive resources that could be spent recalling information are devoted to other social and cognitive tasks. Therefore, strategies that reduce retrieval interference may reduce collaborative inhibition.

A potential social explanation for collaborative inhibition concerns the influence of shared and unshared memories in collaborative groups (Stewart, Stewart, & Walden, 2007; Wittenbaum & Park, 2001). Shared memories are common to more than one group member, whereas unshared memories are unique to only one group member. Research indicates that collaborative groups may be especially likely to mention and discuss the validity of their shared memories (e.g., Stewart et al., 2007). Consequently, unshared memories receive less attention at the collaborative level and are unlikely to be contributed to the information pool.

Weldon et al. (2000) explored the role of several motivational explanations for collaborative inhibition. For example, they considered social loafing, evaluation apprehension, personal accountability, and group cohesiveness as explanatory motivational factors. Although varying these motivational factors sometimes increased the overall level of recall, the relative difference between collaborative groups and nominal groups remained the same. At this time, there is a lack of evidence that motivational factors have a direct contribution to collaborative inhibition.

The group memory literature indicates that members of collaborative groups pool their memories and fill in one another's memory gaps (e.g., Hinsz, 1990). Pooling memories allows groups to remember more presented information than individuals. Nonetheless, collaborative group members do not pool all of their memories, as indicated by poorer collaborative memory relative to nominal groups of the same size. Cognitive processes such as retrieval interference, and social processes such as the tendency to focus on shared memories, prevent collaborative groups from aggregating all available memories. In these ways, aspects of the cognitive-social-motivational framework can aid in understanding collaborative inhibition that is associated with incomplete pooling of memories in collaborative groups. Yet, some of the limitation in information pooling of collaborative groups can be offset by the error correction these groups achieve.

Error correction

Collaboration allows for the correction of memory errors among group members. Memory errors refer to incorrect recollections about presented information and may include information that was simply not presented (i.e., a false memory) or information that was presented but remembered incorrectly (e.g., remembering that an event occurred, but incorrectly remembering details surrounding that event).[2] Discussing individual recollections within a group allows the members to evaluate the validity of their memories (Hinsz, 1990). In juries such as the one depicted in *12 Angry Men,* jurors recall presented evidence together and correct one another's incorrect recollections (Pritchard & Keenan, 2002). Collaborative groups correcting the memory errors of their members reflect a combination of cognitive, social, and motivational processes. This error correction has been shown in numerous laboratory studies (e.g., Maki et al., 2008). For example, Betts (2009) found that recall as a group response included significantly fewer false memories than recall of members before they remembered as a group.

Collaborative groups also tend to have better memory judgment strategies than individuals in that they are better able to identify the likelihood that their memory responses are

correct and incorrect (i.e., meta–memory accuracy; Hinsz, 2004). For example, Hinsz (1990) asked groups and individuals to rate their confidence in the recognition of judgments and found that groups evaluated the accuracy of their memories more effectively than individuals. The processes related to better memory strategies in groups becomes important in a number of situations. For example, the decision processes of a jury may be affected by how confident they are in their memory for case details.

Not all forms of collaboration allow for error correction. For error correction to occur, interaction between group members is necessary (e.g., Maki et al., 2008). When group members do not interact (e.g., turn taking), they can only pool their memories (Basden et al., 1997). Because collaborative groups can correct the memory errors of their members, they produce more accurate memory responses than noninteracting groups (e.g., Maki et al., 2008).

Despite tendencies of collaborative group members to correct one another's memory errors, not all errors are corrected. To some degree, collaborative groups compensate for remembering less information than nominal groups by correcting the memory errors of their members. However, correcting memory errors is not easy. Research suggests that it may be easier to argue that presented information was presented than that nonpresented information was not presented. Clark and collaborators use the example of a group member remembering the presentation of the word 'horse' and supporting this memory by describing why he or she remembers the word (the word 'horse' made the participant think of the television series, *Mr. Ed*) (Clark, Abbe, & Larson, 2006; Clark et al., 2000). Presenting a rationale for why one remembers information tends to convince group members who do not remember that information to accept that it was presented. This helps explain why collaborative groups are effective at filling in memory gaps among their members. Presented information that is forgotten or never encoded by some group members is provided to them by group members who remember that information. Alternatively, arguing that information was not presented is more difficult because, aside from lack of familiarity, people typically cannot provide reasons for their lack of memory. Failure to remember information may accurately reflect the information not being presented, but it may also be a result of a failure in the member's memory.

There may also be situations in which collaborative groups are uniquely likely to produce memory errors. Betts (2009) demonstrated that collaborative groups are more likely to falsely remember information when they develop a strong shared representation about presented information. A shared representation is 'any task/situation-relevant concept, norm, perspective or cognitive process that is shared by most or all of the group members' (Tindale, Smith, Thomas, Filkins, & Sheffey, 1996). When a strong shared representation about presented information develops in collaborative groups, group members tend to remember information that fits the shared representation but was not presented. These false memories tend to be supported by other group members because they fit the group's shared representation about presented information. Therefore, shared representations can lead groups to exaggerate memory errors, even though collaborative groups often correct memory errors among their members (Betts, 2009; Maki et al., 2008). We next highlight the importance of collaboration in groups for accurate collaborative group memory performance.

The Importance of Collaboration on Memory Tasks

There are trade-offs between quantity and quality of memory performance for collaborative and nominal groups. Nominal groups recall more information than collaborative groups, but collaborative groups are able to correct memory errors unlike nominal groups.

The question then arises as to whether collaboration in group settings is advantageous for memory performance.[3] In our view, collaboration is essential for accurate group memory performance because of the potential consequences associated with memory errors. In a typical jury, members discuss their views and reach a verdict; however, consider a jury that decides to pool its jurors' memories about the case and preferred verdicts by writing them down and giving them to the jury foreperson (similar to a nominal group). The jury foreperson then considers the various memories and preferred verdicts of the jurors and makes a decision as to the guilt or innocence of the defendant. Aside from concerns about bias of the foreperson, the possibility exists that critical memories of the jurors will be inaccurate. A juror may recall evidence that was not presented, and this evidence may not be contradicted by any of the other jurors. The jury foreperson's decision could be predicated upon this faulty evidence, potentially leading to an inappropriate verdict.

Notably, unfortunate consequences can also result from a group's inability to remember presented information. We described how a juror in *12 Angry Men* recalled an important fact in the case that swayed the votes of several jurors. Groups whose members recall information individually (i.e., nominal groups) may be more likely than collaborative groups to remember such additional information. However, nominal groups are also more likely to falsely remember information that was not presented, so using nominal groups for recollections should only occur with full consideration of the potential consequences associated with falsely remembering more nonpresented information. Thus, despite performance advantages associated with collaboration on memory tasks, opportunities for improvement remain. Next, we consider techniques that have the potential to enhance collaborative group performance on memory tasks.

Techniques to Improve Collaborative Group Memory Performance

We provided several plausible explanations for the limitations associated with collaborative group memory performance. By appropriately managing the causes underlying these limitations, collaborative groups may remember more presented information and correct more memory errors than they typically do. This article does not present all the potential techniques to improve collaborative group memory performance; rather, we target cognitive and social processes within the cognitive-social-motivational framework. For interested readers, Weldon et al. (2000) present several motivational techniques. We hope the techniques presented here provide a basis for efforts that produce additional procedures for improving collaborative group memory performance.

Enhance attentional regulation

Collaborative group memory tasks can be cognitively and socially demanding (Hinsz, 1990). Group members must remember and monitor their own recollections, determine the validity of their recollections, decide whether to present their recollections to the group, defend the recollections they present to the group, assess the validity of recollections presented by other members, argue for or against recollections presented by other members, and help reach a consensus account of the material presented. Considering these extensive demands, memory performance should be optimal when cognitive resources are fully available and directed at the memory task. Techniques designed to focus member attention on the task at hand may lead to increased memory performance.

Mindfulness training may improve the ability of group members to regulate their attention, allowing them to devote greater cognitive resources to memory tasks. Mindfulness

involves '…the self-regulation of attention so that it is maintained on immediate experi-ence, thereby allowing for increased recognition of mental events in the present moment' (Bishop et al., 2006). In one recent study, individuals undergoing mindfulness training experienced improvement in working memory and sustained attention, as well as reduc-tion in rumination (Chambers & Allen, 2008; see Speca, Carlson, Goodey, & Angen, 2000; for a detailed description of a mindfulness training program). These improvements in working memory and sustained attention may be critical for memory tasks. It is also important that individuals undergoing mindfulness training experienced reductions in rumination that should release more cognitive resources for memory tasks (Troyer & Craik, 2000).

Although direct empirical evidence is needed, mindfulness training may also influence the memory performance of collaborative groups. In natural groups, enhancing the atten-tional regulation of members before they form recollections may be very important. For example, many potential jurors may arrive at court with other things on their mind (e.g., work and family needs). Redirecting the attention of jurors toward the case at hand should allow for more accurate memory of case details.

Improve communication between group members

Social interaction is an important component of effective collaborative group memory performance (Hinsz, 1990). The ability of groups to effectively remember presented information and correct memory errors is dependent upon their collaboration. However, many groups exhibit poor communication between members. Brunell et al. (2008) dem-onstrate that individuals high in trait narcissism are especially likely to assume leadership positions in group settings. In collaborative memory contexts, groups whose members are dominated by a narcissistic member may experience difficulty reporting their memories and critiquing those of other members. Similarly, groups whose members' positions vary hierarchically (e.g., supervisor and subordinates) may give less credibility to the recollec-tions of lower status members. Techniques that facilitate balanced communication between group members may lead to memory performance gains.

Generally, *ad hoc* groups should benefit by listening to the memory responses of all members. Each member in a collaborative group may remember information that is com-mon and unique to that of other members. By comparing and contrasting all of these common and unique memories, collaborative groups should exhibit an advantage over both individuals working alone and groups that communicate less effectively. In contrast to this perspective, it could be argued that group consensus memory responses should reflect the responses of the member who remembers the most information accurately. However, research shows that ad hoc groups are generally unable to identify their most competent member (Henry, Strickland, Yorges, & Ladd, 1996) and incorrectly identifying member competency may result in increased memory errors and poorer performance in general. For instance, a group may assume that its most confident member is also its most accurate member. However, research indicates that confidence is not always indicative of accuracy (Pritchard & Keenan, 2002).

In groups in which members are familiar with one another, they may be better able to determine the member with the best chance of remembering the information sought (Wegner, 1986). These groups can take advantage of the strengths of their members to remember more information and remember information more accurately. For instance, in a human resource team consisting of a manager, organizational psychologist, and schedule coordinator, the organizational psychologist may be best able to recall information about

an applicant's interests in working in groups, whereas the manager remembers the applicant's current job title and the coordinator remembers when an interview could be scheduled. This is referred to as a transactive memory system (Wegner, 1986; see Peltokorpi, 2008; for a recent review). Importantly, groups employing transactive memory systems benefit most when the areas of expertise among members are known. This occurs naturally in many groups (e.g., elderly married couples; Johansson, Andersson, & Rönnberg, 2000); however, some groups may need to make these areas of expertise explicit. Group members adopting such a strategy will have to make efforts to discuss their unshared, as well as shared, memories (Stewart et al., 2007). Otherwise, shared (redundant) memories may dominate discussions and reduce the amount of presented information remembered.

In natural groups, the degree of familiarity among members may determine the appropriateness of communication techniques employed. For example, jurors who are not initially familiar with one another should not assume that others do or do not remember specific information or that the information others remember is correct. Memories of all jurors should be considered and evaluated for accuracy. Conversely, management teams may be more familiar with one another's expertise, so it may be reasonable to assume that members will remember information that is consistent with their area of expertise. Nonetheless, the accuracy of remembered information should be scrutinized whenever disagreement about recollections is present.

Separate member and group recall

Basden et al. (1997) have suggested that hearing other group members' recall disrupts one's own subjective organization and retrieval strategies. This explanation partially accounts for why collaborative groups recall less information than an equal number of individuals working alone. In response to concerns about retrieval interference, group members may find it useful to recall and assess their memories privately before discussing them with their group. The recall of dyads is more accurate when their members recall individually first (Stephenson, Abrams, Wagner, & Wade, 1986a; Stephenson, Clark, & Wade, 1986b). This strategy should lead to at least two positive outcomes. First, the possibility that group members will experience difficulty reconstructing their knowledge in the collaborative setting should be reduced, because group members are not required to divide their attention between their own memories and those of others. Second, the ability of group members to correct the memory errors of their members should not be compromised, because group members still come together to discuss their memories, just at a later time. Recalling information privately before collaborating should lead to improvements in collaborative group memory performance.

Separating member and group recall can be easily accomplished in natural groups. For example, jurors might be asked to summarize evidence alone before discussing their recollections with the rest of the jury. Human resource team members could be asked to independently summarize the strengths and weaknesses of job applicants before discussing their recollections with the team. Employing this technique should allow natural groups to remember more presented information and still correct memory errors among their members.

Explore new communication modalities

Although face-to-face and other synchronous forms of communication in collaborative groups may lead to retrieval interference (Basden et al., 1997), recalling information via

an alternative medium may lead to improvements in collaborative group memory performance. Dennis and Valacich (1994) provide evidence that the quality and quantity of ideas generated by large collaborative groups may improve when interactions are facilitated electronically in an asynchronous fashion. They argue that asynchronous communication (e.g., chat rooms) allows for multiple monologs where group members can choose to participate in as many or as few discussions as they wish and do so at their own pace. Asynchronous forms of communication for discussions of memory may be useful as well, because they should reduce retrieval interference by allowing group members to participate at their own pace.

Asynchronous forms of communication may be most useful for large groups required to remember a large quantity of information. For example, university and college instructors leading discussion sections may desire that their students remember as many valuable discussion points as possible. Hosting an electronic discussion board may be an effective way for students to identify these valuable discussion points.

Acknowledge potential memory fallibilities

Members of collaborative groups have the potential to forget and falsely remember information, yet they often lack awareness of these faults in their memory. For example, Pritchard and Keenan (2002) demonstrated that members of a mock jury overestimate their memories and consequently tend not to ask for clarification during deliberation. An important benefit of collaboration on memory tasks is the correction of memory errors, so alerting group members of their natural memory fallibilities should prove useful. By acknowledging these potential fallibilities and the unique ability of collaborative groups to correct memory errors, group members should be more likely to consider their recollections and those of other members more carefully.

In natural groups, it may be very important to alert group members to potential faults in memory. Earlier, we described how groups may develop a strong shared representation about presented information and falsely recall information consistent with the shared representation (Betts, 2009). Informing natural groups such as juries about potential faults in memory may facilitate more careful recollections.

Conclusion

We began this review with examples of important circumstances in which the ability of groups to collaboratively remember information is essential. Juries, management teams, and human resource teams provide only a few of the many contexts in which collaborative group memory performance is important. Generally, collaborative groups perform quite well on memory tasks. Collaborative groups can pool the member memories, fill in memory gaps, and correct memory errors among their members. Nonetheless, there are opportunities for improvement. Collaborative groups generally do not remember as much information as the same number of individuals working alone, and they sometimes do not correct the memory errors of their members. We presented a cognitive–social–motivational framework for viewing collaborative group memory processes, emphasized the importance of collaboration for accurate group memory performance, and suggested a number of techniques by which collaborative group memory performance may be improved. Our hope is that this account and our suggestions for improving collaborative group memory performance will spur further research and discussion.

Acknowledgment

Short Biographies

Kevin R. Betts is a doctoral student in the Social/Health Psychology program at North Dakota State University. He received his B.S. from Grand Valley State University where he majored in Psychology and Sociology and minored in Applied Statistics, and his M.S. from North Dakota State University where he studied Social/Health Psychology. His research interests are in the area of group judgment and decision making, group memory, and inter-personal conflict. His current research projects include empirical studies of collaborative group memory, approach and avoidance motivation in groups, intergroup and intragroup conflict, and ostracism. He has presented research at numerous academic conferences including the *Society for Personality and Social Psychology* and the *Midwestern Psychological Association*.

Verlin B. Hinsz received his undergraduate degree in Psychology and Sociology from North Dakota State University and his Ph.D. in Social–Organizational Psychology from the University of Illinois at Urbana-Champaign. Since earning his doctorate, he has been on the faculty of North Dakota State University where he is now Professor of Psychology. Like his doctoral degree, Professor Hinsz's research lies at the intersection of social and organizational psychology. Some of Professor Hinsz's recent publications have dealt with information processing in groups, motivating food safety, group and individual judgment and decision making, and approach and avoidance motivation in groups.

Endnotes

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[1] Collaborative inhibition appears to be exclusive to recall memory. For recognition memory, collaborative groups and nominal groups tend to remember approximately the same amount of presented information (Clark, Hori, Putnam, & Martin, 2000).

[2] Incorrectly rejecting presented information could also be considered a memory error, but research suggests that these types of errors are rare in collaborative groups (Betts, 2009). Our use of the term 'memory error' in this article does not include incorrect rejections.

[3] Collaboration in natural groups may also serve important purposes aside from those concerning memory performance. For example, jury verdicts are based on more than the memory responses of jurors. Jurors often recall information similarly but disagree about the implications of those memories. Collaboration allows group members to discuss varying perspectives that may influence decisions.

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