

Creativity in Groups and Teams

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Most of the work on creative thought processes has focused on understanding these at the individual level (Mumford, Mobley, Uhlman, Reiter-Palmon & Doares, 1991; Ward, Smith & Finke, 1999). We have only limited information about how these cognitive processes operate at the team level or group level. Understanding how creativity operates at the team level is especially important because many of our organizations utilize teams as the primary unit of employee arrangement. This article will review what we know about how some of the cognitive components of creativity (problem construction, information search and gathering, idea generation, idea evaluation and selection) are influenced by group and team dynamics.

Recently, the concept of shared mental models has been used to explain team performance (Cannon-Bowers, Salas & Converse, 1993; Klimoski & Mohammed, 1994). Mental models embody the shared representations of a group of people. Researchers have typically found positive relationships between the degree of agreement of these mental models and various measures of team effectiveness and team processes (e.g., Marks, Zaccaro & Mathieu, 2000; Mathieu et al., 2000; Smith-Jentsch et al., 2005). However, the team members' agreement on the task mental model may be the result of each member automatically selecting a similar problem definition, which feeds into a similar group level problem definition (Reiter-Palmon, Herman & Yammarino, in press).

Though problem construction provides the map for generating a solution to a problem, many situations require additional information to either elucidate the aspects in question, or to provide ideas that may address the situation. The process of information search includes the identification of necessary information. Information necessary to solve the problem can come from internal sources (e.g., knowledge already available to the problem solver) or external sources (e.g., books, other people). Individuals who are able to use diverse and conflicting information

develop more creative solutions (Baughman & Mumford, 1995; Reiter-Palmon, Mumford, O'Connor Boes & Runco, 1997).

At the team level, information search and encoding is also important. We know that the open flow of information between team members is related to solution quality, increased flexibility, and innovation in problem-solving teams (Brown & Eisenhardt, 1995; Drach-Zahavy & Somech, 2001). Furthermore, it has been suggested that one advantage of diverse teams, especially those that are functionally diverse, is the varied knowledge base that members bring; they have differences in perspectives and access to different knowledge sources (Cummings, 2004; Perry-Smith & Shalley, 2003).

Researchers examining information sharing in groups have focused on how information that is not shared initially by all group members is pooled. These researchers have consistently found that group members are more likely to discuss the information that all group members know, but are less likely to discuss information that is known by one or only a few group members (e.g., Devine, 1999; Hollingshead, 1996; Stasser & Titus, 1985, 1987).

In terms of what we know about group and team creativity, idea generation has received the most attention. Most of this work has been discussed in terms of brainstorming, which has been a regular practice in many organizations. A review of the brainstorming literature suggests that in most cases individuals working alone, or when individual output is pooled, outperform groups in terms of the number of ideas generated, but the effect of working in groups on quality and originality is not as conclusive (e.g., Diehl & Stroebe, 1987; Larey & Paulus, 1999; Mullen, Johnson & Salas, 1991).

Researchers have suggested that teams may provide the most benefit to the creative problem solving process in the later stages, namely, idea evaluation and selection and implementation (Nijstad,

Rietzschel & Stroebe, 2006; West 2002). A study by Mumford and colleagues (2001) found that under certain conditions, groups were better at evaluating and selecting a solution than individuals, specifically when fewer alternatives are available and when team members have a shared mental model.

Our understanding of creative cognitive processes at the individual level is more advanced than our knowledge about how creative problem solving occurs in teams. Many questions about the latter remain unresolved, such as how teams engage in problem definition. We don't know when problem definition occurs more automatically or when it is deliberate, or if diverse teams will be more likely to engage in discussions of how the problem should be framed. In terms of information searching, we need to examine how teams facilitate information sharing without causing information overload. With respect to idea generation, do teams provide better solutions when quality or originality is taken into account? Additionally, which factors (e.g., techniques that allow for continuous idea generation and sharing, effects of newcomers and new members) facilitate idea generation in groups? Finally, how do groups reach agreement on which standards to use for evaluation, and what is the effect of using different standards on solution choice?

Despite these many lacunae in our knowledge about creativity in groups and teams, we do have some ideas on how we can structure teams that should facilitate creative problem solving. Heterogeneous groups, in terms of experiences and job functions, have a potential advantage when it comes to being thorough. They are also more likely to refrain from "tried and true" ways of doing things, in part because of the members' varied histories, but also because they may not share mental models from which to operate. Additionally, heterogeneous groups may be beneficial because they will not be as likely to search and identify only confirming information, and will be more apt to thoroughly search for all relevant information. Groups of experientially diverse members are likely to generate a greater number of different solutions, and will likely apply different criteria when evaluating the group's ideas. These different criteria are likely to result in more creative solutions selected relative to groups whose members have similar experiential backgrounds. This is not to say that creating heterogeneous teams will automatically result in optimal performance. Heterogeneous groups are more likely to take longer to figure out how best to communicate, engage in conflict and share/trust.

Other factors of teams, such as size and membership change, will also influence the creativity of the group. Smaller groups are more likely to produce more ideas and solution evaluation criteria because members are less likely to refrain from participation. Additionally, membership change is likely to have positive

influences on creativity through new ideas, fresh perspective and possible experiences with different approaches to solving the problem. Benefits resulting from membership change will most likely only be realized only if new members are encouraged to participate and made to feel a part of the effort.

In order to consider how to best help facilitate creativity in teams, you must first consider your creativity goals—are they long-term or short-term? Is this an isolated need for creativity, or do you want to foster a more lasting creative environment? Are you concerned with existing teams organized for special functions, or do you want to restructure your team assignment? Will your creative needs be best met by an individual? After careful consideration of your creativity objectives, you can then form your strategy; you can decide if you can best facilitate creativity through techniques or through team design. ■

About the Author

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Anne E. Herman, Ph.D., serves as a research consultant for the Kenexa Research Institute. Dr. Herman worked previously for two years as a research consultant for Kenexa's survey team. She has extensive consulting experience in performance management, organizational assessment and change, creativity and innovation, employee selection and promotion, organizational strategy, program evaluation and statistical methodology. Her research interests include problem solving and decision making, creativity and innovation, leadership, organizational motivation, survey design and program effectiveness. Dr. Herman has spoken at many conferences and her research has appeared in several publications. She has taught graduate and undergraduate courses in leadership, business strategy, organizational behavior and behavioral statistics.

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