

GROUP CREATIVITY

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y main focus is the influence of social psychological factors on creativity.

Educational institutions and industrial organisations have become increasingly dependent on the individuals and groups of

people who work in a complex social environment to create useful and novel products, processes, procedures, and services.

Empirical data and theory indicate that both individual and group creativity are highly dependent on social factors in the environment. I will first consider the impact of the social context on individual creativity, and then I will discuss some of the factors that facilitate or inhibit creativity in groups and teams.

THE INFLUENCE OF THE SOCIAL CONTEXT ON INDIVIDUAL'S CREATIVITY

Experimental studies with children and adults, interviews and questionnaire studies in real world settings, autobiographical reports and case studies all provide evidence that the social context has an impact on the creative performance of the individual.

Participants in the laboratory studies were asked to produce creative work under different conditions, and their results in different experimental conditions were compared in order to understand the effects of environment on creativity. Their work on the experimental tasks resulted in an observable product or response that was later judged for creativity by means of a procedure called **"consensual assessment technique"** that is based on the idea that something is creative to the extent that appropriate observers independently agree it is creative. People seem to be able to recognise creativity when they see it, even if it is difficult to define or measure objectively, and social judgments of creativity often rely on subjective judgments of creativity by experts in a particular field. Thus, expert ratings of the creativity of the work of each participant in these studies were obtained from observers familiar with the domain in which the product was cre-

ated (Amabile, 1987).

One example is a task for artistic production where participants were each given one piece of white poster paper, cardboard, glue and set of 110 pieces of paper of varying sizes, shapes and colours and were asked to use the materials to make a collage. Experts, in this case studio artists, were asked to rate the collages using their own subjective definition of creativity, and to judge the collages relative to each other. Other studies asked participants to make designs using a computer, to write a haiku-style poem or tell a story. Tasks were designed to allow for creative exploration and realization, and were not dependent on special verbal or artistic skills, and all participants were able to produce something that can be judged by experts as more or less creative (Amabile, 1987).

In other domains, field results were gathered from interviews with scientists working in research and development laboratories in a variety of corporations from around the world. They were asked to describe an example of high creativity and an example of low creativity from their work on the development of new products and processes or the improvement of existing ones. Detailed analysis of these interviews revealed that environmental factors were mentioned much more frequently than the qualities of the problem solvers in both low and high creativity stories. Non-scientists were also included in the observations, and a questionnaire assessing their work environment was used to evaluate their creativity (Amabile, 1994).

Researchers also looked into autobiographies, letters, and journals of outstanding creative individuals for retrospective reports on their creative processes. Case studies, such as an analysis of the factors behind the success of the British pop group The Beatles, are another useful source of information (Clydesdale, 2006).

Taken together, these different types of evidence reveal six specific environmental factors that influence the creative performance of the individual.

These are:

- Evaluation
- Surveillance
- Reward
- Competition
- Restricted choice
- Time pressure

Conditions decreasing individual creativity

Being concerned with external evaluation undermines creativity.

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In their descriptions of low creativity events, scientists repeatedly mentioned salient evaluation procedures. People who were told that their paper collages would be judged produced collages that were rated as less creative in comparison to the collages produced by those participants who were not expecting evaluation of their works.

Surveillance appeared to have the same sort of negative effect on creativity as expected evaluation. Subjects who believed that they were being watched while working produced less creative work. It is harmful to your creativity to believe that someone is actually watching your work, as it is harmful to believe that someone will be critically viewing your work afterwards. An environment that appears threatening can undermine creativity.

Another fairly common obstacle to creativity that emerges from scientists' interviews and creators' introspective writings is reward. They found it easier to be creative when there was no specific, well-defined, contracted-for, large reward for a successful project. Those participants who were offered reward for engaging in the activity produced outcomes that were rated as less creative than the outcomes of the participants who worked in no reward condition. Furthermore, those among them who chose to engage in the activity in order to obtain a reward exhibited the lowest creativity.

It appears that contracting to receive a reward for an activity undermines the creativity of the outcome. Seeing oneself as engaging in the activity in order to obtain the reward, and perceiving the task performance as a means to **an end decreases one's creativity in performing the task.**

When individuals compete with others for reward or praise, they want to do something better and/or faster than everyone else. Competition implies trying to meet external standards, feeling watched and having chosen to work for a reward. It is not surprising therefore that those participants who made collages or told stories as part of a contest performed worse and produced less creative works. Additionally, the evaluation of the collages showed that the competition group was much more restrictive in their approach to the use of materials.

Restricted choice was mentioned by half of the interviewed scientists as *the most important single factor in examples of low-creativity*. They described themselves and their teams as being most creative when they were allowed control over the plan for action, how to attack the problem, the techniques to be used, the pacing of the project and the use of available resources. Children who were given free choice of which materials to work with made more creative collages than those for whom the experimenter made the choice. It seems difficult to be creative when one is told the exact way something should be done. Insufficient

resources, over-controlled work assignments or tightly set goals have a restrictive effect in the work environment.

Time restrictions diminish creativity. Strong explicit or implicit deadlines, as well as insufficient time, and arbitrary or unrealistic deadlines may paralyse working at all. One third of the interviewed scientists mentioned time pressure in their low creativity examples, and one third mentioned sufficient time as a positive factor in their high creativity stories.

To understand how environmental factors influence individual creative performance, let us consider what makes for a creative task performance, and then examine the processes that could mediate the effect of social psychological factors on individual creativity.

MOTIVATION AND CREATIVE PERFORMANCE

Skills and motivation are necessary for a high-level performance in any domain.

Domain-relevant skills involve knowledge about the domain, technical skills, and special domain-relevant talent. So, for high-level performance in, say, the domain of cinematography, one must have knowledge about cinematography, the relevant technical skills, and talent for lighting and composing images.

For creative performance on open-ended tasks where there is no clear and straightforward path to the solution and multiple solutions are possible, creativity-relevant skills are also required. They consist of a particular cognitive style, a particular style of working, and implicit or explicit knowledge of creativity heuristics or methods.

Creativity relevant cognitive style is marked by the ability to break mental habits and an appreciation of complexity.

Creativity relevant style of working is characterised by the ability to concentrate effort for long periods of time, a sense about when to leave a stubborn problem for a while, and a generally high energy level (Amabile, 1987; 1994).

Skills determine what an individual can do, but it is motivation that will determine what he/she will do while working on a particular task. The extent to which an individual will

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engage his/her skills and knowledge for creative action depends on his/her motivation. Neither skills nor creative techniques can compensate for a lack of intrinsic motivation to perform an activity.

Intrinsic motivation arises from a **person's** positive reactions to the qualities of the task itself. Intrinsically motivated individuals engage in a task primarily out of their own interest in it. They are motivated by interest, deep involvement, curiosity, enjoyment, satisfaction, and the positive challenge of the task. Enjoyment of engaging in the task and the successful accomplishment of a challenging task is an intrinsic outcome that is independent of any rewards or recognition from others.

Because they enjoy the task itself, and the process of searching for new solutions, intrinsically motivated individuals are more likely to expend energy exploring the problem, and more likely to find creative solutions. By devoting more attention to the task for its own sake, intrinsically motivated individual can explore varied perspectives and different pathways, step away from the problem to see the non-obvious sides of the problem situation, and attend to less apparent aspects of the task. These behaviours increase the probability to achieve a nontrivial, creative solution to the problem.

Task motivation is specific to each task and may vary over time for a particular task. It depends not only of the initial attitude of the individual towards the task and his/her degree of intrinsic interest in it, but is also affected by the presence or absence of constraints in the environment. When task performance is tied to conditions like external evaluation outcomes, rewards for results, competition with others, or restricted choices and limiting deadlines, extrinsic motivation for the performance of the task is emphasised.

Extrinsic motivation affects behaviour that is perceived as a means to an end, such as earning extrinsic rewards or meeting the expectations of the others. Extrinsic motivation is other-directed, in that it arises from sources outside the task itself and focuses attention on external **conditions placed on one's work**.

Extrinsically motivated task performance **reduces the individual's sense of autonomy and freedom**, and task-related behaviours tend to be

confined to instrumental actions. Extrinsically motivated individuals are distracted from the playful exploration of interesting and unusual aspects of the task, and their efforts are narrowly focus on the task as originally defined and on common algorithms that have worked well in the past. These extrinsic behaviours typically reduce **individuals' creativity in task performance**.

Given the overwhelming presence of evaluation pressure upon work and performance and the large use of rewards, competition and controlling limits in schools and at work, is it possible to be creative in the presence of extrinsic constraints?

CONDITIONS ENHANCING INDIVIDUAL CREATIVITY

Of all the components that are necessary to enhance creative performance, motivation may be easiest to affect.

As we have seen, it can be influenced by some changes in the social environment. While it would be very difficult to eliminate the evaluation of performance or the use of some reward system in the real world, it is possible to reduce their importance and to place the focus more on the work itself and less on its external controls. These **changes may turn individuals' attention away from external factors**, and reduce the negative effect of external constraints on the intrinsic task motivation (Amabile, 1987; 1994; Bjorkman, 2004).

Although contracted-for-rewards can have a detrimental effect on creativity, rewards offered as a bonus (as above and beyond what one might expect to receive) can have positive effects on creativity. Creators appreciated recognition for their efforts in the form of good salary and monetary benefits, equitable pay and compensation for effort, promotions, praise, and favourable working conditions.

In addition, positive effects of extrinsic motivation on creativity have been found when participants in the experiment were explicitly instructed to be creative, and were given specific instructions on how to be creative (goal perception). Extrinsic motivation can be conducive to creativity when it is informational, or when it encourages intrinsic involvement with the task performance.

Extrinsic factors in the work environment could be **presented in ways that supports one's sense of competence, but do not undermine one's sense of self-determination**.

An example is encouraging workers to evaluate their own work, and make whatever changes are necessary in their method. This leads to a sense of personal control and **freedom, which supports the perception of one's motivation as self-motivation**.

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It is also important as much as possible to focus on and appreciate the intrinsically rewarding aspects of the task.

Research indicates that those participants who focused on intrinsic reasons for involvement with a creative activity (writing) produced poems that were judged to be more creative than the poems produced by participants who focused on extrinsic reasons for writing. The experimental manipulation required them to fill in a questionnaire on why people write (e.g. the market for freelance writing is constantly expanding (extrinsic) versus the pleasure derived from expressing yourself clearly and eloquently (intrinsic)).

Training in intrinsic motivation, such as role modelling video demonstration showing children engaging in creative work because of its value and their intrinsic involvement, could immunize children against the negative effects of reward.

To enhance individual creativity, it seems reasonable to emphasise the challenging aspects of the task at hand, the importance of finding a solution, and to increase the intrinsic satisfaction of the work process itself. The latter could be done, for example, by matching tasks to interests; allowed time, freedom and resources to build on the **enjoyable aspects of one's work, or the possibility for an evaluation-free practice of an activity.**

There are also some exceptions to the negative relationship between extrinsic motivation and creativity. Extrinsic motivation can provide the focus and energy necessary for completing a creative task when there are important sub-tasks that are not themselves particularly interesting. For example, in the completion of a research project, careful validation of the data entries and of the results of the statistical analyses can be very important but at the same time they can be seen as more boring and less intrinsically motivating than the excitement of generating hypotheses and interpreting the data. In the motivation – work cycle match, extrinsic motivation may work together with intrinsic motivation when the novelty of the outcome is of less importance.

Under some special circumstances, competition may also enhance creativity. Observations of creativity among research and development scientists showed that when they competed as a team with other teams, creativity within the group may actually be enhanced (Amabile, 1994). An analysis of the factors behind the success of the British pop group The Beatles illustrates the positive effect that resulted from the synergy between collaboration and mutual stimulation for high performance within the group, and enhanced competition outside the group (Clydesdale, 2006).

In conclusion, the optimal conditions for **individual's creativity can be described as** an atmosphere where there is minimal external constraint and maximal support for the intrinsic enjoyment and involvement with the work. It is also important to encourage talent development, skills training, and creative problem solving to a high level.

CREATIVE PERFORMANCE IN GROUPS AND TEAMS

The creative process that leads to an original, useful product includes:

- Understanding of the problem to be solved
- Its definition and redefinition
- Generation of many and varied, interesting and unique ideas;
- Evaluation of the proposed ideas and selection of the best solution,
- Planning for its implementation.

This process of development of novel ideas that are useful requires varied knowledge and skills (Stoycheva, Lubart, 2001).

Working in groups has become an important approach to the improvement of the idea generation and idea application. The involvement of people with multiple skills and knowledge databases is expected to bring for a superior outcome of the creative process. More concretely, this is characteristic of how films are made.

This expectation however is not necessarily confirmed by empirical research and field studies. There is a large amount of evidence that group composition and group processes affect the creative performance in experimentally created groups as well as in real world teams in both positive and negative ways. (Bjorkman, 2004; Paulus, 2000).

Group generation of ideas: Stimulation or production blocking?

Groups can be defined as two or more individuals who have some interdependence or relationship, and who have an influence on each other through their interactions. Real groups of individuals interacting in face-to-face meetings are potentially

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more creative than single individuals or nominal groups composed of individuals performing independently. For example, this approach to idea generation is implemented in the well-known procedure of brainstorming.

Mutual stimulation of associations, elaboration and development of the proposed ideas along with thorough problem exploration increase the chance that, in a group session, ideas or categories of ideas will emerge that one would not have thought of working alone. The expressed thoughts of group members may recall unique task-relevant stimuli that elicit more divergent thinking from other members.

But the comparison of performance by real versus nominal groups reveals that participants in the real group condition do not necessarily produce more and better ideas.

Different processes seem to contribute to the production-blocking effect that occurs in groups. For example, group discussion of ideas introduces time constraints: when others are talking, it is not possible to share one's own ideas. Members may also forget ideas while waiting, or decide that they are no longer relevant. Discussion may involve task-irrelevant behaviours such as needlessly elaborate stories, which eat time away and distract the thought processes of the group members. **The cognitive demand to consider others' ideas while trying to generate one's own ideas** lower both individual and group productivity.

Members may also limit their efforts and contributions by relying on the high performance of others in the group. This motivated, intentional withdrawal of efforts is referred to as free riding. Free riding occurs because group member perceives one's effort as dispensable in a situation of diffused responsibility. Social or cognitive loafing, i.e. being less motivated to work when individual contributions are combined into a group product, may decrease group's ideational output as well, since participants do not work as hard as when they are working alone.

Nevertheless, it is possible to design work pro-

cedures that are effective in overcoming the production loss in group generation of ideas (Bjorkman, 2004; Paulus, 2000).

Real groups did not suffer from production-blocking effects when they exchanged ideas by means of written notes or a computer-based group decision support system.

When using electronic brainstorming, group members can share their ideas simultaneously, remain anonymous to other group members, and still be accountable for their individual performance. Other ways to promote idea generation process consisted of providing groups with a comparison standard, and individuals with explicit feedback about their performance levels. Trained facilitators may increase the sharing of ideas in groups through appropriate moderation of the group discussion, for example, by eliminating critical evaluation or task irrelevant behaviours.

Others and me: Evaluation apprehension, and supportive leadership

Members' fear of expressing ideas, referred to as evaluation apprehension, may impair group productivity in idea generation. Group members may be concerned about how other group members will perceive them, when they

want to present more unusual or unconventional ideas, and therefore they may refrain from freely sharing their

In conclusion, the optimal conditions for individual's creativity can be described as an atmosphere where there is minimal external constraint and maximal support for the intrinsic enjoyment and involvement with the work

most creative ideas. Even if there is no overt reactions, individuals may still be concerned about the private reactions of others. Compliance to perceived group norms and conformity to group pressures might further restrict individual generation of large number of varied and unique ideas.

In a group environment that is safe, participants can freely express their opinions. Anonymity may seem an appropriate solution as it would lower social anxiety and make the individual less self-conscious, which in turn would lead to the free expression of ideas and comments that would be normally held back due to inhibitions. On the other hand, anonymous group members will be unable to receive personal recognition for their contributions, and free riding and social loafing could be promoted.

Leadership plays an important role in group creativity. The specific challenge of leading a group towards creative solutions lies in the creation of a form of interactions that support creative processes in the group work. By their behaviour, leaders and facilitators define the reality of the group

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work.

Their role has at least three important aspects related to creativity: (Bjorkman, 2004; Paulus, 2000).

First, they have to create an atmosphere of intellectual stimulation by encouraging divergent thinking and promoting creative attitudes among group members. Evaluation apprehension could be overcome when feedback on **member's ideas is more supportive than critical. Criticism**, if employed at all, is not directed personally but aims at motivating, expanding and developing more ideas. Supportive feedback is not limited to just positive sayings but entails further elaboration and examination of the proposed ideas.

Second, the leader/facilitator has to create an atmosphere of acceptance that promotes consideration of individual ideas and points of view, and recognition and appreciation of the unique contribution of any and every one. His/her concern should be to encourage full participation of all group members in order to expand the group source of knowledge and information.

The third aspect of leadership for creativity relates to **group motivation. Clearly defined goals sustain group's efforts and motivate its members to exert themselves.** Strong motivation can reduce the degree of social loafing **and free riding and increase group members' participation** in the generation and exploration of ideas. It inspires collective action, and promotes enjoyment of and satisfaction with teamwork.

DIVERSITY AND CREATIVE PERFORMANCE

Diversity, in terms of differences among group members, may lead the group towards more divergent and more original results.

One study examined the effect of membership change on group creativity. Some group members were randomly rotated among groups during a series of idea generation tasks. **"Open" groups exchanged one of their team members for a newcomer from another group, while "closed" groups kept their membership constant.** Results indicated that open groups generated more ideas and more different kinds of ideas than closed groups (Choi & Thompson, 2005).

Another study of the link between diversity and group creativity involved participants with different approaches to problem solving: people who focused on unstructured, broad, and idea generating processes (innovators) or people with incremental, highly structured process-oriented approaches (adaptors). Three - members groups were formed. Some groups were homogeneous (only innovators

or only adaptors) and other groups were heterogeneous (two adaptors and one innovator or two innovators and one adaptor). Groups were assigned to one of two sides of a management – labor negotiation simulation. They were asked to design a scoring system to aid the negotiation process, which required that they specify all of the issues that they consider relevant to situation presented to them.

The groups' creative performance was measured objectively, by counting each proposed idea that was relevant to the upcoming negotiation. Heterogeneous teams produced more ideas than did homogeneous teams. Teams whose members employed different cognitive styles to approach and solve problems presented, considered, and combined more ideas and have achieved a more creative outcome (Kurtzberg, 2005).

While heterogeneity results in higher objective measures of group's creative performance, it may entail lower subjective perceptions of group creativity. Such a tendency was observed, for example, in a longitudinal study of 26 teams (ranging in size from 3 to 20 people) in seven different organisations in three different industries. They were identified as teams where creativity was important in their work, and they were studied for an entire project or definable project phase, from start to finish. Each day, participants **rated their work and their team's work on topics like own/team creative performance, team unity, importance of the work and events occurred that day.** Subjective perceptions of group creativity were related to positive feelings and team satisfaction. The more heterogeneous teams, which had a greater degree of variation in approaches to problem solving, rated their creativity lower and felt less positive about their teamwork. **Individuals' positive affect was lower in bigger teams as well** (Kurtzberg, 2005).

Subjective perceptions of group creativity may differ from more objective measures of **a group's creative performance.**

In the management – labour negotiation simulation, for example, **individuals' evaluation of their teams' creativity was not at all related to the objective evaluation of teams' creativity. Nevertheless, internal**

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feelings of creativity are a positive factor in group creativity, and can in fact stimulate high level performance. They help maintain a self-image of creativity that can potentially translate into tangible creative outcomes. It may take time before the creative potential of the ideas is actualised, and subjective perceptions of creativity will support and maintain creative behaviour throughout. Self-rated creativity may act as a self-fulfilling prophecy. Individuals with higher self-rated team creativity feel more satisfied with their work, and the observed link between self-evaluations of positive affect and creativity is important for team effectiveness.

An optimal degree of heterogeneity is necessary for the highest degree of creativity. On one **hand, members' diversity provides broad array** of input from a wide variety of people. On the other, members have enough in common to be able to experience group cohesion, work together smoothly, enjoy the work process, and being satisfied with its results.

Creative groups create an environment conducive to creativity. The qualities of the group members and the quality of interactions within the group affect the creative process. There are two complementary ways to promote group creativity. One enables creativity by limiting the negative influences of the group environment on individual and group performance. The other encourages processes that have positive influence on creativity at both individual and group level.

Finally, we should never forget that creativity is a probabilistic process. We cannot know beforehand when and how a novel and appropriate response will be achieved. Therefore, tolerance for ambiguity, patience, and an open minded, receptive and flexible attitude are best supporting the creative process in both individuals and teams.

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