

# Analysis of Team Creativity Promotion Based on Shared Mental Model

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**Abstract:** In today, with the development of knowledge, economy, technology cross integration and increasingly fierce market competition, the competition among enterprises is not limited to the comparison of performance level, more and more organizations begin to pay attention to the creativity of enterprises. The level of team creativity is gradually used by enterprises as an important means to develop the core competitiveness. Shared mental model acts on organizational members in an implicit and collaborative way in the team, and improves the creativity of the team by influencing the employees' cognition. From the cognitive perspective, this paper makes a comprehensive analysis of the improvement of team creativity under the influence of shared mental model, and puts forward some suggestions on how to grasp the role of shared mental model in improving team creativity.

## 1. Introduction

In the 1850s, Guilford, President of the American Psychological Association, gave a speech on creativity. So far, the word creativity is still recognized by the academic and practical circles. The research on creativity has changed from the research on individual creativity to the discussion on team creativity. More and more researchers have begun to pay attention to team creativity, and scholars have made some achievements. As for the factors that affect the improvement of team creativity, the main focus is on process behavior, such as team task characteristics, organizational structure and team external environment. There is little attention on team cognition. As a kind of team cognition, the influence of shared mental model on team creativity cannot be ignored.

At present, the existing research shows that shared mental model plays a positive role in improving team innovation performance, but the impact on team creativity has different views. Therefore, it is necessary to explore the shared mental model to improve team creativity. Based on this, this paper makes an analysis of team creativity and enriches the research contents related to share mental model and team creativity.

## 2. Literature Review

### 2.1 Shared Mental Models

The mental model comes from cognitive psychology, which is considered as a psychological expression of individuals' expectation to the external environment or behavior. Shared mental model was first proposed by Cannon, Bowers and Salas in 1990. Shared mental model, also known as team mental model, refers to the psychological mechanism that team members form a consistent cognition of key elements in the organization through seeking, analyzing, coding and storing, and interpret, rely on and expect task activities together. In addition, Cannon, Bowers and Salas also put forward four classification forms of sharing, which are consistency, overlap, collaboration and complementation. However, the existing research on shared mental model focuses on consistency and overlap. In 1993, Cannon and Bowers showed that too much overlapping of team members' cognition will reduce the quality of decision-making and affect the improvement of organizational

efficiency. Rentsch & Klimoski (2001) thought that the higher the homogeneity between team members, the higher the level of shared mind, but with the increase of team size, the level of shared mind showed a downward trend [1].

The research on mental model is mainly seen in four aspects: individual, team, organization and cross level. The individual level mental model mainly focuses on the entrepreneurial mental model and influencing factors. From individual to team, shared mental model appears. Scholars generally believe that shared mental model can be divided into two categories: collaborative mental model and task-based mental model, and the two mental models have positive or negative impact on team creativity. In addition, scholars divide the nature of shared mental model. Rentsch J R & Hanges P J (2008), Edwards B D, Day E a & Arthur J W (2006) believe that similarity and accuracy are two important characteristics [2, 3]. Chinese scholars, Lin Xiaomin and Bai Xinwen & Lin Lin (2014), studied the impact of these two properties of shared mental model on team creativity, and obtained some research results [4].

## **2.2 Team Creativity**

Creativity refers to individuals put forward the valuable innovative ideas for products or services. According to Amabile et al. (1996), useful and fresh are important criteria for measuring creativity [5]. Farh, Lee, & Farh (2010) believe that team creativity is different from individual creativity, which refers to team members under the stimulation of external demand produced novel, valuable and practical scheme, emphasizing the coordination of organizations [6]. As a team, it can take initiative to take measures to achieve the transformation of creativity after putting forward innovative ideas and maintain team creativity. At this time, the description of mental model cannot be individual mental model, but rise to share mental model, a change from behavior representation to cognitive mechanism.

At present, the research on team creativity focuses on team process variables. Hackman proposed an Input-Process-Output model. As important input variables, external environment, member characteristics and organizational structure all affect the improvement of team creativity. Besides team input and process, team cognitive factors play an important role in the influence of creativity. More and more scholars begin to pay attention to the effect of other factors. With the deepening of research, this IPO research model has not been able to explain the mechanism of team creativity, so it is necessary to consider a non process variable-shared mental model. Many studies have shown that the team, as the subject of processing external information, encodes and represents information in the initial stage, while the shared mental model relies on the teams common and coordination in improving team creativity.

## **2.3 Research on the influence of shared mental model on team creativity**

The research on the influence of shared mental model on innovation performance is relatively concentrated. The paper discusses the influence of the similarity and accuracy of shared mental model on team performance. Davison & Blackman (2005) research show that the similarity of shared mental model hinders the improvement of team creativity [7]. Bai Xinwen et al. (2011) pointed out that the similarity of shared mental model provides a common cognitive basis for individuals in the team, and the effect about team behavior can have a positive impact on team performance [8]. Lin Xiaomin et al. (2014) based on the maintenance data of 80 information platforms, pointed out that the similarity of mental models has a negative impact on team creativity, while the correctness of mental models has a positive impact on team creativity [4]. The combination of the two levels has different effects on team creativity. This research combines team cognition and team creativity, which plays a positive role in promoting the research results of the two fields. Hao Jingxi et al. (2015) took 63 teams as survey samples, and adopted factor analysis and structural equation model to verify the impact of shared mental model on team creativity. The results show that shared mental model can effectively improve team creativity [9].

To sum up, some scholars have carried out different degrees of verification on this impact model, and it can be concluded that the shared mental model has an overall "inverted U" trend in influencing team creativity. This paper holds that there is the best inflection point for the influence

of shared mental model on team creativity. It shows the tendency of first up and then down.

### **3. Ways to improve team creativity under the shared mind model**

According to the research of existing scholars, the shared mental model can be divided into task-based shared mental model and collaborative shared mental model. In the task-based sharing economy model, employees are more consistent and tend to have the same goals and expectations on information understanding, which is characterized by group nature; in the collaborative sharing mental model, organizational members show the characteristics of difference. Only by combining task-based and collaborative shared mental models can we make the best use of them. Based on this, this paper proposes the following ways to build a shared mental model to enhance team creativity:

#### **3.1 Promote the cognitive transformation of team creativity**

The shared mental model of entrepreneurs is the embodiment of the mental model at the individual level, but the transformation from the individual to the shared mental model in the group field depends on the cognitive change of team creativity. On the one hand, the attention of the organization to team creativity can create an innovative atmosphere, on the other hand, the encouragement and support of leaders, the efforts and cooperation of team members jointly build a shared mental model to improve creativity. Therefore, the cognitive transformation of team creativity is the key to further improve the innovation performance of enterprises.

#### **3.2 Follow the principle of moderation**

Huang Tongfei & Peng Can (2015) studies show that the shared mental model is not linearly related to the improvement of team creativity, but presents an inverted U-shaped relationship<sup>[10]</sup>. Only when the shared mental model reaches the appropriate level can it have a positive impact on the improvement of team creativity, otherwise it will have a negative effect. Therefore, this paper holds that the application of shared mental model should follow the principle of moderation in the promotion of team creativity, combine the heterogeneity of members with the same goals, and give timely feedback to the shared mental model within the team. Judge the application effect of shared mental model in the promotion of team creativity through phased summary and review.

#### **3.3 Build a task based + collaborative team sharing mental model**

The Task-based shared mental model makes great efforts to reach a consensus goal and form a common expectation for team members. Driven by Task-based shared mental model, the team can achieve the expected goal with an internal tacit understanding and emphasize a common mission. Collaborative teams share the mental model of individuals in the team to play expertise, through complementary forms of collaboration to improve organizational efficiency, to play creativity and work hard, collaborative mental model emphasizes a team state of mutual integration. Therefore, to build a Task-based + Collaborative shared mental model, while forming a common goal, give full play to the individual's advantages to improve the team's creativity with higher efficiency.

### **4. Conclusion**

This paper analyzes the influence of shared mental model on team creativity promotion from the perspective of related scholars' research on shared mental model, and points out that the cognitive model of shared mental model cannot be ignored in the influencing factors of team creativity promotion. Previous research focuses on input-process-output. In recent years, pay attention to the construction and research of perception level, this paper emphasizes the importance of shared mental model to the improvement of team creativity on the basis of summarizing the literature of scholars, and puts forward three practical suggestions for the improvement of team creativity by shared mental model. Hope to complement the research in the field of mental model and team creativity. Firstly, promote the cognitive transformation of team creativity, from the individual to the shared mental model. Secondly, follow the principle of moderation, emphasis on timely

feedback. Thirdly, build a Task based + Collaborative team sharing mental model, improve the team's creativity with higher efficiency.

In the future, researchers can analyze the mechanism between mental model and creativity. And consider the impact of the external environment. By providing in-depth research, we can obtain more accurate suggestions for the improvement of team creativity.

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