

The Effect of Autonomy on Team Creativity and the Moderating Variables

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Abstract

Autonomy, the freedom to choose how to accomplish tasks, is shown to have positive impact on individual creativity. The literature suggests that this positive effect is mediated by intrinsic motivation. It may seem reasonable to assume that autonomy would benefit team creativity as well. However, the literature does not provide consistent support for this latter notion. The purpose of this research is to theorize on the effect of autonomy on team creativity in more detail and shed some light on the inconsistency in the literature. The article first reviews relevant concepts and recent research. Based on the review, individual autonomy and team autonomy are differentiated. Task interdependence and team level creative self-efficacy are proposed to be moderating variables for individual and team autonomy. Some new research possibilities are discussed. In addition, some cautions are laid out for managers who want to promote team creativity by giving high levels of autonomy.

Keywords: autonomy, team creativity, task interdependence, creative self-efficacy.

Introduction

Creativity and innovation are playing increasingly important role for organizational growth and performance improvement. Creativity is often defined as the generation of original and useful ideas (Amabile, Conti, Coon, Lazenby, & Herron, 1996; Woodman, Sawyer, & Griffin, 1993). Early research on creativity tends to characterize creative people and hence focuses on the individual level, but a fast growing body of research centers on factors for creativity at team and organizational level (Brazdauskaite & Rasimaviciene, 2015; Drazin, Glynn, & Kazanjian, 1999; Hennessey, & Amabile, 2010; Hülshager, Anderson, & Salgado, 2009; Woodman et al., 1993). For example, two meta-analyses review 14 dimensions of the climate for creativity (Hunter, Bedell, & Mumford, 2007) and 15 team-level predictors of creativity and innovation (Hülshager et al., 2009). Some factors for creativity show consistent and large effect and this knowledge provides important insights into the theory and practice of managing creativity and innovation. However, not all factors examined have consistent and significant effect. Among them, autonomy, or the freedom to choose how to accomplish tasks (Amabile et al., 1996), is an interesting one. In the study by Amabile et al. (1996), while most expected effects of environment on creativity were validated, autonomy did not show significant difference between projects of different levels of creativity. In the meta-analysis by Hunter et al. (2007),

autonomy has the smallest effect size among all dimensions, although the effect is significant.

This research aims at further exploring the effect of autonomy on team creativity in organizations. More specifically, two moderating factors are proposed: team level creative self-efficacy and task interdependence. While the positive relationship between autonomy and creativity has been studied for decades (Amabile et al., 1996), such further exploration seems missing in the literature.

Literature Review

Team Creativity

Creativity has been studied at various levels: individual, group, team, and organizational level (Hennessey, & Amabile, 2010). Team and group are two different concepts. Group means two or more individuals with mutual influence through interactions, and some interdependence or relationship (Paulus, 2000). Team is a working group in an organization, and team members have common goals (Paulus, 2000). Resulting from this distinction, the research on group creativity and team creativity are distinguishable by their methodologies. Group creativity research usually involves lab experiment on group ideation tasks and is more psychology-oriented (e.g., Backstrom & Soederberg, 2016; Bechtoldt, De Drew, Nijstad, & Choi, 2010), while team creativity research typically samples real teams in organizations and is more oriented towards management theory and practices (e.g., Farh, Lee, & Farh, 2010). This paper targets team creativity instead of group creativity.

In the management literature, creativity and innovation are often studied at the team level (Hülshager et al., 2009). Even some theories aiming at organizational creativity acknowledge the importance of factors at team or project level (Drazin et al., 1999; Woodman et al., 1993). The literature suggests that some variables in team composition, team characteristics (e.g. norm, size, and degree of cohesiveness) and team process (e.g. methods for problem solving) influence team creative outcomes (Woodman et al., 1993). A good summary of these variables is presented in the meta-analysis by Hülshager et al. (2009). Of the 15 team-level variables identified, several are of strongest effect: support for innovation, vision, task orientation, and external communication. Vision is defined as the idea of a valued outcome as higher order goals and a motivating factor at work (Hülshager et al., 2009). This variable may also be described as “clarity of and commitment to objectives” (West & Anderson, 1996). Task orientation refers to a shared concern with excellence of task performance related to common vision (Hülshager et al., 2009). In addition, internal communication, cohesion and goal interdependence also show strong and generalizable relationships with team innovation. All these variables are positively related to creativity and innovation. Also found is that self-report measures of innovation result in stronger relationships, when compared with independent ratings and objective criteria of innovation.

Personal characteristics are apparently related to team creativity. On the team level, an important variable of personal characteristics is team diversity. A review of 50 years of research suggests that team diversity may result in social divisions which harm team performance (Mannix & Neale, 2005). The diversity in the background refers to non-task-related differences such as gender and ethnicity. The meta-analysis shows no significant correlation of background diversity with innovation (Hülshager et al., 2009). Study by Kurtzberg (2005) shows that cognitive diversity may harm team satisfaction and affect, although benefits for objective functioning are also possible. The current understanding suggests that team diversity may benefit creativity only when the team process is carefully managed (Hennessey & Amabile, 2010).

Another three sets of variables are relevant although they are not necessarily studied at team level. The first set is job or task characteristics. Job complexity is identified as positively correlated with creativity (Shalley, Zhou & Oldham, 2004). The rationale is that complex and demanding job increases individuals' excitement and interest, thus enhances the intrinsic motivation.

The second set of variables is about evaluation and reward. It is found that critical judgment is detrimental to individual creativity, while developmental evaluation, a nonjudgmental evaluation aiming at assisting the development of an individual's skills, has positive effect (Shalley et al., 2004). It is explained that judgmental evaluation is perceived as controlling, distracts attention and harms intrinsic motivation. In contrast, developmental evaluation is perceived as supportive and informational and benefits creative performance. Effect of contingent rewards is undecided both theoretically and empirically (Shalley et al., 2004). There is empirical evidence for both positive and negative influence of contingent reward on creative performance. The positive effect might be explained that reward is informational in recognizing individuals' competencies. The negative effect may be explained that reward is similar to judgmental evaluation and can be perceived as controlling and distracting, which decreases intrinsic motivation. Apparently further empirical study and theoretical analysis are needed to settle the argument.

The third set of variables is climate. Hunter et al. (2007) summarized 14 dimensions with significant impact on creativity, among which are positive supervisor relations, resources, challenge, mission clarity, autonomy, flexibility and risk-taking. The significance of these effects holds under different job, group, organizational and environmental conditions. Three dimensions with largest effect sizes are challenge, intellectual stimulation and positive interpersonal exchange. The dimension with smallest effect size is, surprisingly, autonomy. The complexity of the effect of autonomy on creativity is evident in the research by Amabile et al. (1996), where non-significant result was obtained. The concept of autonomy, together with some other key concepts, is discussed below.

Key Concepts and Theories

Four concepts are central to this article: intrinsic motivation, autonomy, creative

self-efficacy, and task interdependence. Intrinsic motivation means "the motivational state in which an individual is attracted to and energized by the task itself instead of by some external outcomes that might be obtained through doing the task" (Zhou, 1998). In other words, the process of performing the task is seen as an end in itself, instead of a means to an end (Zhou, 1998). Intrinsic motivation tends to result in more flexible cognition, preference for complexity and novelty, and seeking higher levels of challenge. Therefore, intrinsically motivated person is more likely to identify many alternative solutions and nontraditional methods and to persist. All these tend to lead to higher creativity (Zhou, 1998). The positive relationship between intrinsic motivation and creativity has been supported by a number of studies (Amabile, 1979, 1985; Koestner, Ryan, Bernieri, & Holt, 1984). Intrinsic motivation has two components: cognitive one and affective one. Deci and Ryan's (1985) cognitive evaluation theory (CET) addresses the cognitive component. CET's assumption is that people have the need to feel competent and autonomous. Accordingly, intrinsic motivation is characterized by perceived competence and self-determination (Gagne, & Deci, 2005). CET suggests that external factors such as tangible rewards, surveillance and deadlines tend to reduce perceived self-determination and hence intrinsic motivation. On the other hand, optimally challenging activities and positive feedback are shown to promote intrinsic motivation (Gagne, & Deci, 2005). Affective components have been proposed such as interest and excitement, elation and deep task involvement as "flow", as well as happiness, surprise and fun (Amabile, Hill, Hennessey, & Tighe, 1994). It is further argued that the orientation towards intrinsic motivation is part of stable personality (Amabile et al., 1994; Amabile, 1997). In Componential Theory of Individual Creativity (Amabile, 1997), three components for individual creativity are domain expertise, creative-thinking skill and task motivation. Amabile further contends that when task motivation is primarily intrinsic, it is more conducive to creativity. The Intrinsic Motivation Principle by Amabile (1997) nicely summarizes current understanding, "Intrinsic motivation is conducive to creativity. Controlling extrinsic motivation is detrimental to creativity, but informational or enabling extrinsic motivation can be conducive, particularly if initial levels of intrinsic motivation are high". Informational extrinsic motivation refers to reward and feedback that recognize competence or inform a person on how to improve performance. Enabling extrinsic motivation refers to reward and feedback that directly enhance a person's involvement in the work, such as allocation of more resources (Amabile, 1997).

Autonomy has long been proposed to influence creativity in individual and teams (Amabile et al., 1996). Usually autonomy refers to task autonomy, the degree of control over how to perform tasks (Amabile et al., 1996; Zhou, 1998). Consequently, autonomy involves a sense of volition and the experience of choice (Gagne, & Deci, 2005). Autonomy is often considered a positive factor for employee performance, which is based on the empowering effects, giving employee responsibility and increasing sense of ownership of work activities

(Trevelyan, 2001). However, Trevelyan (2001) argues that autonomy can have negative effect on job satisfaction due to isolation and deprivation of valued inputs resulting from low-involvement type of leadership. Relatedly, it is argued that empowering leadership, by giving high level of autonomy, may hurt performance because of higher likelihood of distraction, extra burden of decision making, and stress (Cheong, Spain, Yammarino, & Yun, 2016). The effect of autonomy on creativity, however, is usually assumed to be positive (Hunter et al., 2007). In two early studies, freedom, which is equivalent to autonomy, was found to benefit creativity of children's artistic creation and creativity of R&D scientists, respectively (Amabile, & Gitomer, 1984; Amabile, & Gryskiewicz, 1987). Even though non-significant result was found in the study by Amabile et al. (1996), where twelve high creativity projects show no difference in freedom when compared to eleven low creativity projects, the positive effect of autonomy on creativity is rarely challenged. The rationale supporting positive effect is straightforward: autonomy increases perceived self-determination and hence intrinsic motivation, which in turn enhances creativity (Zhou, 1998). While the studies above refer to individual autonomy only, autonomy can also be conceptualized at team level (Langfred, 2005). According to Langfred (2005) autonomy can be defined as the extent to which an individual or a team has considerable discretion and freedom in deciding how to carry out tasks. While team autonomy and individual autonomy can be correlated, they are distinct constructs (van Mierlo, Rutte, Vermunt, Kompier, & Doorewaard, 2006). As mentioned by some scholars (Eisenbeiß & Boerner, 2010), the relationship between team autonomy and innovation is often assumed to be positive, but there are only a few empirical studies on this topic. One study shows that autonomous teams are more effective for projects pursuing radical innovations (Patanakul, Chen, & Lynn, 2012). This is because team autonomy is associated with high levels of ownership and responsibility, and facilitates knowledge transfer, flexible information processing, and collaboration: all benefit radical innovations. Relatedly, Chen and colleagues show that the effect of team autonomy on new product development is dependent on the level of technological turbulence (Chen, Neubaum, Reilly, & Lynn, 2015). In technologically turbulent environments, the effect of team autonomy on product success tends to be positive since there is a strong need for flexible information processing and responsiveness. When the technological environment is stable, since managers tend to have the experience and knowledge to develop good guidelines and strategies, the effect of team autonomy is likely negative.

Self-efficacy can refer to either self-perceived capability for performing a task, or generalized trait about one's overall self-estimation of the ability to achieve an outcome (Prabhu, Sutton, & Sauser, 2008). Empirical evidence has been found to support the positive relationship between creativity and self-efficacy, in either task-specific or general sense (Prabhu et al., 2008). Tierney and Farmer (2002) further defined creative self-efficacy as the belief in one's knowledge and skill to generate creative outcomes. The discriminant validity of this construct is

supported and several factors are found to contribute to creative self-efficacy: job tenure, job self-efficacy, supervisor support, and job complexity. Most importantly, creative self-efficacy is shown to predict creative performance beyond the predictive effects of job self-efficacy (Tierney & Farmer, 2002). It is suggested that creative self-efficacy may nourish intrinsic motivation to engage in creative activities (Gong, Huang, & Farh, 2009). In addition, creative self-efficacy can mediate the effect of learning orientation and transformational leadership on employee creativity (Gong et al., 2009).

The last key concept, task interdependence, is defined as “the extent to which team members are dependent on one another to carry out their tasks and perform effectively” (Hülsheger et al., 2009). Task interdependence can be classified into pooled, reciprocal and sequential interdependence (Langfred, 2005). Here, the discussion is limited to a generalized notion of task interdependence. Task interdependence may result in more interpersonal interaction, communication and cooperation, which might promote idea exchange, discussion of different viewpoints and their evaluation and integration. Therefore, task interdependence is often expected to have positive relationship with innovation (Hülsheger et al., 2009). Meta-analysis by Hülsheger et al. (2009) shows no significant relationship between task interdependence and innovation, which is not conclusive due to the small number of studies on this topic. Task interdependence is shown to moderate the influence of autonomy on team performance (Langfred, 2005). Specifically, when task interdependence is high, team performance is positively related to team autonomy but negatively related to individual autonomy. When task interdependence is low, these relationships are reversed. The rationale is that when task interdependence is high, a team already has significant interaction and coordination, therefore is well positioned to benefit from team autonomy. In the meantime, individual autonomy would make it more difficult to interact and coordinate effectively, therefore hurt team performance. This set of relationships is empirically supported. It needs to be noted, however, in the study the team performance is primarily a productivity measure, not a creativity measure (Langfred, 2005).

In summary, the literature suggests that autonomy is positively related to creativity mediated by intrinsic motivation, and the reasoning seems applicable for both individual creativity and team creativity. This research, however, sets out to qualify this assertion. First, the distinction between individual autonomy and team autonomy is made. Second, task interdependence and team level creative self-efficacy are proposed to be moderating variables.

Propositions

Here the effects of individual autonomy and team autonomy are considered separately. Each effect is further proposed to be moderated by another variable. The model is shown in Figure 1.

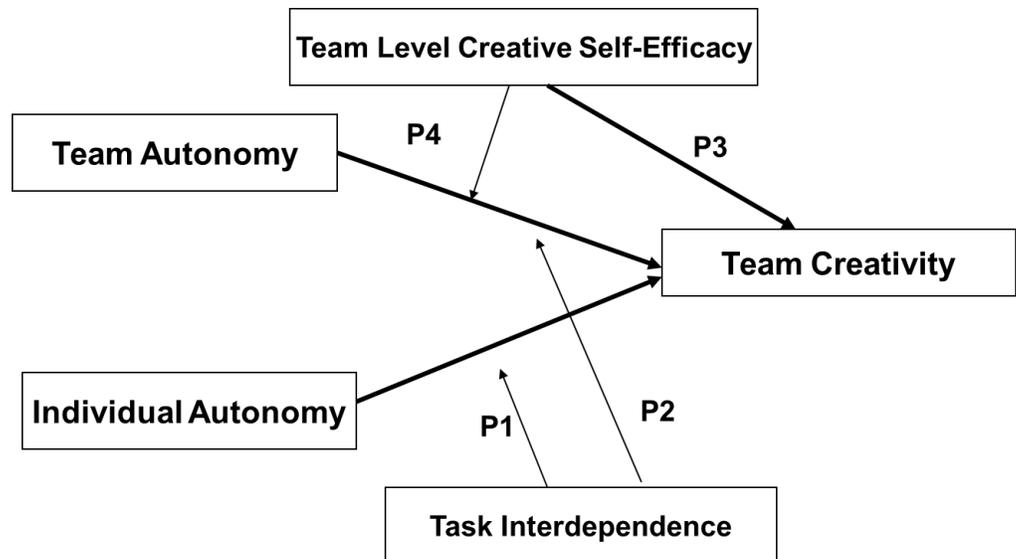


Figure 1. The model for the effect of autonomy on team creativity.

When individual autonomy is high, each individual in the team may choose interesting ways to perform the task and perceive more self-determination. In addition, because of the empowering effect of individual autonomy, each individual feels more responsibility and sense of ownership of work (Trevelyan, 2001), which may increase the perceived self-competence. Therefore, individual autonomy may enhance these three elements of intrinsic motivation: interest, perceived self-determination and perceived self-competence. The increased intrinsic motivation mediates the positive relationship between individual autonomy and individual creativity (Zhou, 1998). In a team environment, when task interdependence is low, each member may perform relatively independently. In this case, the positive effect of individual autonomy on individual creativity adds up to the team level, leading to higher team creativity. However, when task interdependence is high, team members rely on each other to perform effectively (Hülshager et al., 2009) and close coordination of individual activity is required (Langfred, 2005). Individual autonomy may lead to each individual exercising the self-determination and choosing methods that fit his or her interest and agenda, as opposed to using methods that are beneficial to the whole team. Furthermore, the intrinsically motivated individuals may have diverse intentions. High individual autonomy, hence lack of coordination among team members, can result in non-optimal interaction and cooperation and hurt the creative performance of the team as a whole. So task interdependence moderates not only the effect of individual autonomy on team performance (Langfred, 2005), but also the effect of individual autonomy on team creativity.

Proposition 1. *Individual autonomy has negative impact on team creativity if task interdependence is high. If task interdependence is low, the effect is positive.*

When task interdependence is high within a team, there is significant internal communication (a positive factor in team innovation (Gong & Huang, 2009)), coordination and more shared concerns with the collective outcome; therefore, the team is well positioned to take advantage of team autonomy without having extra coordination costs (Langfred, 2005). With high level of team autonomy, a team perceives more responsibility and ownership of the work, chooses approaches that are most interesting and best matches to its capabilities, and adapts to external changes and seizes new opportunities readily. Therefore, team autonomy will positively affect team creativity. When task interdependence is low, the low level of internal communication and coordination makes it hard to harvest the benefit of team autonomy but easy to experience the down side: significant coordination cost and motivation losses (Langfred, 2005). Therefore, team creativity would be reduced by team autonomy.

Proposition 2. *Team autonomy has positive effect on team creativity if task interdependence is high. The effect is negative if task interdependence is low.*

A new concept is proposed in this model: team level creative self-efficacy (TLCSE), which is built upon definition of individual creative self-efficacy (Tierney & Farmer, 2002). This concept means the aggregated individual's perception of the team's knowledge and skill to generate creative outcomes. Analogous to the situation in individual level (Gong & Huang, 2009; Tierney & Farmer, 2002), teams with higher TLCSE may be more motivated to engage in creative team effort, show more persistence and coping efforts in challenging situations. Consequently, such teams may demonstrate better creative performance.

Proposition 3. *Team level creative self-efficacy has positive impact on team creativity.*

It is argued that team autonomy improves project performance, which is attributed to the enhanced sense of responsibility and self-determination, as well as utilizing team's ability to manage the work and adapt to change (Tatikonda & Rosenthal, 2000). Similarly, it can be argued that team autonomy leads to the sense of ownership, positive challenge, and responsibility, and hence improve the motivation for creative work. In addition, team autonomy allows flexible information processing and fast adaptation to change, which also tend to improve team creativity (Chen et al., 2015). When team level creative self-efficacy is high, team members are responsive to motivational effect of team autonomy and ready to collectively use their ability to manage the uncertainty and challenge. Therefore positive impact of team autonomy on team creativity is expected. When team level creative self-efficacy is low, the motivation for making creative team effort tends to be low. Team autonomy is unlikely to lead

to team effort towards a creative direction. In addition, the team lacks confidence in performing creatively on their own. The need for direction and external information is high. In this case, team autonomy may result in inadequate direction and information for creative work, which reduces team creativity.

Proposition 4. *When team level creative self-efficacy is low, team autonomy has negative effect on team creativity. When team level creative self-efficacy is high, the effect is positive.*

Discussion

Future research should not only test the four propositions empirically, but also tap into related research questions. In this article, I theorize that the distinction between individual autonomy and team autonomy is an important consideration. It is conceivable that a team has high level of team autonomy but low level of individual autonomy. For example, a team, as a whole, may be given much freedom of how to perform tasks, but the team members may have very specific and rigid roles and duties. On the contrary, a team, as a whole, can be closely guided and monitored, while the team members still enjoy much flexibility in how to perform individually and how to collaborate. This distinction between individual autonomy and team autonomy can be related to other management phenomena, such as team dynamics, job satisfaction, non-creative team performance, and transformational leadership.

Task interdependence has been studied and related to team innovation. However, the effect of task interdependence on team innovation, according to a meta-analysis, is not significant (Hülshager et al., 2009). This may not be surprising. Although task interdependence offers the opportunity for close collaboration and information exchange, such effort may not be channeled towards innovation. Task interdependence, as this article suggests, may have moderating roles in team innovation, instead of direct effects. In addition to the relationships proposed in this article, it might be the case that task interdependence also moderates the effect of job-related diversity on team innovation. Job-related diversity is the diversity in task-related attributes, such as profession, tenure, and expertise (Hülshager et al., 2009). Many people argue that job-related diversity can result in diverse perspectives and ideas, which should promote creativity. The empirical evidence for this effect is rather weak. Perhaps we need to investigate the moderating role of task interdependence here: the diversity in perspectives and ideas does not matter unless people are working closely together and exchange information frequently. However, this is only a conjecture and needs more theorization and testing.

This article also has implications for managers in organizations. Managers often want their employees or teams to be innovative. A common suggestion is to give people much autonomy so that employees have a sense of ownership and

responsibility, as well as much flexibility in pursuing innovative ideas. However, as argued in this article, we do have some cautions. If a team does not have much confidence in its own creative ability, then giving the team much freedom is unlikely to promote innovation. Instead, the team should first be trained or supported so that they have the confidence and skills to be innovative. Furthermore, if there is a high level of task interdependence in a project, then giving team members too much individual freedom is unlikely to benefit team creativity. Managers do need to set up internal procedures and rules to facilitate collaboration and synergy to allow high level of creativity. On the contrary, if the level of task interdependence is low, then it may make sense to give much individual freedom so that employees can try different approaches at work, however, the whole team needs to be given enough guidance and support, so that the team can work towards common, creative goals.

Conclusions

Despite the common notion that autonomy is beneficial to creativity, the literature does not provide consistent evidence for the relationship between autonomy and *team creativity*. To resolve this issue, individual autonomy and team autonomy are distinguished. Task interdependence and team level creative self-efficacy are proposed to moderate the effects of individual and team autonomy on team creativity. This set of theorization opens new research possibilities. It also cautions managers who want to promote team creativity about when autonomy does not necessarily work.

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