

# Does Team Autonomy Increase or Decrease Team Implementation? The Role of Team Learning

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**Abstract** As the necessity for teams to implement different innovations is prominent, the study addresses the question of the effect of team autonomy on teams' innovation implementation. Team autonomy is usually considered as a beneficial job characteristic but it is still unclear whether it aligns with the necessity to make teams implement new technologies, work methods or other innovations. We argue for a positive effect of team autonomy on teams' innovation implementation through the process of team learning. The results from a sample of 61 work teams (414 employees- 61 team leaders and 353 team members) from different organizations support our hypotheses. The results indicate that team autonomy facilitates team learning, that team learning facilitates team implementation, and that team autonomy positively affects team innovation via team learning.

**Keywords:** team autonomy, team implementation, team learning

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## 1. Introduction

Team autonomy, meaning the degree to which team members experience substantial freedom, independence, and discretion in their work (Kirkman & Rosen, 1999), is usually considered as a desirable work design characteristic (e.g. Cohen, Ledford & Spreitzer, 1996; Humphrey, Nahrgang, & Morgeson, 2007; Langfred & Moyeb, 2004). Nonetheless, the impact of team autonomy on the team's ability to positively respond to implementation demands is still unclear. Innovation implementation is an important need in dynamic environments (Choi, & Chang, 2009; Klein & Knight, 2005), and often management initiates implementation needs. Does team autonomy increase or decrease team innovation implementation? On the one hand, the necessity to implement new goals, techniques and other innovations might evoke a reluctant response in autonomous teams, and therefore decrease their innovation implementation level. Team autonomy, or decentralizing decision-making authority to lower level employees might have beneficial effects on employees' satisfaction but its effect on performance is more questionable (Cordery, Morrison, Wright, & Wall, 2010; Richardson, Vandenberg, Blum, & Roman, 2002). Increased levels of autonomy might lead the subordinate units to sense of independence and thus to reduced cooperation and responsiveness to other units' needs and to management's demands and instructions (e.g. Lanaj, et. al., 2012). Nonetheless, we argue that team autonomy might increase team implementation, due to its positive effect on team learning behaviors. Team learning is a

spiral process of reflection and action, proactively and intentionally performed by team members to improve their team's future results (Edmondson, Dillon, & Roloff, 2007; Grant & Ashford, 2008; Keith & Frese, 2011; Schippers, Hartog, & Koopman, 2007; Hirst, Van Knippenberg, & Zhou, 2009). We suggest that team learning plays a mediating role in a positive effect of team autonomy on team innovation implementation: team autonomy increases team learning, and team learning, in its turn, increases team implementation (See Figure 1 for the research model).

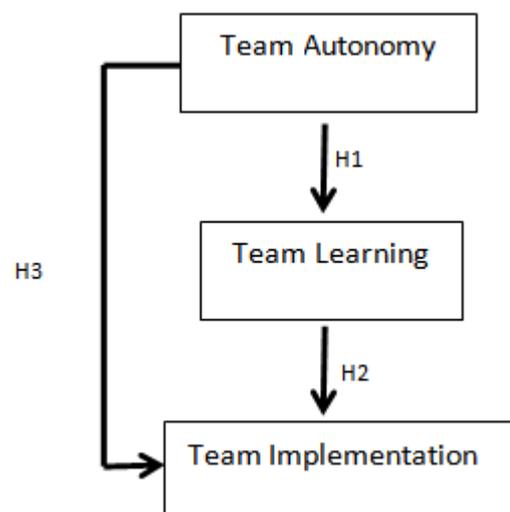


Figure 1. The Research Model and Hypotheses

In the next section we first elaborate on team autonomy, team learning, and team implementation, and generate the

research hypotheses. We then, test the research hypotheses in 61 work teams.

## 2. Literature Review and Theory Building

Edmondson (1999) conceptualized team learning behavior as "an ongoing process of reflection and action, characterized by asking questions, seeking feedback, experimenting, reflecting on results, and discussing errors or unexpected outcomes of actions" (p. 353). Since team learning includes the experimentation of new ways as a result of team reflection, there is a necessity in some autonomy to allow for it. Team learning scholars argue for the importance of team autonomy and team psychological empowerment for team learning (Gibson & Vermeulen, 2003; Kirkman, Rosen, Tesluk, and Gibson, 2004). Team psychological empowerment is a broader concept that includes 4 dimensions that one of them is team autonomy (Spritzer, 1995): "*For teams to engage in learning behavior, it is important that they have the latitude and ability to experiment and implement potential improvements as they see fit. This requires external leaders to give up authority for the planning and organization of work*" (Gibson & Vermeulen, 2003; p. 215)..... "*Without empowerment, teams will not have the leeway to experiment and to discuss and implement alternative courses of action*" (p. 215)". The results of their study that conducted on 156 teams in five pharmaceutical and medical products firms supported the positive effect of team empowerment, including team autonomy, on team learning.

Other scholars as well point to the importance of team autonomy for team learning or team's process improvement, meaning activities carried out by team members through which a team obtains and processes data that allow it to adapt and improve (Kirkman, Rosen, Tesluk, and Gibson, 2004): "... *higher team autonomy will likely lead to greater risk taking and experimentation* (Tushman & O'Reilly, 1996). *Team members will not have to wait for managerial permission or guidance before engaging in risk-taking activities crucial to process improvement and learning, such as detecting environmental changes and proactively meeting changing customer needs* (Edmondson, 1999)" (p. 177). The results of their field study conducted on 35 sales and service virtual teams in a high-technology organization raise support for that argument.

In another study that investigated the effect of multinational organizational context on team learning, the effect of team autonomy on team learning was supported as well (Zellmer- Bruhn & Gobson, 2006). In this field study 115 teams in five multinational firms, it was found that a learning outcome —"the extent to which the team created new processes and practices" (p.22)—was more likely to occur in less-centralized organizations where teams are granted decision-making autonomy by the local and global organizations. In contrast, teams with less discretion or those in organizations with a strategy of global integration were more likely to conform to prescribed practices and thus showed less learning behavior.

Therefore, we hypothesize:

*Hypothesis 1: Teams that have higher level of team autonomy will demonstrate higher level of team learning.*

### 2.1. Team Learning and Team Implementation

Previous research demonstrated a positive effect of team learning on team performance (e.g., Bruller & Carmeli, 2011; Van der Vegt et al., 2010; Vashdi et al, 2013; Zellmer-Bruhn & Gibson, 2006). We further suggest that team learning positively affect team implementation.

Researchers defined implementation of innovations as the extent to which organizations incorporate and routinely use the innovations (Klein, Conn, & Sorra, 2001). Implementation is the critical gateway between the decision to adopt the innovation and the routine use of the innovation (Klien & Knight, 2005; Klien & Sorra, 1996).

Team learning behavior of reflection and planning assists in team implementation since reflection and planning creates a conceptual readiness for, and guides team members' attention towards relevant opportunities for action and means to implement the innovation (Gollwitzer & Bargh, 1996) even if the implementation need was raised by the management and not by the team. For example, in a qualitative field study of 16 hospitals implementing an innovative technology for cardiac surgery it was found that reflective practices aided in implementing innovative process improvements (Edmondson, Bohmer, & Pisano, 2002). Likewise, learning behavior facilitates the adjustment of team practices to the innovation (; Zhu, & Kraemer & Xu, 2006). More generally, team learning is needed for team implementation to overcome different obstacles and difficulties involved in understanding how to implement and use the innovation (Klein and Knight, 2005). Moreover learning teams are motivated to experience and explore and not give up to the fear of making mistakes: "*In organizations and teams that have a strong learning orientation, employees eagerly engage in experimentation and risk taking; they are not constrained by a fear of failure. A learning orientation is critical during innovation implementation because implementation is rarely an easy, smooth process or an instant success. Bugs, errors, and missteps are likely. A strong learning orientation allows organizational members to overcome such obstacles, experimenting, adapting, and persevering in innovation use*" (Klein and Knight, 2005; p. 245). Risk taking, persistence in the face of failure, and a sense of psychological safety instead of fear of failure are important for implementation process that are demanded by the management as well as those initiated by the team.

Furthermore, team learning leads the team to be more aware of innovations in their environments (Tucker, Nembhard & Edmondson, 2006) and even to raise and develop innovation by themselves (Hirst, Van Knippenberg & Zhou, 2009; Zhang, Chen, & Kwan, 2010; West, 2002).

Therefore, we hypothesize:

*Hypothesis 2. Teams that have higher level of team learning will demonstrate higher level of team implementation.*

*Hypothesis 3. There will be a positive effect of team autonomy on team implementation via team learning.*

### 3. Method

#### 3.1. Sample

414 employees (61 team managers and 353 team members) from 61 work teams from variety of organizations almost all of them service organizations participated in the study.

51% of the participants are male, their average age was 32.5 years (SD= 9.3), and their average tenure was 5.5 years (SD= 5.15). The average team size was 7.86 team members (SD= 4.77), and the average organization size was 454.90 employees (SD= 1,357.29).

#### 3.2. Procedure

The research questionnaire was administered to participants by the research assistants after receiving the organization management's agreement. The team members and leaders received an explanation from the research assistants on the anonymity of their responses and that their participation was on a voluntary basis only.

#### 3.3. Research Variables and Measures

**Team autonomy.** Consisted of 6 items (Kirkman & Rosen, 1999). For example: "Our team could select different ways to do its work." Team members completed this scale (1 \_ "very inaccurate," and 7 \_ "very accurate").

The Cronbach's Alpha reliability (as reported in Table 1) was 0.86.

**Team learning.** Consisted of 6 items based on Edmondson (1999). For example: "In this team someone always makes sure we stop and reflect on our team work processes". Team members completed this scale (1 \_ "very inaccurate," and 7 \_ "very accurate").

The Cronbach's Alpha reliability (as reported in Table 1) was 0.79.

**Team implementation.** Consisted of 6 items (Axtell et al., 2000). For example: "The team succeeds in implementing new goals and objectives". Team managers completed this scale (1 \_ "very inaccurate," and 7 \_ "very accurate").

The Cronbach's Alpha reliability (as reported in Table 1) was 0.89.

**Control Variables.** We controlled for team members' tenure as team members (in years), and for the size of the organization (the number of employees).

#### 3.4. Data Analysis

**Aggregation to the team level.** Before aggregating the data of the team-level constructs of team learning and team implementation the validity of aggregation was assessed by the following indices (as seen in Table 1).

First, we calculated rwg(j) index of agreement. The mean value of team autonomy was 0.79 and the mean value of team learning was 0.77. These values indicates strong within-group agreement, justifying the view that team autonomy and team learning are existed and could be aggregated to the group level (LeBreton & Senter, 2007).

Second, a one way analysis of variance (ANOVA) indicated team autonomy as well as team learning varied significantly across clinics ( $F[35, 311] = 2.81, p < .0001$ ;  $F[33, 320] = 1.617, p < .05$ ). The ICC1 values of 0.53 for team autonomy and of 0.41 for team learning are above the typical median value of 0.14 (Bliese, 2000; LeBreton & Senter, 2008). The ICC2 values of 0.92 for team autonomy and of 0.88 for team learning are above the minimum acceptable criterion of  $ICC(2) > .70$  (Bliese, 2000; LeBreton & Senter, 2008).

Therefore, we concluded that the data satisfy the conditions for being aggregated across team members to obtain an average.

#### 3.5. Analytical Approach

We tested the indirect effect of team autonomy on team implementation via team learning using Hayes's (2013) approach based on conditional bootstrapping of mediation effect. This procedure is an extension of the Sobel test (Sobel, 1982) and it is recommended over that of Baron and Kenny (1986) because it does not assume a normal sampling distribution of indirect effects.

The hypothesis was tested by PROCESS approach. PROCESS is a computational tool for path analysis-based (Hayes, 2013).

In all analyses we controlled for team members' tenure and organization size.

### 4. Results

#### 4.1. Descriptive Statistics

Table 1 presents the research variables' means, standard deviations, and inters- correlations, and the scales' reliabilities.

Table 1. Means, Standard Deviations, Inter-correlation of the Research Variables

	N	Mean	SD	1	2	3	4	5
1. Team learning	61	4.25	.85	1				
2. Team autonomy	61	4.36	1.05	0.73**	1			
3. Team's innovation implementation	58	5.07	1.10	0.36**	0.21	1		
4. Team members' tenure	61	5.58	5.11	-0.06	-0.02	0.10	1	
5. Organization size	61	454.63	1375.04	0.02	-0.15	0.34**	-0.07	1

\*\* Correlation is significant at the 0.01 level (2-tailed).

As seen in Table 1 there was a significant positive correlation between team autonomy and team learning ( $r = 0.73, p < 0.01$ ). There was also significant positive correlation between team implementation and team learning ( $r = 0.36, p < 0.01$ ). Last, there was a significant positive correlation between team implementation and organization size ( $r = 0.34, p < 0.01$ ).

#### 4.2. Hypotheses Testing

**Effect of Team autonomy on team learning (Hypothesis 1).**

As seen in Table 2, and consistent with Hypothesis 1, there was a significant positive effect of team autonomy on team learning ( $p < 0.001$ ).

**Table 2. Effect of Team Autonomy on Team Implementation via Team Learning**

	Step 1: Team Learning $R^2=0.60$	Step 2: Team Implementation $R^2=0.26$		
Team learning		0.41**		
Team Autonomy	0.78***	-0.03		
Team members' tenure	-0.04	0.15		
Organization size	0.13	0.36**		
<b>Step 3: Indirect effect of Team Autonomy on Team Implementation via Team Learning</b>				
	Effect	Boot SE	CI 95% low	CI 95% upper
Team Learning	0.32	0.14	0.04	0.60

There was no significant effect of the control variables of team members' tenure and organization size on team learning.

#### Effect of Team learning on team implementation (Hypothesis 2).

As shown in Table 2, and consistent with Hypothesis 2, there was a significant positive effect of team learning on team implementation ( $p < 0.01$ ).

There was no significant effect of the control variables of team members' tenure and organization size on team learning. There was also significant effect of the control variable organization size on team learning.

#### Effect of Team autonomy on team implementation via team learning (Hypothesis 3).

We tested the indirect effect of team autonomy on team implementation via team learning using Hayes's (2013) Model 4 in SPSS PROCESS.

As Preacher and Hayes (2008) recommend, we estimated the indirect effects applying bootstrapping procedures with 5,000 resamples to place 95% confidence intervals around the estimates of the indirect effects. Bootstrapping provides evidence of mediation if the bias-corrected 95% confidence interval (CI) excludes zero for indirect effects.

As seen in Table 2, in congruence with Hypothesis 3, there was a positive significant indirect effect of team autonomy on team implementation via team learning ( $ab=0.32$ , CI 95% [0.045, 0.60]).

## 5. Discussion

The results of the study point on a positive effect of team autonomy on team implementation due to the mediating role of team learning.

First, our findings are with congruence with previous research that supported the positive effect of team autonomy on team learning (Gibson & Vermeulen, 2003; Kirkman, Rosen, Tesluk, and Gibson, 2004). Team autonomy allows teams with the *latitude and ability to experiment with improvements as they see fit* and encourage more *engagement in risk-taking activities*. Therefore it is important for encouraging the team learning behaviors of reflection and experimentation.

Second, the finding regarding the positive effect of team learning on team implementation is in congruence with scholars that claims for the importance of learning orientation and team learning for innovation implementation (Gollwitzer & Bargh, 1996; Edmondson, Bohmer, & Pisano, 2002; Zhu, & Kraemer & Xu, 2006; Klein and Knight, 2005). Team learning creates a conceptual readiness for the implementation by reflection and planning, it is

needed to overcome different obstacles and difficulties involved in understanding how to implement and use the innovation, and it facilitates the adjustment of team practices to the innovation.

Moreover, our findings further demonstrate positive effect of team autonomy on team implementation owing to team learning. To the best of our knowledge no previous research has investigated that mediation effect. This finding is not entirely intuitive since autonomous teams might be less responsive and cooperative with managements' implementation demands. However, according to the present results it can be concluded that team autonomy is beneficial in dynamic environments which require innovation implementations due to increased team learning behaviors.

### 5.1. Limitations and Future Research

The present research is a field correlational study. Therefore the causality of the associations that were found between the research variables is somewhat questionable. But, it is far less reasonable that team learning leads to team autonomy. Moreover, we used different sources for the research data as team leaders rated team implementation and team members rated team autonomy and team learning.

However, we suggest two lines to future research. first, further research is needed for distinguishing between the mediating role of team learning in the effect of team autonomy on the implementation of innovations that are initiated by management versus by those that are initiated by the team. Furthermore, future research might also consider the contribution of team autonomy to team performance via team implementation.

### 5.2. Practical Implications

Managements might hesitate to give up authority in competitive and demanding work environments. As the benefits of for team autonomy in means of subordinates' satisfaction are clearer its benefits to performance are less clear. The dynamic environments also made innovation implementation to an imperative. The implication of the preset study is that team autonomy is advantageous in these environments as it lead to higher innovation implementation via team learning. As team learning is important for team innovation implementation is essential to nurture it especially when there is a high and frequent need for revitalization. Giving up some authority for the planning and organization of work and increasing teams' discretion is an important step toward it.

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**APPENDIX 1.**

## Team autonomy (Kirkman &amp; Rosen, 1999)

1. Our team can select different ways to do its job.
2. Our team determines how things are done
3. Our team feels a sense of freedom in what it does
4. Our team determines as a team what things to do
5. Our team makes its own choices without being told by management
6. Our team has a lot of choice in what it does

## Team learning (Edmondson, 1999)

1. We regularly take time to figure out ways to improve our team's work methods
2. Team members go out and get all the information they possibly can from others- such as customers, or other parts of the organization
This team frequently seeks new information that leads us to make important changes
In this team, someone always make sure that we stop to reflect on the team's work process
People in this team often speak up to test assumptions about issues under discussion
We invite people from outside the team to present information or have discussion with us

## Team implementation (Axtell et. al., 2000)

This team succeeds in implementing new goals and objectives
This team succeeds in implementing new working methods or techniques
This team succeeds in implementing new methods for achieving work objectives
This team succeeds in implementing new information or recording systems
This team succeeds in implementing new products or product improvements
This team succeeds in implementing in other aspects of its work