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The relationship between employee creativity and team creativity: The moderating roles of team autonomy and task interdependence

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Nnenna Echem and Sissi Chan

Abstract

With the growing attention on the competitive advantage in organizations, so has the attention on the field of creativity in an organizational setting. In this study, we investigate whether team autonomy or task interdependence has an effect on the relationship between employee creativity and team creativity. We propose a model where team autonomy and task interdependence works as moderators on the relationship between employee creativity and team creativity. In order to explore the relationship, we applied data collected from a two-staged survey. The survey had a total of 78 participants, consisting of 48 employees and 30 leaders, from 29 Norwegian based companies in the creative field. Through regression analysis, the results from the data collection showed that the relationship between employee creativity and team creativity was non-significant. The results also showed that the moderating effect of team autonomy and task interdependence on the relationship between employee creativity and team creativity was non-significant. The findings indicate that employee creativity may not necessarily lead to team creativity. Future research is recommended to investigate its boundary conditions. Discussion of our findings, implications and directions for future research is deliberated.

The Relationship Between Employee Creativity and Team Creativity: The Moderating Roles of Team Autonomy and Task Interdependence

1.0 Introduction

The purpose of this study is to examine and theorize whether team autonomy or task interdependence has an effect on the relationship between employee creativity and team creativity. According to Barnett and McCormick (2016), task interdependence can be defined as the degree to which the team members must depend on and interact with each other to accomplish their task effectively. Team autonomy, on the other hand, is defined as the extent to which a team has the authority and freedom to make its own decisions to fulfill its mission (Chen, Neubaum, Reilly & Lynn, 2014). Furnham and Nederstrom (2010) defines creativity as the production of novel and useful ideas, concepts or products. For companies that operate in a competitive market and are relying on differentiation of their goods or services, creativity is crucial. In order to stimulate creativity in the organization, extensive research has been done in this field (Furnham & Nederstrom, 2010).

Langfred (2005) claimed that past researchers have only chosen to study the effects of individual autonomy on individual performance and team autonomy on team performance. Therefore, Langfred suggests that a combination between individual and team should be studied and under which circumstances might result in high performance. Caniëls, Stobbeleir and Clippeleer (2014) studied employee creativity and the different stages of the creative process. They suggested that future research should study the importance of antecedents in each of the different phases of creativity, as this is considered to be lacking in the field of creativity.

Many organizations have shifted their focus to team-based work to increase their responsiveness and their ability to facilitate innovation. These organizations need to be concerned not only with cultivating creativity among individual employees, but also with establishing creative and innovative teams (Pirola-Merlo & Mann, 2004). According to Pirola-Merlo and Mann (2004), it is unclear how organizational support for creative teams, if at all, is different from support for creative team members. More specifically, the relationship between employee creativity and team creativity. Researchers such as Scott and Bruce

(1994) have approached this concern by either focusing on the contributions of individual team members, or by focusing on the team processes and broader contextual influences (Bain, Mann, & Pirola-Merlo, 2001). However, each of the approaches has limitations. While only using individual-level measures, creative performance can lead to mistaken beliefs, if the findings are used to draw inferences about team-level relationships. On the other hand, by only using team-level measures, creative performance sheds little light at the micro level mechanisms (Kozlowski & Klein, 2000). The importance of fostering creativity in the organization on the individual and team level is vital. As managers wish for their team members and teams to be creative, it is important for managers to understand the roles of autonomy and task interdependence in relation to creativity.

Task interdependence is a central part of team design in an organization. When an organization provides enough freedom for employees in their task, theory suggests that this influences employees' creative performance. According to Sia and Appu (2015), this will lead to a relaxed mindset and might help to foster new and creative ideas among workers. The reason why task interdependence is important to this study, is due to the emphasis on the importance of collective effort and cooperation among team members. It can also increase communication and promote supportive behaviour, which can be considered important in terms of creativity (Fong, Men, Luo & Jia, 2018). According to Fong et al. (2018), task interdependence is important because it can be considered as a vital part in terms of group dynamics. The research on task interdependence in connection with both individual and team creativity has not been widely researched.

The role of autonomy is also crucial in relation to team creativity for several reasons. Autonomy may lead to empowerment and increased control over the work tasks. In addition, workers are able to make greater use of their skills and problem-solving capabilities, become more positively disposed to workplace management and also become more committed to their organization (von Bonsdorff, Janhonen, Zhou and Vanhala, 2015). In reference to von Bonsdorff et al. (2015), the basic elements of autonomous teamwork are the three elements; task interdependence, independence and discretion when scheduling work and determining the procedures to be used. Further, von Bonsdorff et al. (2015),

claims that the basic idea in sociotechnical teamwork tradition is based upon team autonomy. The underlying notion in relation to sociotechnical teamwork tradition is the view that one group will more effectively apply its resources to address work conditions variances within the group, than an individual employee would do separately.

In sum, organizations have shifted focus to team-based work, and it is essential to study the relationship between employee creativity and team creativity, as it is an essential part of organizations in terms of competitive advantage. Added to the study is team autonomy and task interdependence, due to the importance both constructs may share in a team setting. Team autonomy may lead to empowerment and increased control over the work tasks, which is considered to be important to creativity. Task interdependence emphasizes collective effort, and also increases communication and promotes supportive behaviour, which is also considered to be positively related to creativity (Fong et al., 2018).

2.0 Theoretical framework

Creativity is essential to what it is to be human. It helps our adaptation to the changing environment and circumstances allowing us to transform them. Creativity as a term spans a number of domains from science to business. Creative thinking is the foundation for numerous of fields such as art, science, philosophy, and technology (Chávez-Eakle, Eakle, & Cruz-Fuentes, 2012). Creativity is not only related with finding new ideas and products, but it also deals with new organizational strategies, finding solutions to business problems and to provide creative changes in the entire processes in the organization (Bradbury & Mainemelis, 2001). The field of creative studies has had an unsteady start, where there are numerous of assumptions on what creativity is and how a creative person behaves. The earliest research on creativity was designed to test the possibility that creativity was distinct from intelligence. According to Kaufman and Beghetto (2009), creativity is not only the ability to produce novel and useful ideas, but also ideas that are of high quality, appropriate in terms of usefulness, and ideas that meets task constraints. The Four-C model was therefore developed, which entails four types of creativity; Mini-C, Little-C, Pro-C, and Big-C. The Four-C model describes the types of creativity from ‘novel and personally meaningful’(Mini-C),

to ‘eminent creative accomplishment’ (Big-C). To understand creativity and what processes are involved in creative thinking remains a challenge. The following presents a review on the field of creativity among employees and teams in organizations.

There has been a lot of research on employee creativity and team creativity, but less light has been shed on the relationship between the two constructs. The reason why might be because the relationship depends on the nature of the task and can therefore not be generalized to other. Some of the researchers that have explored this relationship are Pirola-Merlo and Mann (2004). They investigated how the creativity of individual team members is related to team creativity, and also how the influence of climate for creativity in the workplace on individual and team creativity. Their results showed that team creativity is positively correlated with average team member creativity. Their results also showed that factors such as team climate had an impact on team member creativity, but that there is a significant variance in the creativity of individuals within a team. The sources of the variance were claimed to be beyond the scope of their research, but the likely causes were expertise and motivation.

Nevertheless, Pirola-Merlo and Mann (2004) concluded that it is via individual creativity that creative team products emerge in a dynamic process that unfolds over time. A single member of a particular team might feel that the contributions one day are meaningless, but Pirola-Merlo and Mann’s (2005) (2005) model show how each members’ contribution is important. Further, Pirola-Merlo and Mann (2005) did not specify any actions for future research.

Another study that has researched the relationship between individual creativity and team creativity is Taggar (2002). Taggar’s study showed an interaction effect where team creativity was highest when teams had high ratings of individual creativity, and also creativity relevant processes, such as team citizenship and effective communication. Taggar’s findings also suggested that team creativity is more than the sum of its member’s creativity. Taggar (2002) suggest that future research look at components that may interact with the resources for creativity.

Our study aims to look the relationship between employee creativity and team creativity, and to further explore components that may interact with creativity, such as team autonomy and task interdependence.

2.1 Employee Creativity

Employee creativity, which is an important component of human capital, is a formation of novel and useful ideas (Jain & Jain, 2016). Employee creativity can be defined as "the production of novel and useful ideas concerning product, services, processes and procedures by a team of employees working together" (Shin & Zhou, 2007, p. 1715). Employee creativity is distinct from individual creativity in a way that the creativity occurs in work settings (Oldham & Cummings, 1996). For an organization to be able to respond to technological changes, globalization, as well as competitive pressure, there is a need for organizations to diffuse creativity to the employees, thus employee creativity has an important role in personal and organizational effectiveness.

As stated by Amabile, Conti, Coon Lazenby and Herron (1996), there are several researchers that have concluded that creativity is supported when individuals have high autonomy. An individual will produce more creative work when they feel that they have a choice and say in how to solve a given task. Proposed by theorist is the interpretation that communication of ideas and information, as well as being in contact with others should be positively associated with the creative process. The creative process is an individual process as well as a group process. An individual will conceptualize an idea, and then actively choose whether or not to share it with the team (Shalley & Gilson, 2004).

Employee creativity is a key component in human capital, because it generates ideas that are novel and valuable, and also enhances employees' creative job performance and satisfaction. Employee creativity has a central role in personal and organizational effectiveness, but there are conditions that also may hinder employee creativity. De Clercq, Mohammad Rahman and Belausteguigoitia (2017), mentions task conflict as a possible hinder of employee creativity. The pressure that arises under task conflict might create interpersonal animosity, which would challenge this process. Further, it is also proposed that goal congruence might challenge employee creativity, because it may enhance organizational resistance to novel and valuable ideas and instills complacency, which can discourage employees from looking at other viewpoints to find other solutions. In addition, previous research has found that jobs with simple and routinized tasks may not motivate or allow employees to try a different approach

in solving tasks, take risks, and to perform creatively (Shalley & Gilson, 2004).

2.2 Team Creativity

Previous research on creativity tends to focus on creative individuals and therefore most of creative research is focused on the individual level. However, a growing scope of research focus on factors that moderate creativity at a team and organizational level (Brazdauskaite & Rasimaviciene, 2015; Hennessey & Amabile, 2010; Woodman, Sawyer, & Griffin, R., 1993). Research on creativity within groups has moved from the conclusion that individuals outperform groups in terms of creativity, towards a more nuanced understanding of the group processes and an adjustment of experimental design, model of group interaction, motivation, and disposition. Nevertheless, much remains unknown about the creative process within teams, however progress has been made (Hennessey & Amabile, 2010). Taylor and Greve (2006) studied the comic book industry, where they unveiled that working in a team under the right circumstances, resulted in more creative production than working individually and overall, individual creators performed lower than teams.

In the question of the differences between individual work compared to team work, it was concluded that although group work produced better results on numerous measures of creativity, fluency scores were higher for individuals working alone rather than in teams (Svensson, Norlander & Archer, 2002). Research studies on creative problem solving showed that individuals are generally superior to that of groups in creative performance (Treffinger, Isaksen, & Dorval, 2006). However, other researchers assume that these patterns of results may have been driven by the scope of the research such as the experimental tasks, concepts, and research methods that has been employed, a context-based setting. Brophy (1998) proposed a model as a way of explaining inconsistent experimental findings, where he pointed out that creative solvable problems vary in their complexity, requisite knowledge base, and the extent divergent and convergent thinking that are necessary. In addition, the model emphasized that a complete creative problem-solving process require both considerable convergent and divergent thought in continuing alteration. The model predicted that individuals and teams that diversified within knowledge, ability and in work arrangements would be suitable for some problems and a poor suit for others.

There have been discussions on individual and team creativity, in terms of what type of situation creates the best creative ideas. According to Shin, Kim, Lee, and Bian (2012), a team may respond differently to the same context compared to an individual in the same context. This is because of factors such as groupthink, which is referred to as "a mode of thinking that people engage in when they were deeply involved in a cohesive group, when members striving for unanimity override their motivation to realistically appraised alternative courses of action" (Janis 1982, p. 9). Therefore, it would not be appropriate to assume that individual creativity as a construct would equate at team level.

2.3 The role of Team Autonomy

Autonomy is defined as "the degree to which the task provides substantial freedom, independence, and discretion in scheduling the work and in determining the procedures to be used in carrying it out" (Hackman & Oldham, 1980, p. 79)**.** Individual autonomy relates to independence, freedom, and discretion in the individual task (Mierlo, Rutte, Vermunt, Kompier & Doorewaard, 2006), while team autonomy relates to the degree to which a team has considerable discretion and freedom when deciding how to carry out tasks (Langfred, 2005).

Researchers in the field of autonomy have either examined individual or team autonomy, relating it to either individual or team outcomes (Fausing, Jeppesen, Jønsson, Lewandowski & Bligh, 2013). Numerous of researchers suggest that autonomy plays an important role in the "need-satisfaction" process of the cognitive evaluation theory. The cognitive evaluation theory describes the motivation that individuals experience to seek autonomy and influence over their work role and outcome.

Team autonomy is considered to be the team-level parallel of individual autonomy. Researchers have related team autonomy with increased work motivation, improved quality of work, job strain, and reduced absenteeism. It has also has been included in several studies in relation to team member attitude, team creative performance, and behavioral and internal processes (Fausing et al., 2013). Team autonomy is of importance in order to fully gain the advantages of working in a team. In addition, with team autonomy the team will be able to take advantage of the team members knowledge and skills. The existing research on team autonomy do suggest a positive relationship between team autonomy and various

indicators of psychological well-being (Mierlo, Rutte, Vermunt, Kompier & Dooreward, 2007).

As individual autonomy is related to independence, individuals exert control over the scheduling and implementation of their own tasks, and thus leads to less interaction between members of a team. Since this study aims to study team creativity, it is crucial to look at autonomy on the team level. According to Langfred (2005), team autonomy is not the collection of individual autonomy of the team level, but purely a team-level construct with no purposeful existence at the individual level. It has also been pointed out that creative performance may suffer, if team-level autonomy is forced on a team where members act very independently. One can therefore argue that individual autonomy may not necessarily equate to team-level autonomy. Mortimer and Finch (1985) states that autonomy in relation to work is an important determinant of an employee's job satisfaction. Autonomy will provide a better choice for the application of the work and it helps employees to explore their ideas freely. In addition, Chung (1977) discussed how autonomy is an individual's ability to determine their work method, controlling the work schedule and selection of work targets. Further, Amabile's (1996) componential theory of creativity explained the importance of autonomy in relation to work, in order to enhance the employee's creative performance. The work environment will influence the employee's task performance due to the fact that an employee's affective and perceptual aspects are controlled by the conditions at work. As several researchers has found a positive connection between autonomy and employee creativity, it can also be assumed that there is a positive connection between team autonomy and the connection between employee creativity and team creativity. On the other hand, an individual construct may not necessarily equate at the team level. Therefore, it can also be discussed that team autonomy may have no effect or a negative effect on the relationship between employee creativity and team creativity.

Based on the presented theory above, this study will explore the construction of team autonomy, together with the other moderator task interdependence, because they are both considered to be critical elements of team creative performance (Langfred, 2005). Due to this, one can assume that team autonomy and task interdependence are also critical elements of team creativity.

2.4 The role of Task Interdependence

As previously defined, task interdependence is the degree to which team members must rely on and interact with each other to accomplish their tasks effectively. Most literature on task interdependence focus on the objective structure, while task interdependence is determined by the characteristics of a task (Barnett & McCormick, 2016).

In general, all teams in organizations require input from different members and areas of knowledge. Members in teams interact with each other to share and develop ideas, and to integrate different components of a task that was developed independently (Pirola-Merlo & Mann, 2004). Individuals who work on a different component of a task can also be referred to as task interdependent, which is the degree where interaction and coordination of team members are needed to complete tasks (Guzzo & Shea, 1992).

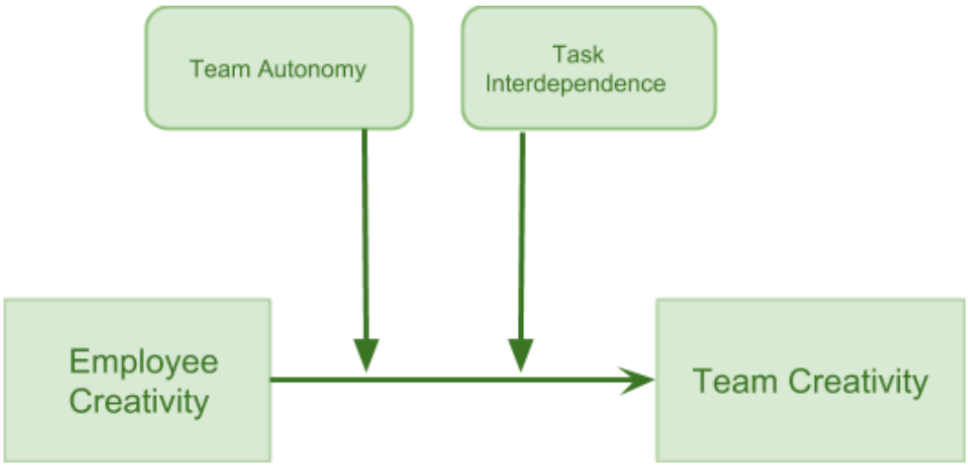
According to Courtright, Thurgood, Stewart and Pierotti (2015) interdependence is a central aspect of team design. Wageman (2001) stated that a leader's team design choices and the level and type of interdependence will play a critical role to the team's creative performance. Regardless of the importance of interdependence, there exists some confusion with reference to interdependence and its role in teams. Interdependence have been operationalized and conceptualized by scholars in numerous of ways, which ultimately leads to confusion of the meaning of interdependence. There are scholars that percepts interdependence as a structural property of teams, while other scholars view interdependence as a behavioral construct. Further, there is also a lack in clarity regarding the impact of interdependence on team creative performance and team functioning (Courtright et al., 2015). Task interdependence and team autonomy are both considered critical elements of team creative performance. There are several factors that can affect creativity on the individual level, as well as on the team level. We choose to look at task interdependence and team autonomy because there has been little research of this specific context.

2.5 Research question and hypotheses

Based on the earlier discussion as well as the previous research, we want to investigate the relationship between employee creativity and team creativity with team autonomy and task interdependence as the moderators of the relationship.

The hypothesized model (see figure 1) shows employee creativity as the independent variable and team creativity as the dependent variable.

Figure 1. The hypothesized model of the relationship between Employee Creativity and Team Creativity:



Researchers have investigated the question on how organizational support for creative teams differs from support for creative individuals by either focusing on; the contributions of individual team members, the team processes, broader contextual influences or by scrutinizing the interaction between member contributions (Pirola-Merlo & Mann, 2004). Pirola-Merlo and Mann (2004) describes creativity as either a micro or macro perspective, and that recent work in theoretical advancements have been linking micro and macro perspective, the work environment and intra-individual components. Amabile´s (1997) Componential Model of Organizational Innovation is an important theory linking the contextual factors with intra-individual factors. The model describes three intra-individual factors that are important for creativity (domain-relevant knowledge, creativity-relevant skills, and motivation), and it also describes characteristics of the work environment (organizational motivation to innovate, resources and management practices). Another relevant theory is West's (1990) model of team climate. Team climate has been studied in relation to team creativity. West (1990) identifies four team climate factors that are found to predict creative performance. These are vision, participative safety, task

orientation and support for innovation in a team.

Little light has shed on the relationship between the team and the individual contributions of the members, due to the reason that the relationship is reliant on the nature of the group task. Thus, findings of one type of group working on a type of task cannot be generalized to others (Pirola-Merlo & Mann, 2004). Moreso, creativity can arise as individual work separately on subtasks of the larger task, and can also arise as members interacts. Taggar (2002) investigated the relation between individual creativity and a groups ability to utilize creative resources and suggested that group creativity is not fully determined by individual creativity, instead, that group creativity might appear synergistically when members jointly communicates in certain ways. Further, previous research has suggested that creativity is most profound when conducted individually, but existing theories also predicts higher creativity whenever members of teams differ in their task-relevant perspectives and knowledge (Hoever, Van Knippenberg, Van Ginkel, Barkema & Kozlowski, 2012). As previously mentioned, employee creativity generates novel and valuable ideas, and one can assume that a team of employees may have different point of views and creative ideas in terms of task completion. Based on this, we hypothesize:

H1: *Employee creativity is positively associated with team creativity*

Numerous of researchers have argued that it is necessary for an organization to enhance the creative performance of their employees to achieve competitive advantage (Oldham & Cummings, 1996). A frequent amount of evidence indicates that employee creativity contributes to organizational innovation, effectiveness and survival, and is therefore important to the organization (Beheshtifar & Zare, 2013). According to Oldham and Cummings (1996) little is known about the conditions that promote creative performance of employees in an organization. Beheshtifar and Zare (2013) explains that employees will not have the ability to foster their creativity in traditional productivity driven organizations with structures, time constraints, regulation, similar tasks and standardized workplace. One can therefore make an assumption that the opposite of a typical standardized organization, which is an organization that foster autonomy, will have the ability to cultivate creativity in an organization. As stated by Schaufeli

and Salanova (2007), work related autonomy should be considered as an important job resource that advocate three dimensions of engagement; dedication, vigor and absorption. Oldham and Cummings (1996) also stated that team members with high levels of autonomy are more inclined to engage in problem-solving, alternative thinking and risk taking, which all are expected to stimulate creativity. Therefore the following hypothesis is proposed:

H2a: *Team Autonomy will moderate the relationship between employee creativity and team creativity. The relationship will be stronger when team autonomy is high.*

According to Saavedra, Earley and Van Dyne (1993), task interdependence is considered to be one of the most structural variables that influences team creative performance. Additionally, Langfred and Shanley (2001), pointed out that task interdependence often indirectly influence creative performance by moderating the effects of other variables on creative performance. Pearce and Ravlin (1987) explains that task interdependent teams are well positioned in terms of coordination. Other teams may experience process loss from having to coordinate and interact sufficiently.

In H1 we proposed that employee creativity is positively associated to team creativity. Task interdependence is of great importance, and is often moderating the effects of other variables on creative performance as stated by Langfred and Shanley (2001). High task interdependence in a team results to less time spent on planning, coordination and decision making, which also can alternatively create more room for creative thinking within a team. Further, task interdependence is considered to be a structural constraint on the ability of team members to successfully complete their tasks (Langfred, 2005). As previously discussed, conflict within a team was a factor that might inhibit creativity, but in a team with high task interdependence team members are more likely to be aware of the problems within the team, compared to teams where task interdependence is low. One can assume that the higher task interdependence within a team, the higher the chance of creating a novel and valuable idea within a team.

Therefore, we propose the following hypothesis:

H2b: *Task Interdependence will moderate the relationship between employee creativity and team creativity. The relationship will be stronger when task interdependence is high.*

We previously discussed the effect of employee creativity on team creativity, where we hypothesized a positive relationship due to previous research suggesting that creativity is higher when members differ in their task-relevant knowledge. Further, both task interdependence and team autonomy can be positively related to team creativity. Thus, the higher task interdependence the greater the room for creative thinking within a team, eliminating problems such as conflicts in a team. Further, in a team where the autonomy is high, it will allow the team to think and develop creative ideas without an organizational constraint. Therefore, one can assume that when team autonomy and task interdependence is high, the positive relationship between employee creativity and team creativity will be the strongest. Based on this we propose a three-way interaction:

H3*: Employee creativity, team autonomy and task interdependence will interact to predict team creativity, such that the positive relationship between employee creativity and team creativity is strongest when team autonomy and task interdependence is high.*

3.0 Methodological framework

3.1 Data Collection

In order to investigate the proposed hypotheses through an inductive approach, we collected data using field surveys distributed to employees and to their respective leaders of the organization. In terms of quantitative research the purpose is to quantify attitudes, opinions and behaviors. By utilizing quantitative research, one can formulate facts and uncover patterns in research by generalizing results from a larger sample of a population. More specifically, a more general conclusion could be drawn to the extent to which team autonomy and task interdependence can

moderate the effect between employee creativity and team creativity (Bryman & Bell, 2011).

A cross-sectional design was chosen for this study. The reason is because it allows much bigger samples, and also because we wish to examine the relationship between variables. This will allow us to collect data on more than one case, and at a single point in time. It also makes it possible for us to detect patterns, and analyze phenomena (Bryman & Bell, 2011). In addition, no follow-up is required, since all information is collected just once. As such, it is relatively inexpensive and takes up little time to conduct.

According to Younus (2014) all research methodology consists of planning and execution, which are two broad phases. Because both planning and execution are two broad phases there is also likely that limitations will arise. To avoid potential common method biases, we collected data from two sources, consisting of employees and their respective leaders (Conway & Lance, 2010).

3.2 Procedure and Sample strategy

To be able to collect data, we conducted an online survey using a web-based program called Qualtrics. The questionnaires were distributed at one point in time to 7l organizations that operate in the creative field. The reason behind collecting data from multiple organizations is because it can strengthen the generalizability of our findings (Bryman & Bell, 2011).

Survey participants were approached through email. In order to make sure that the participants understood the scope of the survey, we contacted the leader in each team to explain the purpose of our study, so that the respective contact person could bring the information further. We also attached an information letter about the research and procedure to ensure confidentiality. The questionnaires were distributed through emails, and participants got individual links to answer the survey. Using individual links made it possible to distinguish which participant belonged to what team.

Our analysis was based on an online survey of 48 employees and 30 leaders who work in the creative field. These were in the creative fields of architecture, marketing, public relations (PR), media agencies, and entertainment located in Norway. To collect a representative sample, the survey was sent out to

216 employees and 88 leaders, however only 86 (40%) employees and 54 (61%) leaders responded to the survey. But because of the need of a leader-employee dyad the total amount who could further be used in our research was 78 respondents. In terms of dyads, there were 48 dyads. The responses from employees consisted of 18 male (37.5%) and 30 female (62.5%) respondents, whereas the responses from leaders consisted of 21 male (70%) and 9 female (30%) respondents. The response rate was in the age differences ranging from 18-50, for both employees and leaders.

3.3 Measures

Questionnaires had to be authorized by NSD (Norwegian Social Science Data Services) before distributing it out to companies in Norway. After approval from NSD, the process of sending out surveys started.

To ensure valuable and reliable measures, the questionnaire had items that covered all variables we wanted to measure. These were of independent, dependent and moderating variables, on a 7-point Likert scale, except from the control variables. Likert scales are asked survey questions about an issue where respondents answer to the degree they feel about an issue. The reason as to why one chooses to use the Likert scale is to isolate personal opinion from collective response. Using the Likert scale will provide us with quantifiable data. However, by using the Likert scale our respondents will have the ability to stay neutral, which can skew the results (Bryman & Bell, 2011). Measures were adopted from previous research to ensure that they have been tested out previously. In terms of using Likert scale there has been discussion in regards to how accurate the scale is. The Likert scale usually either has a scale of 5 or 7, where the scale can be perceived differently by survey respondents. In example, the rating 3 may not be the same for every respondent, and may therefore fail to measure the true attitude of the respondent (Bryman & Bell, 2011). Scales used in the thesis will be presented in the next section. In addition to collecting data from employees, data was also collected from the leader of all the teams. The reason why data was collected from leaders was to capture the leader-follower dyad: the link between the leader and the team.

As a result of a multilevel studies on creativity, employee creativity was measured using self-ratings, in addition, the team leaders' ratings on their team

creativity was also obtained. On a separate rating form, leaders were provided with a similar set of questions for them to answer, using the same response scale as the employees.

3.3.1 Employee Creativity

This study explored employee creativity as the independent variable. In agreement with previous creative studies we used a 13-item scale developed by Zhou and George (2001). The scale is designed to measure six key dimensions of employee creativity. These were: creativity, job dissatisfaction, continuance commitment, useful feedback from coworkers, co-worker helping and support, and perceived organizational support for creativity. The employee creativity construct was measured by using self-ratings questionnaires, where participants were asked to answer questions, using a 7-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree). Items used in the 13-item scale developed by Zhou and George includes: *(1) I suggest new ways to achieve goals or objectives (2) I come up with new and practical ideas to improve performance (3) I suggest new ways to increase quality.*

3.3.2 Team Creativity

Team creativity is the dependent variable, and the variable was measured by looking at the leader's ratings of the overall creative performance of their team, using the same 13-item scale from Zhou and George (2001). We modified the scale from measuring employee creativity, to the leaders´s ratings on the overall team creativity performance (Pirola-Merlo & Mann, 2004). Leaders were asked to rate their answers on a 7-point Likert scale, and some of the questions included were: *(1) the team usually proposes creative and useful ideas (2) the team produces knowledge that did not exist before the team was formed (3) the team can complete the project task within the deadline.* In line with previous creativity studies, leaders were asked to assess the team's creativity (Zhou, 2003).

3.3.3 Team Autonomy

Team autonomy is the first moderator in the proposed model. As a moderator, team autonomy will affect the relationship between the independent variable; employee creativity, and the dependent variable; team creativity. According to

Langfred (2005), there are several researchers that have attempted to develop scales for team autonomy. To measure team members' internal orientation toward autonomy on a 7-point Likert scale, we will use items from the General Causality Orientation Scale (Deci & Ryan, 2000). Some of the questions included: *(1) The team is free to decide how to go about getting work done (2) the team is free to choose the method(s) to use in carrying out work (3) the team is able to choose the way to go about its work.* The items for this scale was the same for the leaders as it was for the employees.

3.3.4 Task Interdependence

Task interdependence is the second moderator in our proposed model. In terms of our model we propose that task interdependence will affect the relationship between the independent and the dependent variable. Task interdependence was measured using 7-item scale adapted from Kiggundu (1981). This scale measures both received task interdependence and critical task interdependence. By using items from this scale, we will be able to capture an overall measure of task interdependence. Some of the question included: *(1) the team works best when we coordinate our work closely (2) team members have to work together to get group tasks done (3) the way individual members perform their jobs has a significant impact on others in the team.* Examples of items from this scale modified for leaders was: *(1) their work cannot be done unless other people do their work (2) Most of their work activities are affected by the activities of other people on the team.*

3.3.5 Control variables

A variety of variables were controlled in order to rule out any alternative explanations on the relationship between independent and dependent variable, and to explore whether these had any effects on the relationship. Age and gender diversity was included as prior work has suggested that these variables could be linked to interpersonal contacts, knowledge bases and creative performance (Van Der Vegt & Bunderson, 2005). Age was measured using categories *(18-26, 27-34, 35-42, 43-50, 51 or older)*, and gender was measured as a dummy variable coded as 1 equals male and 2 equals female. Organizational tenure was also included. Research suggests that communication increases, as an employee's organizational

tenure increases, due to interpersonal relationship develop and the desire to speak to others may rise (Zenger & Lawrence, 1989). Similarly to age, organizational tenure was measured with categories *(less than 1 year, 1-5, 6-10, over 10 years)*. Education level was also implemented as a control variable, and was measured using four categories, where the last was open question *(1. High school, 2. Bachelor's degree, 3. Master´s degree, 4. Open)*. As creative skills can be acquired through alternative ways, we wanted to give survey participants an open option in case they had other background that was not listed in terms of education.

4.0 Results

Table 1 displays descriptive statistics such as means, standard deviations and correlations of all variables.

4.1 Reliability

As the conceptual idea of this thesis is to examine the relationship between employee creativity and team creativity, the employee ratings and leader ratings has not been aggregated. To avoid common method bias the leader ratings was used in the team creativity construct, while individual ratings were used in the employee creativity construct. In terms of the definition of team autonomy and task interdependence, one can assume that leaders usually rate the creative performance of the team, and are often not part of the team in terms of the work process. Thus, one may argue that individual rating can be used for the constructs of task interdependence and team autonomy. On the other hand, team autonomy and task interdependence are both constructs that relates to a team, but a leader and team are different virtues that strongly relate to each other, which is why an aggregated rating is used for both constructs. More specifically, task interdependence is known as a group-level phenomenon. As task interdependence increases, the group member's degree of dependence on others in the team increases. This creates the need for coordination, communication and coordinated action. It is argued that leaders are more likely to have an impact on team creative performance when task interdependence is high, thus a leader's assistance in coordinating interaction among team members is needed (Liden, Erdogan, Wayne & Sparrowe, 2006). Based on this, we used an aggregated rating on the task

interdependence construct. In addition, an aggregated rating was used in the team autonomy construct, following Langfred (2005).

The Cronbach's Alpha coefficient was used to estimate the reliability for all constructs, this is to ensure that the constructs are measuring what they are supposed to measure. According to Pallant (2010) for a construct to be reliable the Cronbach's Alpha score should be above .7. The constructs that were used in the questionnaire are all based on constructs that have been previously tested and confirmed as reliable.

The Cronbach alphas are presented in table 1. Employee creativity (n=48) was reliable with a Cronbach's Alpha of .858. Team creativity (n=48) indicated a score of .642, which is not reliable. To address this issue, we removed two items to improve the reliability. After the removal of items (item 3 and item 4), it yielded a reliable Cronbach's Alpha for team creativity with a score of .719 for four items. For team autonomy (n=48) the results indicated a score of .894, whereas task interdependence (n=48) had an estimate of .738. Thus, all the scales provided the desired score above .7, which illustrates reliable measures for all constructs.

4.2 Data analysis

The three proposed hypotheses were tested through multiple regression analysis using SPSS. This statistical performance analyses the relationship between the independent (employee creativity) and dependent variable (team creativity), and the moderators (task interdependence and team autonomy).

The regression analyses had employee creativity as the independent variable and team creativity as the dependent variable. Through performing regression analysis, results showed that employee creativity had a non-significant contribution on predicting team creativity (β=.235, p>.05) *(p=.196)* (see table 2). The analysis had an R-square of .262, which means that 26.2% of the variance in team creativity is explained by employee creativity. The adjusted R-square was .088, thus the model did not reach a statistical significance *(p=0.183)*. Our results did not support the hypothesized moderation for Hypothesis 1.

Table 1. Means, standard deviations, scale reliability and correlations among variables.

Variables	Mean	SD	α	1	2	3	4	5	6	7	8
1. TeamcreativityL	5.8646	0.63153	0.719								
2. Age	2.13	0.866	n.a.	0.255							
3. Gender	1.63	0.489	n.a.	-0.099	-.399						
4. Education	2.44	0.769	n.a.	0.168	0.012	-0.064					
5. Tenure	1.98	0.785	n.a.	0.262	0.567	-.353	-0.266				
6. EmployeecreativtyEc	0.00	0.64593	0.858	0.340	0.187	-.124	0.399	0.087			
7. TeamautonomyEc	0.00	0.95197	0.894	0.180	0.071	-.036	0.221	0.057	0.512		
8. TaskinterdependencYEc	0.00	0.85731	0.738	0.264	-0.070	0.203	0.025	-0.062	0.212	0.210	

N=48
**p < 0.05: **p < 0.01*

Moving on to the second hypothesis (H2a), the analysis included the same independent and dependent variables, employee creativity and team creativity. However, it also included team autonomy as a moderating variable to see if this affected the relationship between employee creativity and team creativity. The results showed a non-significant relationship (β=-.095, p>.05) *(p=.573)* (see table 2). This indicate that our results did not support the hypothesized moderation for Hypothesis 2a.

Further, Hypothesis 2b included the independent variable employee creativity and the dependent variable team creativity, as well as task interdependence as a moderating variable on the relationship between the independent and dependent variable. The results showed (β=-.064, p>.05) *(p=.709)* (see table 2). The results did not support the hypothesized moderation.

To test Hypothesis 3, we ran a second regression analysis where we included the three interaction factors; *EmployeecreativityEc, TeamautonomyEc and TaskinterdependencyEc*. The purpose was to explore whether employee creativity, team autonomy and task interdependence will jointly interact to predict team creativity. Through performing a regression analysis result showed (β=.067, p>.05) *(p=.761)* (see Table 2). This suggests that the results did not support the hypothesized moderation for Hypothesis 3.

Table 2. Regression results testing for direct and moderated relationship.

	TEAM CREATIVITY	
	Direct relationship	*Moderated relationship*
Constant	n.a. *(.000)***	n.a. *(.000)***
Age	.071 *(.689)*	195 *(.314)*
Gender	-.014 *(.930)*	.090 *(.582)*
Education	.138 *(.406)*	.029 *(.866)*
Tenure	.208 *(.297)*	.177 *(.390)*
EmployeecreativityEc	.235 *(.196)*	.168 *(.401)*
TeamautonomyEc		-.063 *(.710)*
TaskinterdependencyEc		.220 *(.154)*
EmployeecreativityEc ×TeamautonomyEc		-.095 *(.573)*
EmployeecreativityEc×TaskinterdependencyEc		-.064 *(.709)*
TeamautonomyEc×TaskinterdependencyEc		.189 *(.349)*
EmployeecreativityEc×TeamautonomyEc×TaskinterdependencyEc		.067 *(.761)*

Note. *N=48*
**p < 0.05: **p < 0.01*
Provided in cursive and parenthesis is the p-value

5.0 Discussion

The aim of this study was to examine how employee creativity leads to team creativity, and to see in what degree team autonomy and task interdependence would jointly affect the relationship between employee creativity and team creativity. Team autonomy and task interdependence were tested as moderators of the proposed relationship. None of our proposed hypotheses were supported. This can prominently be due to a small sample size. However, in addition to small sample size there might be other factors that have played a role that we discuss below.

For Hypothesis 1, we predicted that the independent variable employee creativity is positively associated with the dependent variable team creativity. We based our hypothesis on previous study from Pirola-Merlo and Mann (2004), Amabile (1997), West (1990) and Taggar (2002). The findings did not support the hypothesized moderation. As previously mentioned there has been little research on the relationship between group creative performance and the individual contribution of members, as the relationship is dependent on the nature of the

group task. Therefore a group and the group task cannot be generalized to others. Also, there are studies that are reluctant to the direct link between employee creativity and team creativity, or if there are moderators that foster the relationship between employee creativity and team creativity (Langfred and Shanley, 2001).

Zhou, van Knippenberg and Hirst (2009) explained that people often work in teams in organizations, where individual creativity often is enacted in this context. This means that managing creativity requires the ability to identify employees with creative potential, and also understand how the team context influences the creativity of individuals with different dispositions. Not only is this a challenge for managers, but this is also a challenge for research requiring insight into the dynamic interplay between individual and team determined by individual creativity. According to Bai, Lin & Li (2016) employee creativity is facilitated through organizing employees into small teams, where members can share their distributed knowledge, but that this type of teams or groups does not always necessarily lead to creativity, as there are other factors that may affect the relationship. Further, Bai et al. (2016) explains that teams generally fail to encourage their members to share their creative thoughts, because it might cause disagreements between team members.

Pirola-Merlo and Mann (2004) stated that creativity can occur when individuals work separately on components of a larger project, but also during the time when members interact with each other. This interaction can stimulate ideas among the individuals, but still be attributed to specific individuals, meaning that individual creativity may influence group interaction, but the relationship between the creativity of the individuals on the team and the group-produced creative outcome can be weak. Further, Pirola-Merlo and Mann (2004) states that the idea that team creativity is influenced and to some extent determined by individual creativity may seem uncontroversial. Nonetheless, a question that is important in terms of individual and team creativity is whether team creativity is completely determined by individual creativity, or if it is more of an aggregation of individual creativity.

Additionally**,** results did not support the hypothesized moderation for hypothesis 2a. We based our hypothesis on present study from Oldham and Cummings (1996), Beheshtifar and Zare (2013) and Schaufeli and Salanova (2007). The findings were not in agreement with previous research. To bear in

mind this may be due to the small sample size, however there might be other factors to consider. Amabile et al. (1996) specified that there are several researchers that have concluded that creativity is supported when individuals have high autonomy. Nevertheless, as stated by Oldham and Cummings (1996) there is little information about the conditions that promote creative performance for employees in an organization. The typical standardized organizations with structures, time constraints and regulations were assumed to have a negative impact on employee creativity (Beheshtifar & Zara, 2013), whereas organizations that are the opposite of a typical standardized organization will have the ability to cultivate creativity, through actions such as autonomy. Evidence regarding the benefits of an autonomy supportive work environment for creativity has been evident in the organizational literature. Amabile's (1996) componential theory of creativity emphasized the importance of work environment autonomy in improving one's creativity. Further, Oldham and Cummings (1996) also found that autonomous jobs had a positive influence on subordinate creative performance. Zhou (1998) stated that when autonomy is high regarding task it will facilitate a generation of creative ideas. On the other hand, through a study at High Tech Electronics International, Amabile (1997) found three dimensions that played a relatively less prominent role in terms of organizational creativity, one of these dimensions were freedom, which is a significant part of autonomy.

Moving on to hypothesis 2b**,** the hypothesized moderation was also not supported. We based our hypothesis on research and findings from Saavedra, Earley and Van Dyne (1993), Langfred and Shanley (2001), Pearce and Ravlin (1987), and Guzzo & Shea (1992). The findings do not agree with previous research, which states that task interdependence often indirectly influence creative performance by moderating the effects of other variables on performance. Task interdependence is considered to be one of the most structural variables that influences team creative performance (Saavedra, Earley & Van Dyne, 1993). Again, this can be a result of small sample size leading to non-significant findings.

For hypothesis 3, the results did not support the hypothesized three-way interaction. Hypothesis 3 was based upon the broader contextual factor, and also contributions of the individual members in teams. A possible explanation for the present findings is that creativity is an ongoing process, which is not limited in

time and space (Gilson & Shalley, 2004). As previously mentioned team autonomy relates to the degree to which a team has considerable discretion and freedom when deciding how to carry out tasks (Langfred, 2005). Team autonomy will give an individual some sort of freedom in the team, but we can assume that individuals still will be bounded by norms and rules in a group, and therefore not be solely autonomous. More, task interdependence is the degree to which team members must rely on and interact with each other to accomplish their tasks effectively (Barnett & McCormick, 2016). We argue that one of the foundations in terms of promoting creativity is freedom, and task interdependence requires some sort of reliance on other individuals, so it can be discussed on what level of task interdependence will have a positive impact on team creativity, or if task interdependence is a factor that actually inhibits creativity. During a creative process, a high level of task interdependence requires team members to interact with each other, while a low level of task interdependence will require team members to interact in a certain degree.

Further, it is stated that the process of team creativity remains ambiguous and vague, with limited knowledge on the differences occurring between the stage where teams are formed and generate new ideas. As a result, it remains unclear how moderators, such as team autonomy and task interdependence, can translate into creative outcomes for the team (Cirella, Radaelli & Shani, 2014).

5.1 Limitations and future research

Firstly, our sample size was insufficient (n=48). A larger sample size would therefore be desirable. Although our field study was conducted across multiple sites which gives the benefit of increased generalizability, with a small sample size, the chances of detecting a true effect is reduced, thus our results could not be generalized (Bryman & Bell, 2011). With a sufficient sample size in mind, exploring the interactions in cross-cultural setting and in different organizations, for instance, could extend the generalizability of the findings. Additionally, this study focused on explaining the relationship between employee creativity and team creativity, rather than putting much emphasis on the complexity of team creativity dynamics, and cross-level interactions, that may not apply in an individual context.

We originally wanted to collect data at two points in time, but due to limited time and response rate, the data was collected at one point in time. In terms of access to employees in an organization, a sufficient amount of time has to be available. By measuring two points in time, one can investigate a problem and measure change and stability over time. Further, self-reporting questionnaires was also used in this research, which can cause response bias. According to Rosenman, Tennekoon and Hill (2011) there are several reasons as to why individuals offer biased estimates. The respondents might misinterpret certain questions on the survey, or they may also want to 'look good' even though the survey is anonymous.

Nevertheless, our limitations might strain the conclusion of this study. When the sample size is too small, it might make it difficult to find significant relationships from the data analysis. In addition, a small sample size could be the reason why that no true effect was detected. Normally, statistical tests require a larger sample size to ensure a representative distribution of the population. In addition, a large sample size is also considered to be representative of the group of people that the results are generalized to (Anderson & Vingrys, 2001). Therefore, a suggestion for future research is to replicate our study with a sufficient amount of sample size. In research design one may come across the challenge to collect the necessary sample size. Ideally, the whole population would be studied, but this is considered almost impossible. With a small sample size, it can be difficult to generalize results and is therefore not preferred. On the other hand, Anderson and Vingrys (2001) argues that studies with small sample sizes can be of importance to research as well. Large sample sizes are used to quantify general performance within a population, while Anderson and Vingrys (2011) argues that studies with smaller sample sizes can be used to document the existence of an effect.

Additionally, in this study we limited our sample size to organizations that are in the creative field, and can therefore only generalize our results thereafter. A suggestion for future research is also to include organizations that do not operate with creative tasks. This can test Kaufman's Four-C model, which theorize that not all creativity is novel and valuable, but that there are different types of creativity (Little-C). A research can see if our findings also applies to other types of organizations.

Earlier we mentioned that the creative process is an individual process, as

well as a group process, and that individuals actively choose whether or not to share it with the team. It could be interesting for future research to explore if there is a positive relationship between team tenure and team creativity. Perhaps, it also would be interesting for future research to try other variables as moderators, to see if it can have an effect on the relationship between employee creativity and team creativity. For instance, knowledge sharing within teams could be an interesting moderator of the relationship between employee and team creativity, as practitioners have noted in earlier studies that sharing knowledge is personal, and thus getting members to share knowledge is difficult. If knowledge sharing within a team is a necessity in terms of creative performance and if members do not share information it may lead to low team creativity (Staples & Webster, 2008). On the other side, one could theorize that if members share information within the team, then team creativity would be stronger.

In regards to the moderating effect of task interdependence on the relationship between employee creativity and team creativity, it is a central aspect of team design (Courtright et al., 2015). The researchers emphasized in their study that task and outcome interdependence served as critical inputs to team effectiveness, but instead they operated differently through mechanisms. In the sense that task and outcome interdependence have differential effects on team performance. Added, while task interdependence mainly influenced team performance through task-related team functioning, outcome interdependence mainly influenced team performance through relational team functioning. Courtright et al. (2015) highlights the importance of both types of interdependence as they act as important inputs to team functioning. Building upon this, we argue that it may have resulted differently if also outcome interdependence is included in any future study on the relationship between employee creativity and team creativity and the moderating role of interdependence on the relationship.

Another possible moderator that would be interesting to look further into is team climate. As previously mentioned, team climate is recognized by both Taggar (2002) and Pirola-Merlo and Mann (2004). Team climate should have measurable impact on individual team member creativity, as for instance, a climate of participative safety would increase the chance that a member will contribute an idea that is unusual risky. Thus, climate could facilitate individual

creativity, and therefore have a positive impact on team creativity (Pirola-Merlo & Mann, 2004). We propose team climate as a substitute moderator for task interdependence, as we argue that these two combined, would result as a paradox. As mentioned earlier, teams usually interact to share and develop ideas, in addition to integrating different components of a task that were developed independently, hence disagreements may occur when filtering and critiquing ideas together. Thereof, we suggest a three-way interaction between employee creativity, team autonomy and team climate as an interesting study for future research.

5.2 Practical and theoretical implications

There are some practical implications to our findings. Van den Bossche, Gijselaers and Segers (2006) suggested that it is the sum of the whole, rather than the individual part that enhances creativity. The results suggest that a high level of team autonomy or task interdependence is not necessary for team creativity, and the results also suggest that employee creativity is not a factor in terms of team creativity. Further, these results suggest that there are other factors that may moderate the relationship between employee creativity and team creativity. For example, Joo, Mclean and Yang (2013) recommends organizational learning culture as a key factor that may can have a positive impact on employee creativity, and that it also applies in a team context, as well as an individual context.

Further, this study has implications for the recruitment of employees. In our theory part, we defined employee creativity as an employee that generate novel and useful ideas in the work setting. From a managerial perspective, this can be interesting due to the fact that managers and organizations often facilitate for employee creativity, when it is not positively associated with team creativity. Creative employees are sought after in the job market today, because it is assumed that creative people equals competitive power, but our findings may suggest that a creative employee might not be an important factor in terms of team creativity, and that there are other factors that may lead to team creativity.

Nevertheless, building on the results suggesting that high team autonomy is not necessary for team creativity, could however be necessary for creativity under the right circumstances in terms of effectiveness. Teams that are effective, have more time left to refine their tasks, and thus have more time to be creative.

For instance, multifunctional teams like consulting teams may particularly benefit from this.

As for theoretical implications, the study highlights findings that can contribute to the creativity literature. With regards to the findings, one can assume that the role of employee creativity is not of importance to team creativity. Our findings implicate that teams are not dependent on employee creativity to produce a creative result in a team.

6.0 Conclusion

This study can contribute to the creativity literature by exploring the relationship between employee creativity and team creativity. This study is of importance in the creative field because it investigates topics that are crucial for organizations in terms of competitive advantage. The results suggested that employee creativity is not of significance to team creativity, and that team autonomy and task interdependence will not have a positive effect on the relationship between employee creativity and team creativity. Further, as stated earlier, we cannot generalize our findings, due to the limitations in the study.

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8.0 Appendices

8.1 Appendix 1: Cover letter

Employee and Team creativity - Master Thesis Project

Along with the growing focus on competitive advantage in organizations, the focus on creativity in organizations has increased. Based on this, there is a need for research by the moderators on the relationship between an employee's creativity and team creativity.

As part of a master's thesis at BI Norwegian Business School, a research project on creativity and groups is being carried out. You have been asked to participate because you are employed by an organization with creative tasks. Your organization has agreed to participate in this research project. Your participation is important in helping to understand the relationship between employee creativity and team creativity. You will be invited to participate in a survey designed to evaluate these topics.

What does participation in the study involve?

The survey will be carried out using an online questionnaire - Qualtrics. The survey contains a series of questions where you rate your answers on a scale of 1-7 (indicates to what extent you agree or disagree with a number of statements). Additionally, demographic questions are added that can be checked.

The survey will take about 15 minutes. Note that there is no "correct" or "wrong" answers, and it is important for you to express what you think. The survey will be sent out in two rounds. The current survey is the first survey. Another survey will be sent later in spring 2018. The advantage of this is that the data has higher reliability. Your answers to the surveys during this period will be linked to your email address. All personal information will be made anonymous at the end of the project, 3/9/2018.

What will happen to your information?

All personal information will be treated confidentially. BI representatives are responsible for ensuring that no information is lost. All information will be kept strictly confidential throughout the entire project period - the data is encrypted. In

addition, all direct personal data in the project are stored separately from the answers in the survey. All personal information will be anonymized upon completion of the project 1/9/2018 and for potential publication of the results. Research participation is voluntary. Completed examinations are considered as consent to participation. You can withdraw your consent to participate at any time without giving any reason.

If you wish to attend or have questions regarding the study, please contact Sissi Chan by e-mail: sissi.chan@student.bi.no or phone + 47 47814168, Nnenna Echem, e-mail: Nnenna.echem@student.bi .no or phone +47 45062536, or research supervisor Sut I Wong email sut.i.wong@bi.no or phone +47 46410723.

The study has been approved by the Norwegian Data Protection Agency, NSD - Norwegian Center for Research Data AS.

Best wishes,
Sissi Chan and Nnenna Echem,
MSc in Leadership and Organizational Psychology BI Norwegian Business School Nydalsveien 37, 0484, Oslo

8.2 Appendix 2: Survey for employees

Thank you very much for taking the time to answer this survey, which maps "creativity" to our master's thesis on the study management and organizational psychology at BI Norwegian Business School. Your answer will help us analyze the relationship between an employee’s creativity and team creativity. Estimated survey time is five minutes.

Q1. Age

- 18-26
- 27-34
- 35-42
- 43-50
- 51 or older

Q2. Gender

- Man
- Woman

Q3. Accomplished education

- High School
- Bachelor degree
- Master degree
- Other:_____

Q5. How many years have you been employed in the firm?

- less than one year
- 1-5 years
- 6-10 years
- over 10 years

Q6. Below are a number of statements about your creativity in the workplace:

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
I suggest new ways to achieve goals or objectives.							
I come up with new and practical ideas to improve performance.							
I often search out new technologies, processes, techniques and or							

product ideas.							
I suggest new ways to increase quality.							
I am a good source of creative ideas. I am not afraid to take risks.							
I promote and champion ideas to others.							
I exhibit creativity on the job when given the opportunity.							
I develop adequate plans and schedules for implementation of new ideas.							
I often have new and innovative ideas.							
I come up with creative solutions to problems.							
I often have a fresh approach to problems.							
I suggest new							

ways of performing work tasks.							

Q7. Below are a number of statements about your team's creativity in the workplace:

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
The team usually proposes creative and useful ideas.							
The team produces knowledge that did not exist before the team was formed.							
The team can complete the project task within the deadline.							
The team is productive.							
The new product/technologies /service the team develops meets the market requirement.							
The new product/technologies /service the team develops achieves the customer satisfaction.							

Q8. About your team in work context:

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagre	Somewhat agree	Agree	Strongly agree

				e			
The team works best when we coordinate our work closely.							
Team members have to work together to get group tasks done.							
The way individual members perform their jobs has a significant impact on others in the team.							
My work cannot be done unless other people do their work.							
Most of my work activities are affected by the activities of other people on the team.							
Team members							

frequently have to coordinate their efforts with each other.							
We cannot complete a project unless everyone contributes.							

Q9. About you in the work context:

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
The team is free to decide how to go about getting work done.							
The team is free to choose the method(s) to use in carrying out work.							
The team is able to choose the way to go about its work.							
The team can decide							

when to do particular activities.							
The team has control over the scheduling of teamwork.							
The team has control over sequencing of team activities.							
The team is able to decide team objectives.							
The team has some control over what it is supposed to accomplish.							

8.3 Appendix 3: Survey for leaders

Thank you very much for taking the time to answer this survey, which maps "creativity" to our master's thesis on the study management and organizational psychology at BI Norwegian Business School. Your answer will help us analyze the relationship between an employee's creativity and team creativity. Estimated survey time is five minutes.

Q1. Age

- 18-26
- 27-34
- 35-42

- 43-50
- 51 or older

Q2. Gender

- Man
- Woman

Q3. Accomplished education

- High School
- Bachelor degree
- Master degree
- Other :_____

Q5. How many years have you been employed in the firm?

- less than one year
- 1-5 years
- 6-10 years
- over 10 years

Q6. For you as a leader, assess statements below of your employees at work:

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
The team suggest new ways to achieve goals or objectives.							
The team comes up with new and practical ideas to improve performance.							

The team often search out new technologies, processes, techniques and or product ideas.							
The team suggest new ways for the team to increase quality.							
The team is a good source of creative ideas.							
The team is not afraid to take risks.							
The team promote and champion ideas to me.							
The team exhibit creativity for me when given the opportunity.							
The team develop adequate plans and schedules for implementation of ideas.							
The team comes up with creative solutions to problems.							

The team often has fresh approach to problems.							
The team suggest new ways of performing work tasks.							

Q7. Below are a number of statements about your team's creativity in the workplace:

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
The team usually proposes creative and useful ideas.							
The team produces knowledge that did not exist before the team was formed.							
The team can complete the project task within the deadline.							
The team is productive.							
The new product/technologies /service the team develops meets the market requirement.							
The new product/technologies /service the team develops achieves the customer satisfaction.							

Q8. About your team in work context:

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
The team works best when they coordinate our work closely.							
Team members have to work together to get group tasks done.							
The way individual members perform their jobs has a significant impact on others in the team.							
Their work cannot be done unless other people do their work.							
Most of their work activities are affected							

by the activities of other people on the team.							
Team members frequently have to coordinate their efforts with each other.							
They cannot complete a project unless everyone contributes.							

Q9. About your team in the work context:

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
The team is free to decide how to go about getting work done.							
The team is free to choose the method(s) to use in carrying out work.							

The team is able to choose the way to go about its work.							
The team can decide when to do particular activities.							
The team has control over the scheduling of teamwork.							
The team has control over sequencing of team activities.							
The team is able to decide team objectives.							
The team has some control over what it is supposed to accomplish.							

9.0 Preliminary thesis

Table of Content

Abstract

Coextensive with the growing focus on the competitive advantage in organizations, the focus on the field of creativity in an organizational setting has increased. Due to this, our thesis wish to investigate the effect of team autonomy and task interdependence on the relationship between employee creativity and team creativity. We propose a model where team autonomy and task interdependence works as moderators on the relationship between employee creativity and team creativity.

The Relationship Between Individual Creativity and Team Creativity: The Moderating Role of Team Autonomy and Task Interdependence

Introduction

The purpose of this study is to examine and theorize on the effect of team autonomy and task interdependence on the relationship between employee creativity and team creativity. There is an increased interest in the field of creativity in the organizational setting, however there are many aspects of the field that are inadequate. Since many organizations today operate in a competitive market and are relying on differentiation, the importance of fostering creativity in the organization on the individual and team level is needed. As managers wish for their team members and teams to be creative, it is important for managers to know how to understand the roles of autonomy and task interdependence in relation to creativity.

Greg Oldham and Anne Cummings (1996) were early in the field of creativity. They examined the independent and joint contributions of employees' creativity-relevant personal characteristics. In their study, they proposed that work is needed to examine the contributions of personal and contextual characteristics to creativity outcomes. They also proposed that it would be beneficial to examine the effects of personal characteristics, such as technical skills and cognitive styles, and contextual conditions such as goal-setting programs and financial incentive systems. Creativity as a research field has developed and there are now several researchers in the field. Claus W. Langfred (2005) claimed that past researchers have only chosen to study the effects of individual autonomy on individual performance and team autonomy on team performance. Therefore, Langfred suggests that a combination between individual and team should be studied and under which circumstances might result in high performance. Further, in their study on the relationship with individual autonomy and individual engagement and creativity, W. Zhang, S. Jex, Y. Peng and D. Wang (2017) proposed that future research should replicate their findings so that it can be used across cultures and in workplace settings, because the sample in their study came from a Chinese context.

D. Liu, X. Chen and X. Yao (2011) studied the role of harmonious passion by building on the self-determination theory, and individual autonomy orientation into job creativity. Based on their study and recent study, they suggest that there is a need for research in personality variables and individual personality in the context of creativity relationship. Marjolein Caniëls, Katleen Stobbeleir and Inge Clippeleer (2014) studied employee creativity and the different stages of the creative process. They suggested that future research should study the importance of antecedents in each of the different phases of creativity, as this is lacking in the field of creativity.

Theoretical framework

The Notion of Creativity

Creativity is essential to what it is to be human. It helps our adaptation to the changing environment and circumstances allowing us to transform them. Creativity as a term spans a number of domains from science to business. Creative thinking is the foundation for numerous of fields such as art, science, philosophy, and technology (Chávez-Eakle, R., Eakle, A., & Cruz-Fuentes, C., 2012). The field of creative studies has had an unsteady start, where there are assumptions on what creativity is and how a creative person behaves. Creativity is defined as "the production of both novel and useful ideas, concepts or products" (Adrian Furnham & Mikael Nederstrom, 2010). The earliest research on creativity was designed to test the possibility that creativity was distinct from intelligence. A study by Jacob Getzels and Philip Jackson (1962) reported that creativity was not clearly distinct from intelligence, where their conclusion was based on an empirical research with a group of students who each had taken various test of creative potential. In their research, the measures of creative potential and the indicators of traditional intelligence were correlated (Runco, 2014). Michael Wallach and Nathan Kogan (1965) on the other hand, questioned the correlation between creativity and intelligence and the methodology used that led to it. Wallach and Kogan (1965) challenged the tests used by Getzels and Jackson and alleged that the tests were too diverse and looked at creative skills as well as creative talents. As a result, they conducted their own investigation which relied on the tests of divergent thinking. To understand creativity and what processes are involved in creative thinking remains a challenge. The following presents a literature review on the

field of creativity among employees and teams in organizations.

Employee Creativity

Employee creativity, which is an important component of human capital, is a formation of novel and valuable ideas (Jain, R., & Jain, C, 2016). Employee creativity can be defined as "the production of novel and useful ideas concerning product, services, processes and procedures by a team of employees working together" (Shin, S. J., & Zhou, 2007, p. 1715). For an organization to be able to respond to technological changes, globalization, as well as competitive pressure, there is a need for organizations to diffuse creativity to the employees. Employee creativity has an important role in personal and organizational effectiveness. Employee creativity distinct from individual creativity in the way that the creative achievements happens in work settings (Oldham & Cummings, 1996).

When organizations seek to promote creativity, employees might hesitate to share their ideas and opinions due to the status quo in the organization. To enhance creativity in an organizational setting managers might share task conflict or disagreement among their employees, as task conflict can activate the generation of novel and useful ideas. There are two challenges with applying task conflict for increasing employee creativity. The preference of support to current investments for employees might be a challenge, as well as the fact that novel ideas may alter organizational goal and practices (Clercq, Rahman & Belausteguigoitia, 2017).

As stated by Amabile, Conti, Coon Lazenby and Herron (1996), there are several researchers that have concluded that creativity is supported when individuals have high autonomy. An individual will produce more creative work when they feel that they have a choice and say in how to solve a given task. Proposed by theorist is the interpretation that communication of ideas and information, as well as being in contact with others should be positively associated with the creative process. The creative process is an individual process as well as a group process. An individual will conceptualize an idea, and then actively choose whether or not to share it with the team (Gilson, L. L., & Shalley, C. E., 2004).

Team Creativity

Previous research on creativity tends to characterize creative individuals and thus creativity is focused on the individual level, but a growing scope of research centers factors for creativity at a team and organizational level (Giedre Brazdauskaite & Danute Rasimaviciene, 2015; Beth A. Hennessey & Theresa M. Amabile, 2010; Woodman, R., Sawyer, J., & Griffin, R.,1993). Further, research on creativity within groups has gone away from the conclusion that individuals outperform groups in terms of creativity towards a more nuanced understanding of the group processes and an adjustment of experimental design, model of group interaction, motivation, and disposition. Nevertheless, much remains unknown about the creative process within teams, however progress has been made (Hennessey & Amabile, 2010). Alva Taylor and Henrich Greve (2006) studied the comic book industry, where they unveiled that working in a team under the right circumstances, resulted in more creative production than working individually. Overall, individual creators performed lower than teams.

In the question of the differences of individual work compared to team work, concluded that although group work produced better results on numerous measures of creativity, fluency scores were higher for individuals working alone rather than in teams (Svensson, N., Norlander, T., & Archer, T., 2002). Research study on creative problem solving shows that individuals are generally superior to that of groups in performance (Treffinger, D., Isaksen, S., Dorval, K., 2006)**.** However, other researchers assume that these patterns of results may have been driven by the scope of the research such as the experimental tasks, concepts, and research methods that has been employed. Dennis Brophy (1998) proposed a model as a way of explaining inconsistent experimental findings, where he pointed out that creatively solvable problems vary in their complexity, requisite knowledge base, and the extent divergent and convergent thinking that are necessarily. In addition, the model emphasized that a complete creative problem-solving process require both considerable convergent and divergent thought in continuing alteration. The model predicted that individuals and teams that diversified within knowledge, ability and in work arrangements would be suitable for some problems and a poor suit for others.

When it comes to idea sharing, Paulus and Yang (2000) identified two important factors that enabled idea sharing in teams to become more productive.

The first is the attention given to the shared idea, which is to the extent group members carefully process the exchanged idea. The second is incubation, which is explained as the chance for group members to reflect on the ideas that has been exchanged by team members.

Two study on meta-analysis was conducted to examine the 14 dimensions of the climate for creativity (Hunter, Bedell & Mumford, 2007) and 15 team-level variables of creativity in the workplace. (Hülsheger, U., Anderson, N., & Salgado, J., 2009). There are some factors of creativity that show effect and consistency, and this knowledge adds important insights to theory and practice of managing creativity. Nonetheless, not all factors that are examined have consistent and significant effects. A study by Teresa Amabile, Regina Conti, Heather Coon, Jeffrey Lazenby and Michael Herron (1996) showed that most of the expected effects of environment on creativity were validated, but autonomy as a factor did not show significant variation between projects of different levels of creativity. Further, autonomy in a meta-analysis conducted by Hunter, Bedell and Mumford (2007) had the smallest effect size among all dimensions, although the effect is significant. Autonomy will be further discussed below.

The role of Team Autonomy

Autonomy is defined as "the degree to which the task provides substantial freedom, independence, and discretion in scheduling the work and in determining the procedures to be used in carrying it out" (Hackman & Oldham, 1980, p. 79)**.** Researchers in the field of autonomy have either examined individual or team autonomy, relating it to either individual or team outcomes (Fausing, Jeppesen, Jønsson, Lewandowski & Bligh., 2013).

Individual autonomy relates to independence, freedom, and discretion in the individual task (Mierlo, Rutte, Vermunt & Doorewaard, 2006), while team autonomy relates to freedom and opportunity to make decisions and plan tasks activities within the limit of the team (Fausing et al., 2013). Mierlo et al. (2006) defines team autonomy as "the degree to which the team task provide the team with substantial freedom, independence and discretion in scheduling work".

Numerous of researchers suggest that autonomy plays an important role in the "need-satisfaction" process of cognitive evaluation theory. The cognitive evaluation theory describes the motivation that individuals experience to seek

autonomy and influence over their work role and outcome. The importance of autonomy implies that when individuals are able to manipulate their work role and influence their work outcome, they will become psychologically satisfied at work (Tse, To & Chiu, 2017).

Team autonomy is considered to be the team-level parallel of individual autonomy. Researchers have related team autonomy with increased work motivation, improved quality of work, job strain, and reduced absenteeism, and has been included in several studies in relation to team member attitude, team performance, and behavioural and internal processes (Fausing et al., 2013). Team autonomy is of importance in order to fully gain the advantages of working in a team. With team autonomy, the team will be able to take advantage of the team members knowledge and skills. The existing research on team autonomy does suggest a positive relationship between team autonomy and various indicators of psychological well-being (Mierlo et al., 2007).

The role of Task Interdependence

In general, all teams in organizations require input from different members and areas of knowledge. Members in teams interact with each other to share and develop ideas, and to integrate different components of a task that were developed independently (Pirola-Merlo & Mann, 2004). Individuals who work on a different component of a task can also be referred to as task interdependent, in which is the degree where interaction and coordination of team members are needed to complete tasks (Guzzo & Shea, 1992). James Thompson (1967) categorizes three types of task interdependence; pooled, sequential and reciprocal. Pooled interdependence is managed by standardization and involves the least interdependence of the three categorized tasks. Sequential interdependence is where one complete its task before the next one in the entity can start the work. Finally, reciprocal interdependence is the most complex which involves that one entities output becomes the next entities input, and vice versa.

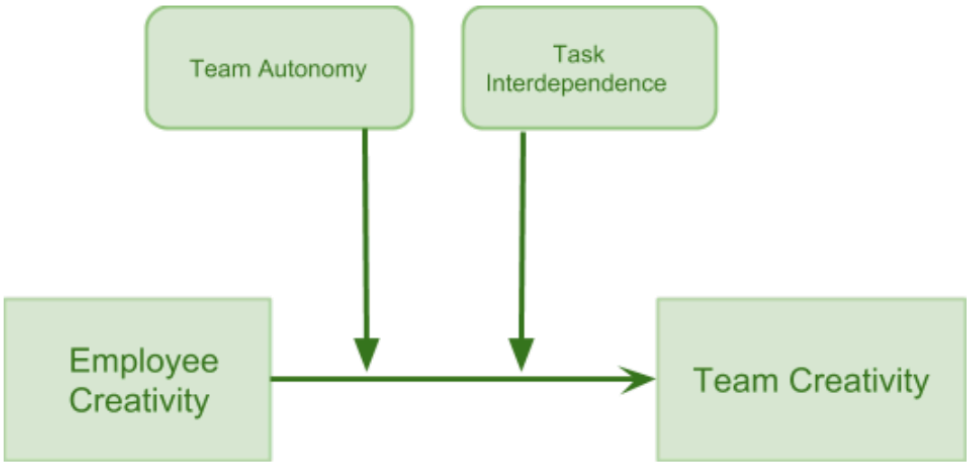
According to Courtright, Thurgood, Stewart and Pierotti (2015) interdependence is a central aspect of team design. Wageman (2001) stated that a leaders' team design choices and the level and type of interdependence will play a critical role to the teams' performance. Regardless of the importance of interdependence, there exists some confusion with reference to interdependence

and its role in teams. Interdependence have been operationalized and conceptualized by scholars in numerous of ways, which ultimately leads to confusion of the meaning of interdependence. There are scholars that percepts interdependence as a structural property of teams, while other scholars view interdependence as a behavioral construct. Further, there is also a lack in clarity regarding the impact of interdependence on team performance and team functioning. The lack of clarity is a consequence of meta-analyses that have assumed interdependence as a boundary condition, while numerous of research show that interdependence can vary across teams (Courtright et al., 2015).

Development of research question and your hypotheses

Research question: Based on previous research, we want to investigate the relationship between employee creativity and team creativity with team autonomy and task interdependence as a moderator of the relationship. The hypothesized model below shows employee creativity as the independent variable and team creativity as the dependent variable.

The hypothesized model of Employee Creativity and Team Creativity:



Research on creativity has a long history in psychology, where the focus lies on individual differences in personality, cognitive abilities, and problem-solving styles. Despite this, theoretical and empirical work has shed light on creativity as something the brain naturally does (Simonton, 2000). Further, creativity is an adaptive feature of normal cognitive capabilities that evolved to aid problem solving under uncertain conditions (Beheshtifar & Zare, 2013).

Despite the previous view of creativity as a function of employee's personal traits and cognitive capability (Oldman & Cummings 1996), more recent research has moved the priority towards a team level perspective with focus on different contextual factors that may cause or hinder employee creativity in a team context (Bai, Lin, & Li, 2016).

Researchers have investigated the question on how organizational support for creative teams differs from support for creative individuals differently by either focusing on; the contributions of individual team members, the team processes, broader contextual influences or by scrutinizing the interaction between member contributions (Pirola-Merlo & Mann, 2004). Pirola-Merlo and Mann (2004) describes creativity as either a micro or macro perspective, and that recent work in theoretical advancements have been linking micro and macro perspective, the work environment and intra-individual components. Amabile´s (1997) Componential Model of Organizational Innovation is an important theory linking the contextual factors with intra-individual factors. The model describes three intra-individual factors that is important for creativity (domain-relevant knowledge, creativity-relevant skills, and motivation), and it also describes characteristics of the work environment (organizational motivation to innovate, resources and management practices).

Another relevant theory is West´s (1990) model of team climate. Team climate has been studied in relation to team creativity. West´s identifies four team climate factors that are found to predict creative performance, that is vision, participative safety, task orientation and support for innovation in a team (Pirola-Merlo & Mann, 2004).

Little light is shed on the relationship between group performance and the individual contributions of members, due to the fact that the relationship is reliant on the nature of the group task. Thus, findings of one type of group working on a type of task cannot be generalized to others (Pirola-Merlo & Mann, 2004). More, creativity can arise as individual work separately on subtasks of the larger task, and can also arise as members interacts. Taggar (2002) investigated the relation between individual creativity and groups ability to utilize creative resources and suggests that group creativity is not fully determined by individual creativity, instead, that group creativity might appears synergistically when members jointly

communicates in certain ways. Based on this, we hypothesize:

H1: *Employee creativity is positively associated with team creativity*

Numerous of researchers have argued that it is necessary for an organization to enhance the creative performance of their employees to achieve competitive advantage (Oldham & Cummings, 1996). A frequent amount of evidence indicates that employee creativity contributes to organizational innovation, effectiveness and survival, and is therefore important to the organization (Beheshtifar & Zare, 2013). According to Oldham and Cummings (1996) little is known about the conditions that promote creative performance of employees in an organization. According to Beheshtifar and Zare (2013) employees will not have the ability to foster their creativity in traditional productivity driven organizations with structures, time constraints, regulation, similar tasks and standardized workplace. One can therefore make an assumption that the opposite of a typical standardized organization, which is an organization that foster autonomy, will have the ability to cultivate creativity in an organization. As stated by Schaufeli and Salanova (2007) work related autonomy should be considered as an important job resource that advocate three dimensions of engagement; dedication, vigor and absorption. Oldham and Cummings (1996) also stated that team members with high levels of autonomy are more inclined to engage in problem-solving, alternative thinking and risk taking, which all are expected to stimulate creativity. Therefore the following hypothesis is proposed:

H2a: *Team Autonomy will moderate the relationship between employee creativity and team creativity. The relationship will be stronger when team autonomy is high.*

According to Saavedra, Earley and Van Dyne (1993), task interdependence is considered to be one of the most structural variables that influences team performance. Additionally, Langfred and Shanley (2001), pointed out that task interdependence often indirectly influence performance by moderating the effects of other variables on performance. Pearce and Ravlin (1987) explains that task interdependent teams are well positioned in terms of coordination. Other teams

may experience process loss from having to coordinate and interact sufficiently. Task interdependence describes the degree of interaction and coordination of team members that are required to complete tasks (Guzzo & Shea, 1992).
In H1 we proposed that employee creativity is positively associated to team creativity. There are studies that support this supposition, but there are also studies that are dubious on the direct link between employee creativity and team creativity, or if there are other moderators that foster the relationship. As task interdependence is of great importance, and is often moderating the effects of other variables on performance as stated by Langfred and Shanley (2001), we propose the following hypothesis:

H2b: *Task Interdependence will moderate the relationship between employee creativity and team creativity. The relationship will be stronger when Task Interdependence is high.*

Based upon the broader contextual factors and the contributions of the individual members in teams, that is team autonomy, task interdependence and employee creativity, we hypothesize a three-way interaction:

H3*: Employee Creativity, Team Autonomy and Task Interdependence will interact to predict Team Creativity, such that the positive relationship between Employee Creativity and Team Creativity is strongest when Team autonomy and Task Interdependence is high.*

Methodological framework and sample

Research methods is linked to the way in which social scientist envision the connection between different viewpoints about the nature of social reality and how it should be examined (Bryman & Bell, 2011 p.4) The differences between qualitative and quantitative research strategies lies in the different epistemological and ontological assumptions and paradigms (Östlund, Kidd, Wengström & Rowa-Dewar, 2011). The selected approach will provide a general structure for our thesis. Within each design approach, there are numerous of possibilities for how to proceed with the research. (Leavy, 2017).

Research Design

Research Design is the framework for the collection and analysis of data. The chosen research design can be seen as reflection of the researcher's decisions about the priority of the elements in the research process. As a result, research designs hold an important influence on the validity and reliability of the obtained results from the research (Bryman & Bell, 2011). Bryman and Bell (2011) describes research method as the technique for collecting data, that can involve specific instruments such as self-completion questionnaires.

Data Collection

In terms of choosing a method there are two general types of research strategies; quantitative and qualitative research. By using qualitative research, one wishes to look at the underlying reasons, as well as opinions and motivation to a problem. With quantitative research the purpose is to quantify attitudes, opinions and behaviours. By utilizing quantitative research, one can formulate facts and uncover patterns in research by generalizing results from a larger sample of a population. Further, research methods are associated with different kinds of research design, where the five most prominent includes quasi-experiments, cross-sectional, longitudinal design, case study design and comparative design. For this thesis, we have chosen a cross-sectional design, or social survey design, which it is often referred as. This is because we wish to examine the relationship between variables, and it allows us to collect data on more than one case, and at a single point in time. As a result, it allows us to detect patterns and analyze a phenomena (Bryman & Bell, 2011).

The preeminent method for distributing surveys is per phone, email, website or in-person (Bryman & Bell, 2011). In point of fact this method is prone to common method bias, which all research method is. According to Younus (2014) all research methodology consists of planning and execution, which are two broad phases. Because both planning and execution are two broad phases there is also likely that limitations will arise. To see if our data is affected by bias, it is possible to test for common method bias. One way this can be done is to send out questionnaires at two points in time.

Procedure & Sample strategy

To be able to collect data, we have chosen to conduct an online survey. Our aim is to collect data from at least 30 teams, which have group members consisting of at least three members. This will make the total number of our participants approximately 90. We will distribute questionnaires at two points in time to minimize the chance of common method bias. The questionnaires will be distributed to several companies that operate with creative tasks, where the participants will consist of both leaders and subordinates. The reason we need to distribute the questionnaires to several companies is because we might not get enough respondents from one company. As of now, relevant companies would be Schibsted Media Group, Egmont, Nidar AS and similar companies.

Measures

Questionnaires needs to be authorized by NSD (Norwegian Social Science Data Services) before distributing it out to companies in Norway. To ensure valuable and reliable measures, the questionnaire will have items that covers all variables we want to measure of independent, dependent and moderating variables, on a 5-point likert scale. Likert scales are asked survey questions about an issue where respondents answer to the degree they feel about an issue. The reason as to why one chooses to use the Likert scale is to isolate personal opinion from collective response. Use of the Likert scale will provide us with quantifiable data. However, by using the Likert scale our respondents has the ability to stay neutral, which can skew the results (Bryman & Bell, 2011).

Employee Creativity

This research will explore employee creativity as the independent variable. In agreement with previous creative studies we will be using a 13-item scale developed by Zhou and George (2001) and ask team leaders to assess each team members' creativity. Past research also suggests that the differences in demographic may influence employee creativity. Therefore, it is suggested to include control variables, such as age, gender and education. Items used in the 13-item scale developed by Zhou and George includes "This employee comes up with creative solutions to problems". Further, employee creativity will be

measured by using self-ratings questionnaires, and questions about previous work will be asked. In addition to that, descriptive questions will be asked to help recollection (Pirola-Merlo & Mann, 2004).

Team Creativity

Team creativity is our dependent variable, and we will measure this variable by looking at the project leader's ratings of the overall creativity of the work on the task that has been completed by team members (Pirola-Merlo & Mann, 2004). In addition, a task can be given for the team to solve, this will be measured by rating the solutions of the team by giving points for the solutions teams have come up with (Hoever, Van Knippenberg, Van Ginkel, Barkema & Kozlowski, 2012).

Team Autonomy

Team autonomy is one of the moderator in this thesis. As a moderator, team autonomy will affect the relationship between the independent variable; employee creativity, and the dependent variable; team creativity. According to Langfred (2005), there are several researchers that have attempted to develop scales for team autonomy. To measure team members' internal orientation toward autonomy we will use items from the General Causality Orientation Scale (Deci & Ryan, 2000).

Task Interdependence

Task interdependence is the second moderators of the thesis. Task interdependence will affect the relationship between the independent and the dependent variable. To measure task interdependence, we will use items from a seven-item scale adapted from Moses Kiggundu (1983). This scale measures both received task interdependence and critical task interdependence. By using items from this scale, we will be able to capture an overall measure of task interdependence.

Tentative plan for completion of thesis

March:	Hand in preliminary. Reach out to companies and organizations in relation to survey and data collection. Finalize survey to get authorization from NSD.
April:	Send out questionnaires and collect data from the first questionnaires and further search for literature.
May:	Set aside some weeks to prepare for exams in two other courses. Preparations to send (second) out more surveys.
June:	Data collection of second questionnaires. We will also do analyzing.
July:	Work on the thesis as a whole.
August:	Continuation of thesis writing. Proofread thesis, reference checking and also data analysis check.
September:	Hand in master thesis before deadline.

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