Team Regulatory Focus and its Role for Idea Generation, Idea Implementation, and Innovative Performance: A Dynamic Perspective

ABSTRACT

In an experimental study, we explored the relationships between team regulatory focus and temporal patterns of innovative activities as well as innovative performance. We manipulated regulatory focus in 44 student teams and assessed idea generation and implementation activities over time based on video data. External raters assessed innovative performance. Latent growth curve models revealed that higher team promotion focus increased idea generation at the beginning of an innovative project but decreased this activity over time. High levels of idea generation at the beginning of a project were related to lower levels of originality, whereas a decline in idea generation over time was related to higher levels of originality. Unexpectedly, relationships between team prevention focus, idea implementation, and quality were not significant. Our findings contribute to a comprehensive perspective on team regulatory focus and innovation, emphasizing the importance of differentiating between activities and performance.

Keywords: idea generation, idea implementation, innovative activities, performance measures, team prevention focus, team promotion focus, temporal development.

In today's work life, innovation is crucial for organizations' competitiveness (Anderson, Potočnik, & Zhou, 2014; Bledow, Frese, Anderson, Erez, & Farr, 2009; van Knippenberg, 2017). Innovative tasks are often performed in teams because they are supposed to have higher potential for innovation than individuals (Hülsheger, Anderson, & Salgado, 2009; Rietzschel, 2011). Interactive and social processes are central elements of the innovation process because innovation requires intensive exchange and dialog within a team in order to successfully develop ideas and put them into action (Drach-Zahavy & Somech, 2001). By definition, team innovation refers to both the development and implementation of something novel (van Knippenberg, 2017). The demands on innovative teams are particularly challenging compared to teams in other contexts (e.g., administration), as they are faced with rapidly changing requirements in highly complex environments. Members of innovative teams must coordinate different tasks, decide on different working approaches, and discuss diverse and competing viewpoints on procedures and problems. Thus, they must regulate their shared activities in order to attain their goals in an extremely dynamic context. Our study aims at providing a comprehensive understanding of how team regulation strategies are linked to both innovative activities (e.g., idea generation) over time and innovative performance (e.g., originality).

To study team regulation, we build on Higgins's (1997) influential regulatory focus theory. This theory has recently been applied at the team level and is concerned with the motivational strategies preferred by people or teams in order to accomplish their objectives (Johnson, Smith, Wallace, Hill, & Baron, 2015). It distinguishes two foci of self-regulation, promotion focus, and prevention focus. Up to now, the relationship between team regulatory focus and innovative activities has only been partially investigated. Existing research has focused on a static perspective, specifically analyzing the relationships between team regulatory focus and various innovative activities on a general level (e.g., Rietzschel, 2011). As innovative environments are highly dynamic (West, 2002b) and rapidly changing, innovative activities will not be carried out on a constant level over time. Thus, we argue that a temporal perspective on team regulatory focus and innovative activities is necessary to develop a comprehensive understanding of how team regulatory focus impacts innovation in teams. In this study, we go beyond the static perspective and examine the dynamic role of...
innovative activities as they fluctuate as a function of time. Hence, instead of focusing on the absolute level of innovative activities, we also consider the change over time in these activities. Moreover, we link team regulatory focus and the temporal trajectories of innovative activities to innovative performance (see Figure 1 for an overview of our theoretical model).

Our paper contributes to existing research on team regulatory focus and innovation in the following ways. First, we extend this line of research by incorporating a temporal perspective based on growth trajectories of innovative activities. Although a detailed understanding of trajectories of team processes or activities is necessary for our understanding of team outcomes, empirical research on such trajectories is still very scarce (Larson, McLarnon, & O’Neill, 2020). Second, we examine how team regulatory focus and the dynamics of innovative activities are linked to innovative performance. As previous research has been limited to studying the link between team regulatory focus and innovative activities, we suggest that it is necessary to go one step further and examine how team regulatory focus is related to the outcomes of these activities, that is, innovative performance.

THEORETICAL BACKGROUND AND HYPOTHESES

Higgins’s (1997) regulatory focus theory is the most influential individual-level self-regulation approach for examining the self-regulatory underpinnings of creativity and innovation. Considering the motivational aspects of self-regulation, regulatory focus theory builds on the assumption that there are “different ways of approaching different types of desired end-states” (p. 1281). Those end-states involve aspects like advancements and growth on the one hand and aspects like obligations and protection on the other hand.
Accordingly, regulatory focus theory is concerned with two different foci of individual self-regulation: promotion and prevention focus. Although the theory was originally aimed at explaining individual self-regulation, scholars have recently begun to examine regulatory focus at the team level (e.g., Levine, Higgins, & Choi, 2000; Rietzschel, 2011; Sassenberg & Woltin, 2008; Shin, Kim, Choi, & Lee, 2016). By definition, team regulatory focus involves distinct team processes in order to regulate their actions to reach collective goals (e.g., Johnson et al., 2015; Johnson & Wallace, 2011).

Following Higgins (1997), individuals with chronic promotion focus have a strong need for growth or change and are driven by their ideals. Similarly, teams with promotion focus are guided by development and realization of gains, prioritizing success and working to reach the best possible outcome (Johnson & Wallace, 2011). In contrast, individuals with chronic prevention focus have a strong need for security and are guided by their obligations. Correspondingly, teams with prevention focus will have their overall attention on security, avoiding losses and regarding team members’ errors as obstructive for development (Johnson & Wallace, 2011). Thus, as teams with prevention focus have their priority on preventing negative outcomes, they may rather concentrate on joint decision making and details.

We suggest that team regulatory focus is highly relevant for innovation processes as aspects like growth, change, success, security, and errors appear to play a central role in innovation processes (e.g., Bledow et al., 2009; Brockner, Higgins, & Low, 2004; Frese & Gielen, 2014; Rank, Pace, & Frese, 2004). A team’s attitude toward those aspects appears to be particularly relevant to their specific activities within innovation processes, and team regulatory focus is thus expected to directly affect the activities of teams in innovation processes. Typically, researchers differentiate between creativity and implementation as different kinds of activities within innovation processes (Rosing et al., 2018) Creativity comprises the development or generation of original and useful ideas (Amabile, 1983). Implementation, in contrast, refers to the application or realization of these ideas (West, 2002a).

Several individual-level studies have documented that both promotion focus and prevention focus impact these activities. The results of this research reveal that promotion focus is associated with a comparatively risky processing style that fosters idea generation and related constructs like creativity, originality, or fluency (e.g., Crowe & Higgins, 1997; Friedman & Förster, 2001; Herman & Reiter-Palmon, 2011; Lam & Chiu, 2002). Promotion states may foster creative insight and divergent thinking as they broaden the attentional scope and facilitate access to mental representations (Baas, De Dreu, & Nijstad, 2008). Prevention focus, however, appears to be related to a conservative and risk-averse processing style, which may be relevant for idea implementation or related constructs, such as maintaining persistence or evaluation of the outcome’s quality (e.g., Crowe & Higgins, 1997; Friedman & Förster, 2001; Herman & Reiter-Palmon, 2011; Lam & Chiu, 2002). Prevention states are assumed to narrow the attentional scope, engendering a focus on local perceptual details (Baas et al., 2008).

Some researchers have also explored the effects of team-level regulatory focus on innovative activities. In line with individual-level results, these studies revealed that team promotion focus is associated with idea generation (Rietzschel, 2011), or related constructs like creative performance (Shin et al., 2016) or risky decisions (Levine et al., 2000), whereas team prevention focus was associated with risk aversion (Florack & Hartmann, 2007) and task performance (Shin et al., 2016) but not with creative performance (Shin et al., 2016) or idea realization (Rietzschel, 2011).

DEVELOPMENT OF HYPOTHESES

Promotion focus and idea generation

Building on research showing a general relationship between team promotion focus and idea generation, we more specifically suggest that team promotion focus affects the frequency of idea generation activities especially at the initial stages of innovation processes. Shin (2014) pointed out that promotion-focused teams display an optimistic and proactive motivation, which enables them to try new ways of working and to challenge the status quo. Similarly, Emich and Vincent (2020) argued that activated promotion-focused affect naturally guides teams toward exploration and idea generation. Building on this argumentation, we suggest that promotion-focused teams’ orientation toward success and their striving for goal attainment energize them particularly at the initial stage of a project. Thus, as team promotion focus impedes thinking about potential barriers or problems, team members may enthusiastically generate as many different ideas as possible and may not reflect on potential future obstacles. Similarly, Knight (2015) proposed that a team’s positive mood is related to high initial levels of exploratory activities, such as idea generation. Furthermore, Rietzschel (2011) and Levine et al. (2000) stated that team promotion focus fosters a collective bias toward
risk. Thus, teams with a promotion focus will not think about dismissing an idea at the beginning of a project due to prospective problems or risks. Consequently, especially at the beginning of a project, teams with a promotion focus will try to generate as many diverse ideas as possible.

**Hypothesis 1a:** Team promotion focus will be positively related to idea generation activities at the beginning of an innovation project.

While we expect promotion-focused teams to highly engage in idea generation when beginning innovation projects, we expect a decrease in idea generation over time. In other words, the more that teams are in a promotion focus, the less they engage in the activity of idea generation over time. Building on a punctuated equilibrium perspective (Gersick, 1988), we argue that over time and with increasing time awareness toward a project’s deadline, promotion-focused teams work in a more focused and concentrated way on their innovation tasks. Gersick (1988) highlighted the role of time as a limited resource in teams and pointed out that time progress may stimulate teams to reorient themselves within a project. In general, time awareness enhances the perception of urgency (Conte, Landy, & Mathieu, 1995) and teams are more actively engaged in work activities the closer they get to a deadline (Chang, Bordia, & Duck, 2003). However, such an increased engagement is not tantamount to an increase in any activity. In contrast, time progress helps teams to adjust their strategies in order to meet a deadline. Accordingly, we expect promotion-focused teams’ high orientation toward success to stimulate these teams to adjust their strategies over time to reach their common goals, which will strengthen their focus on tasks that need to be accomplished. In addition, we expect promotion-focused teams to be especially sensitive for the perception of time progress, due to their achievement focus (Conte et al., 1995). For innovation projects, this means that as the project deadline approaches, promotion-focused teams will concentrate on successfully completing the project. Therefore, they will simultaneously focus on further tasks in addition to idea generation (e.g., evaluation or selling of ideas) that are crucial for the project’s success. As a result, the idea generation curve will decrease over time. In a very similar vein, Knight (2015) argued that positive mood is related to a decrease in exploratory activities such as idea generation after the midpoint of a project.

Taken together, we suggest that time progress will be especially salient for success-oriented promotion-focused teams and will trigger a reorientation of strategies for these teams away from idea generation activities. Therefore, we hypothesize:

**Hypothesis 1b:** Team promotion focus will be negatively related to idea generation activities in innovation projects over time.

**Promotion focus, idea generation, and originality**

We further expect that the level of idea generation at initial project stages will be positively related to the originality of the outcome. Originality refers to the extent that ideas are not only new but also unusual or unconventional (Guilford, 1957). In line with Rosing et al. (2018), we argue that especially in early time frames, teams lay the foundation for innovative outcomes if they explore opportunities in depth and engage in developing a variety of creative solutions. This is also in accordance with West (2002b), who proposed that the generation of creative ideas is required more strongly at early stages of an innovation project when a specific need for innovation is identified and solutions and ideas need to be developed. Consequently, a high level of idea generation is needed to develop promising solutions that are unique and original. Thus, we assume that the level of idea generation at initial stages will be positively related to originality.

In sum, we expect a positive indirect effect (Mathieu & Taylor, 2006) of promotion focus on originality via idea generation activities at early project stages. As a team focus on attainment and success that results from promotion focus is supposed to foster idea generation, especially at early stages, and as high levels of idea generation should result in high originality, we expect the indirect effect of team promotion focus on originality to be positive. In other words, promotion-focused teams will focus on generating many ideas at a project’s beginning, which helps them to reach highly original project outcomes.

**Hypothesis 1c:** There will be a positive indirect effect of team promotion focus on originality via a high level of idea generation activities at initial project stages.

Moreover, we expect that a decrease of idea generation activities during the further course of an innovation project will lower the level of originality. Building on Rosing et al. (2018), who found that high levels of creativity throughout an innovation project are positively related to team innovation, we assume that
teams need to maintain high levels of creativity throughout projects in order to ensure original outcomes. In line with Paulus (2002), these authors argue that an idea is never complete and needs to be developed and modified throughout the whole innovation process in order to reach a level of elaboration that makes realistic implementation possible. Specifically, they add that creativity is needed for the realization of highly original ideas, as those ideas do not have known implementation strategies. Without proven concepts or strategies for team members to draw on, existing knowledge must be recombined and integrated in a new and creative manner, and for that reason, the level of idea generation needs to be maintained (Rosing et al., 2018). Thus, we assume that a decrease in idea generation activities over time will negatively affect the originality of ideas.

In sum, we expect a negative indirect effect (Mathieu & Taylor, 2006) of promotion focus on originality via idea generation activities over time. As a team focus on attainment and success that results from promotion focus is supposed to lower idea generation over time, and likewise, decreasing levels of idea generation result in lower originality, we expect the indirect effect of team promotion focus on originality to be negative.

Hypothesis 1d: There will be a negative indirect effect of team promotion focus on originality via a decrease of idea generation activities over time.

Prevention focus and idea implementation

We propose that team prevention focus fosters idea implementation activities at the beginning of an innovative project. As teams with a prevention focus are averse to risk (Levine et al., 2000), they may strive to implement an idea as quickly as possible in order to ensure results, even if only minimal requirements are met. This strong tendency to avoid failure was also mentioned by Brockner et al. (2004) who underlined that failure has an energizing function within a prevention focus such that failure has a greater motivational intensity than success. We add that this motivational intensity will result in high implementation efforts at the beginning of an innovation project.

Previous individual-level research has linked prevention focus particularly to constructs related to idea implementation (e.g., Crowe & Higgins, 1997; Friedman & Förster, 2001; Herman & Reiter-Palmon, 2011; Lam & Chiu, 2002). However, empirical evidence on the relationship between team prevention focus and idea implementation or related constructs is rather weak (for exceptions see Rietzschel, 2011 and Shin et al., 2016) and inconclusive. Nevertheless, Emich and Vincent (2020) could show that activated prevention-focused affect is related to an early shift from idea generation activities to idea selection. Although their studies did not include idea implementation activities, an early shift to idea selection might also imply an early high level of idea implementation. In addition, building on Shin et al. (2016), who have shown that task performance refers to goal accomplishment, we argue that task performance may also be close to idea implementation activities, as goal specifications are assumed to be particularly relevant for idea implementation (Farr, Sin, & Tesluk, 2003).

Taken together, at early stages of an innovation project, prevention-focused teams will start out in engaging in implementation activities at a relatively high level. Therefore, we predict:

Hypothesis 2a: Team prevention focus will be positively related to idea implementation activities in the team at the beginning of an innovation project.

Over time, we expect a further increase of idea implementation for prevention-focused teams. Thus, we propose a positive relationship between team prevention focus and idea implementation activities during the course of an innovation project. We assume typical strategies of prevention-focused teams (e.g., avoiding mistakes, working precisely, and preventing failure) to be particularly relevant for realization tasks over time. We argue that over time, ideas will become more concrete and tangible such that team members will be able to anticipate how the final product and its implementation will appear. In such a case, prevention-focused teams that focus on details and accuracy will critically question and check the practical feasibility of ideas. At the same time, when ideas are getting more specific and detailed, more potential risks and barriers to their implementation as well as problems with the ideas themselves, become obvious. A focus on avoiding losses will energize prevention-focused teams even more in the course of an innovation project, when its deadline is approaching, and things need to get done with a high level of accuracy. As a result, the implementation curve will further increase.
Lam and Chiu (2002) argued that prevention focus fosters sustained effort in a project, especially in the case of unforeseen obstacles. We suggest that this argument becomes even more relevant in the course of the project, as unforeseen obstacles may have a greater impact on the project's success when the deadline approaches. This is in line with the “goal looms larger” effect (e.g., Lewin, 1935; Miller, 1944) assuming that motivational strength increases, and effort accordingly, as people draw closer to certain goals. In line with that, Förster, Higgins, and Idson (1998) found that vigilance resulting from a prevention focus increased as people moved close to a task’s accomplishment. Thus, we assume that prevention-focused teams will further increase their attention to implementation over time and when the deadline approaches.

Time progress (Gersick, 1988; Marks, Mathieu, & Zaccaro, 2001) in general and, thus, time awareness may also intensify the prevention-focused team’s effort to implement the idea and finalize the project. In line with the general finding that teams increase their engagement in work activities when getting closer to a deadline (Chang et al., 2003), prevention-focused teams will increasingly focus on doing everything to avoid a project failure and, thus, focus on implementation activities to complete the project. Hence, during the course of the project, team prevention focus seems to be a beneficial regulation strategy for implementation activities to “gain momentum” (Rosing et al., 2018, p. 804) such that an approaching project’s deadline will further intensify the prevention-focused team’s implementation efforts. In sum, we expect team prevention focus also to be beneficial for the activity of idea implementation over time.

**Hypothesis 2b:** Team prevention focus will be positively related to idea implementation activities over time.

**PREVENTION FOCUS, IDEA IMPLEMENTATION, AND QUALITY**

We expect that the level of idea implementation at initial project stages will be negatively related to the quality of the outcome. According to Miron, Erez, and Naveh (2004), a high-quality product is reliable, stable, and in keeping with all standards and specifications. Past research has revealed that quality, similar to originality, appears to be an important facet of innovation performance (e.g., Amabile, 1983; Mumford & Hunter, 2005; Rosing et al., 2018).

We argue that a high initial level of idea implementation is obstructive for the quality of the outcome. We assume that episodes of implementation activities (e.g., early pre-tests) will occur in early time frames (Rosing et al., 2018), but, however, the ideas resulting from these initial implementation episodes will not be as elaborated, and their quality is consequently expected to be rather low at this point. Further, Rosing et al., 2018, point out that teams concentrating on “getting things done” (p. 799) early on may have a rather closed focus on execution. However, this appears to be obstructive, as ideas will not be precisely thought out, which lowers their quality. Thus, we assume that a high level of idea implementation at initial stages will be negatively related to quality.

In sum, we expect a negative indirect effect (Mathieu & Taylor, 2006) of prevention focus on quality via idea implementation activities at early project stages. As a team focus on security and losses that results from prevention focus is supposed to foster idea implementation at early stages of an innovation project, and as high levels of idea implementation result in low quality in turn, we expect the indirect effect of team prevention focus on quality to be negative. In other words, members of prevention-focused teams will focus too much on implementation early on and, as a result, will not be able to provide high-quality outcomes.

**Hypothesis 2c:** There will be a negative indirect effect of team prevention focus on quality via a high level of idea implementation activities at initial project stages.

Finally, we expect that an increase of idea implementation activities during the further course of an innovation project will enhance the level of quality. Referring to Baer (2012) and West (2002a), Rosing et al. (2018) have argued that at some point during the project, implementation activities need to be intensified in order to present more than an original idea. We add that this counts not only for originality but also for quality that results from a high level of elaboration. In their team-level study, Rosing et al. (2018) provided support for the general assumption that an increase in implementation is positively related to team innovation. They assume implementation to have the function of a reality check, which becomes more and more important over time because the time frame for possible adjustments steadily gets smaller.

In sum, we expect a positive indirect effect (Mathieu & Taylor, 2006) of team prevention focus on the quality of the outcome over time. As a team focus on security and losses that results from prevention focus is supposed to foster idea implementation over time, and as increasing levels of idea implementation
likewise result in higher quality, we expect the indirect effect of team prevention focus on quality to be positive. In other words, as prevention-focused teams are assumed to be attentive to detail and work precisely, over time, team prevention focus particularly directs teams to aspects of quality when implementing ideas.

**Hypothesis 2d:** There will be a positive indirect effect of team prevention focus on quality via an increase of idea implementation activities over time.

**METHODS**

**PARTICIPANTS AND DESIGN**

132 German undergraduate students of psychology (79.5% women; mean age 21.94 years, standard deviation (SD) = 5.25) took part in our experimental study and received credit points for participation. They were divided into 44 three-person teams. 24 teams consisted of three female members, 13 teams consisted of two female members (and one male), and 7 teams consisted of two male members (and one female). Each team was randomly assigned to one of the two conditions (team promotion focus vs. team prevention focus) of the single-factor between-subjects experimental design.

**MATERIALS AND PROCEDURE**

Teams were tested individually. Each experimental session consisted of two parts, a manipulation in the first step and an experimental task in the second step.

At the beginning of the experimental session, team members were asked to take on the role of strategic purchasers working for a fictitious company selling sport and leisure equipment. The team was informed that their major role was to choose products for the company’s future product range. For reasons of standardization, we solely used written materials to inform the participants about the setting and their tasks. We manipulated team regulatory focus in the content of business strategy presentations and advertisements of outdoor articles, using cues that either implicated team promotion or team prevention focus (Friedman & Förster, 2001). In the first step (manipulation), the team task was to watch the company's business and communication strategy presentation to have an initial basis for forthcoming decisions regarding the prospective expansion of the company’s product range. In the promotion focus condition, the business strategy presentation consisted of several pictures with promotion-related content, such as people being in adventurous situations (e.g., standing on the top of a mountain after having climbed it and gazing into the distance) or celebrating athletic achievements (e.g., being overwhelmed after winning a marathon). The pictures’ statements were emphasized by suitable slogans (e.g., “Experiencing unique adventures...” or “Stay focused on your goals...”) and by music conveying power, strength, and energy. In the promotion-focus condition, the business strategy presentation consisted of several pictures, slogans, and music with prevention-related content. The pictures presented people being in rather unpleasant situations (e.g., freezing, sustaining sport injuries). The pictures’ statements were emphasized by suitable slogans (e.g., “No chance for cold and damp...” or “Injuries and pain will be a thing of the past...”) and by comparatively calm music with elements of tension.

After watching the business strategy presentation, team members were provided with advertisements of three similar outdoor articles (e.g., three outdoor jackets). Each team member had to familiarize themselves with the three advertisements before the team as a whole had to discuss including articles in the future product range. The team was instructed to take the decision in accordance with the company’s business and communication strategies previously presented.

In the two conditions (team promotion focus vs. team prevention focus), the advertisements of outdoor articles (either outdoor jackets or running shoes) were based on either promotion-related or prevention-related content and included product pictures, brand names, slogans, short product descriptions, product details, and customer opinions. Examples are listed in the Appendix. In the promotion-focus condition, this discussion task required teams to choose two out of three products for the future product range. In the prevention focus condition, the discussion task required teams to decide against two out of three products as they do not appear to fit the future product range. After the team had announced its decision to the experimenter, each team member had to write down a short statement to explain the team’s decision to the company’s management. This was intended to strengthen the manipulation. Having completed the writing task, each team member answered a short paper-and-pencil questionnaire consisting of team regulatory focus items.
In the second step (experimental task), the team was presented with an innovation team task that they
had to work on together. Each team was asked to imagine that the company’s product development division
had asked their team for assistance due to its specialist knowledge of markets and customers. The team was
asked to develop a first draft for a specific new product, a mobile washing machine for backpacking travel-
ers. The washing machine was expected to provide travelers with clean clothes while traveling and was
expected to be easily stored in a backpack with clothes and other supplies. Team members had to brain-
storm ideas and solutions and make a sketch on flipchart paper. For this task, they had a time limit of
15 minutes. The team was given a timer and was responsible for time management. While working on the
innovation task, the team was video-recorded. Having completed the task, the team was briefed about the
study’s purpose. The duration of the experiment was approximately 75 minutes per team.

MEASURES

Team regulatory focus

After the manipulation, team regulatory focus was measured using the short version of the English RFQ-
proverb scale (van Stekelenburg, 2006). The scale comprises 14 proverbs (7 promotion and 7 prevention
items) that exist in many languages. Example items are "Nothing ventured, nothing gained" for the promo-
tion focus subscale and "Let the cobbler stick to his last" for the prevention focus subscale. We used the
back-and-forth translation procedure recommended by Brislin (1970) to translate the proverbs into German.
Each participant was tested individually and was presented with the 14 proverbs and indicated on a scale
from 1 ("does not apply") to 5 ("does apply") how far those proverbs applied to the team’s attitudes and
actions in the preceding task. The scale reliability was Cronbach’s \( \alpha = .88 \) for the promotion focus scale and
\( \alpha = .74 \) for the prevention focus scale.

Idea generation and implementation activities

We used the video recorded during the innovation team task to operationalize idea generation and idea
implementation activities. Our aim was to create a frequency rating of idea generation and implementation
activities. Based on previous work describing activities or steps underlying the innovation process (e.g., Ble-
dow et al., 2009; Farr et al., 2003; Rosing et al., 2018; West, 2002b), we developed a theory-driven coding
scheme to determine how far team members’ statements and actions referred to either idea generation or
idea implementation. For example, statements and actions dealing with “problem identification” or “dis-
cussing ideas/solutions” were coded as idea generation. Statements or actions dealing with, for example,
“working out details of an idea” or “trial implementation of an idea” were coded as idea implementation.
In an initial coding procedure, two raters coded team members' statements and actions independently. The
subsample for the initial coding procedure included six videos. Inter-rater reliability in this sample was
good; intra-class correlation coefficients (ICC, Shrout & Fleiss, 1979) were .96 for idea generation activities
and .86 for idea implementation activities (two-way mixed model). Based on these results, we intensively
discussed all inconclusive cases. Subsequently, we redefined and finalized the coding scheme. After reaching
agreement on the coding scheme, one of the raters coded team members’ statements and actions relevant to
innovative activities in all 44 videos.

Finally, we divided each 15-minute video into five sections of equal length (three minutes) and counted
the frequency of codings per category (idea generation vs. idea implementation) in each time unit. As a
result, five points of measurement were available for both idea generation and idea implementation.

Innovative performance

We measured each team’s innovative performance based on external ratings of the team’s final idea. Two
trained master students of business psychology blind to the experiment’s purpose and conditions rated the
teams’ sketches independently. They were asked to evaluate two dimensions (originality, quality) for each
sketch on a five-point scale (1 = “very low”, 5 = “very high”). For a better understanding of the sketches,
the raters were able to refer to all notes taken by the teams during the 15-minute innovation task.
To test inter-rater reliability, we computed ICCs using a two-way mixed model. Values were .86 for orig-
inality and .72 for quality, indicating a good level of inter-rater reliability. Thus, the internal validity of our
measure was confirmed.
DATA AGGREGATION

As we proposed a theoretical model at the team level, we needed to aggregate the individual-level regulatory focus values to the team level, using mean scores. To justify the aggregation of individual assessments and to confirm the reliability and validity of the aggregated scores (Chan, 1998; Klein & Kozlowski, 2000), we calculated the value of within-group agreement index ($r_{wg}$; James, Demaree, & Wolf, 1993) and intraclass correlation coefficients (ICC[1] & ICC[2]; Bliese, 2000), using the Excel-based statistic tool provided by Biemann, Cole, and Voelpel (2012). The mean $r_{wg}$ values were .73 for team promotion focus and .78 for team prevention focus. ICC[1] for team promotion focus and team prevention focus were .15 and .41, respectively. ICC[2] was .34 for team promotion focus and .67 for team prevention focus. As ICC[2] depends on the number of raters in each group, the low ICC[2] value for team promotion focus may result from the relatively small team size in this study (Chiu, Owens, & Tesluk, 2016; Gong, Law, Chang, & Xin, 2009). In sum, all values suggested that aggregation was justified.

ANALYTICAL APPROACH AND PRELIMINARY ANALYSES

We analyzed data using the “lavaan” package (Rosseel, 2012) of the open-source software R (R Core Team, 2018). The analysis consisted of two steps. In the first step, we used a latent growth curve modeling approach (LGC) to analyze growth trajectories of idea generation and implementation activities over time. Latent growth curves are well-suited to studying systematic changes in longitudinal data over a specific period of time (Hox & Roberts, 2011). They are characterized by two latent factors, that is, the intercept and the slope of the focal variable (i.e., idea generation or implementation), representing the initial level and the change over time in this variable, respectively. Specifically, we fixed the regression coefficients for the latent variable intercept to 1 for T1-T5, the coefficients for slope were fixed to 0 for T1 and 1 for T5. The regression coefficients for T2-T4 were estimated freely by the model, which allows taking non-linear change in idea generation and implementation into account (see e.g., Meredith & Tisak, 1990). In the second step, we then used intercept and slope of the growth curves in our hypotheses tests (see below).

In the LGC model that we used to analyze the growth trajectories of idea generation activities, the five measurements of idea generation were modeled by two latent factors representing the intercept and the slope of idea generation. Fit indices showed that the model fit the data well ($\chi^2 \[7\] = 1.82, p = .97; CFI = 1.00; RMSEA = .00; SRMR = .04). In general, results revealed a decrease in idea generation over time ($B = -8.17, SE = 0.61, p < .001$). The regression coefficients for slope on T2, T3, and T4 were estimated as .50, .82, and .92, respectively, indicating that most of the decrease in idea generation occurs in the first half of the time interval under consideration (see Figure 2 below). We used a second LGC model to analyze the growth trajectories of idea implementation activities. Again, the five measurements of idea implementation were modeled by two latent factors representing the intercept and the slope of idea implementation1. Fit indices showed that the model fit the data reasonably well ($\chi^2 \[6\] = 5.26, p = .51; CFI = 1.00; RMSEA = .00; SRMR = .08). The results revealed an increase in idea implementation over time ($B = 4.33, SE = 0.44, p < .001$) with regression coefficients .42, .84, and .93 for T2, T3, and T4, again indicating that most of the increase in idea implementation occurs in the time interval T1-T3.

RESULTS

MANIPULATION CHECK

The team-level manipulation checks using the RFQ-proverb scale revealed that teams with an induced promotion focus indicated significantly higher mean scores on promotion ($M = 3.58, SD = 0.37$) than teams with an induced prevention focus ($M = 3.10, SD = 0.55$), Welsh two-sample $t$-test: $t(36.75) = 3.36$ ($p < .01$). Likewise, teams with an induced prevention focus indicated significantly higher mean scores on prevention ($M = 2.65, SD = 0.39$) than teams with an induced promotion focus ($M = 2.37, SD = 0.44$), Welsh two-sample $t$-test: $t(41.39) = -2.22$ ($p < .05$). Although the manipulation of team regulatory focus had an effect on the shared focus in the teams and operated as intended, we decided to examine the hypotheses in a more differentiated manner instead of testing the conditions against one another. In order to take into consideration the whole range of variance of promotion and prevention focus across both conditions, we utilized the measured team regulatory focus instead of the manipulated team regulatory focus in our further analyses.

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1 Based on modification indices, we added a residual correlation between T2 and T5 to the model to improve the fit substantially.
HYPOTHESES TESTING

Table 1 presents means, standard deviations, and intercorrelations of the main variables. Team promotion focus was significantly correlated with idea generation at T1, while correlations with originality did not show statistical significance. Team prevention focus and idea implementation were not related.

In the second step of the analysis, we tested our hypotheses using the two LGC models presented above within the framework of structural equation modeling analysis (SEM). As described, we decided to base our analyses on the measured team regulatory focus, using the whole data set including both conditions. Specifically, we conducted moderated latent growth curve modeling (Preacher, Curran, & Bauer, 2006). Moderated latent growth curve models allow for testing the effect of a variable (e.g., promotions focus) on the intercept and slope of a second variable (e.g., idea generation) that is regressed on time. Thus, these models make it possible to take the interactions between time and regulatory focus into account. Results of the analyses are shown in Table 2.

To test Hypotheses 1a and 1b, we set up a model with team promotion focus as the predictor and intercept and slope for idea generation as the criteria. The model showed good fit ($\chi^2$ [10] = 4.55, $p = .92$; CFI = 1.00; RMSEA = .00; SRMR = .05). Hypothesis 1a stated that team promotion focus would be positively related to idea generation activities at the beginning of an innovation project (intercept; T1). Inspection of the regression coefficients revealed that this was the case ($\beta = 0.33$, $p < .05$). The more the teams were in a promotion focus, the more they engaged in the activity of idea generation at the project’s beginning. Thus, Hypothesis 1a was supported. Hypothesis 1b stated that team promotion focus would be negatively related
## TABLE 1. Means, Standard Deviations, and Intercorrelations

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>SD</th>
<th>1.</th>
<th>2.</th>
<th>3.</th>
<th>4.</th>
<th>5.</th>
<th>6.</th>
<th>7.</th>
<th>8.</th>
<th>9.</th>
<th>10.</th>
<th>11.</th>
<th>12.</th>
<th>13.</th>
<th>14.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Manipulation</td>
<td>0.50</td>
<td>.51</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
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<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>2. Team Prom. Focus</td>
<td>3.34</td>
<td>.52</td>
<td>–.46**</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
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<td>–</td>
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<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>3. Team Prev. Focus</td>
<td>2.51</td>
<td>.44</td>
<td>–.32*</td>
<td>–.27†</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
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<td>–</td>
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<tr>
<td>4. Generation T1</td>
<td>18.73</td>
<td>6.49</td>
<td>.04</td>
<td>–.30*</td>
<td>–.13</td>
<td>–</td>
<td>–</td>
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<td>–</td>
<td>–</td>
</tr>
<tr>
<td>5. Generation T2</td>
<td>10.61</td>
<td>4.62</td>
<td>.39*</td>
<td>–.01</td>
<td>–.13</td>
<td>.44**</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>6. Generation T3</td>
<td>5.68</td>
<td>3.44</td>
<td>–.15</td>
<td>.01</td>
<td>–.35*</td>
<td>.05</td>
<td>.19</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
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<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>7. Generation T4</td>
<td>3.89</td>
<td>2.53</td>
<td>–.08</td>
<td>–.08</td>
<td>–.15</td>
<td>–.12</td>
<td>.17</td>
<td>.24</td>
<td>–</td>
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<td>–</td>
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<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>8. Generation T5</td>
<td>3.05</td>
<td>2.72</td>
<td>–.02</td>
<td>–.02</td>
<td>–.27†</td>
<td>–.33*</td>
<td>.05</td>
<td>.19</td>
<td>.43**</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>9. Implementation T1</td>
<td>2.50</td>
<td>3.42</td>
<td>–.09</td>
<td>–.16</td>
<td>.13</td>
<td>–.57***</td>
<td>–.38*</td>
<td>–.26†</td>
<td>–.07</td>
<td>.22</td>
<td>–</td>
<td>–</td>
<td>–</td>
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<td>–</td>
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<td>10. Implementation T2</td>
<td>5.61</td>
<td>3.58</td>
<td>.01</td>
<td>.03</td>
<td>.11</td>
<td>–.25†</td>
<td>–.53***</td>
<td>–.51**</td>
<td>–.18</td>
<td>–.04</td>
<td>.38*</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>11. Implementation T3</td>
<td>9.43</td>
<td>3.67</td>
<td>–.06</td>
<td>–.10</td>
<td>.19</td>
<td>–.27†</td>
<td>.06</td>
<td>–.46**</td>
<td>–.03</td>
<td>–.08</td>
<td>–.12</td>
<td>.22</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>12. Implementation T4</td>
<td>11.18</td>
<td>3.88</td>
<td>–.09</td>
<td>–.25</td>
<td>–.21</td>
<td>.17</td>
<td>.05</td>
<td>–.16</td>
<td>–.11</td>
<td>.04</td>
<td>.16</td>
<td>.17</td>
<td>.24</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>13. Implementation T5</td>
<td>12.18</td>
<td>5.50</td>
<td>–.01</td>
<td>–.12</td>
<td>–.24</td>
<td>.11</td>
<td>.52***</td>
<td>.38*</td>
<td>.32*</td>
<td>.38**</td>
<td>.11</td>
<td>–.46**</td>
<td>–.14</td>
<td>.13</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>14. Originality</td>
<td>3.30</td>
<td>9.5</td>
<td>–.16</td>
<td>.10</td>
<td>–.17</td>
<td>–.34*</td>
<td>–.28†</td>
<td>–.10</td>
<td>–.27†</td>
<td>.20</td>
<td>.59***</td>
<td>.16</td>
<td>.08</td>
<td>–.37*</td>
<td>–</td>
<td></td>
</tr>
<tr>
<td>15. Quality</td>
<td>3.03</td>
<td>.83</td>
<td>.18</td>
<td>–.02</td>
<td>.07</td>
<td>.17</td>
<td>.04</td>
<td>–.18</td>
<td>–.01</td>
<td>–.12</td>
<td>.04</td>
<td>.48***</td>
<td>.17</td>
<td>.29†</td>
<td>–.08</td>
<td>.58***</td>
</tr>
</tbody>
</table>

**Note.** *N = 44; coding label of “Manipulation”: 0 = Team Promotion Focus, 1 = Team Prevention Focus. †p < .10, * p < .05, ** p < .01, *** p < .001."
### TABLE 2. Results of Moderated Latent Growth Curve Analyses

<table>
<thead>
<tr>
<th>Dependent variables</th>
<th>Idea generation activities (Intercept, T1)</th>
<th>Idea generation activities (Slope, T1-T5)</th>
<th>Originality of the outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$\beta$</td>
<td>SE</td>
<td>$\beta$</td>
</tr>
<tr>
<td>H1a and H1b: Team Promotion Focus</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Model Fit:</strong> $\chi^2$ [10] = 4.55, $p = .92$; CFI = 1.00; RMSEA = .00; SRMR = .05</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Idea Generation Activities (Intercept, T1)</td>
<td>0.33*</td>
<td>(.14)</td>
<td></td>
</tr>
<tr>
<td>Team Promotion Focus via Idea Generation Activities (Intercept, T1)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Idea Generation Activities (Slope, T1-T5)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Team Promotion Focus via Idea Generation Activities (Slope, T1-T5)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Model Fit:</strong> $\chi^2$ [13] = 8.83, $p = .79$; CFI = 1.00; RMSEA = .00; SRMR = .06</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>H2a and H2b: Team Prevention Focus</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Model Fit:</strong> $\chi^2$ [9] = 18.84, $p = .03$; CFI = .60; RMSEA = .16; SRMR = .12</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Idea Implementation Activities (Intercept, T1)</td>
<td>0.15 ($p = .39$)</td>
<td>(.18)</td>
<td></td>
</tr>
<tr>
<td>Team Prevention Focus via Idea Implementation Activities (Intercept, T1)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Idea Implementation Activities (Slope, T1-T5)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Team Prevention Focus via Idea Implementation Activities (Slope, T1-T5)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Model Fit:</strong> $\chi^2$ [12] = 27.04, $p = .01$; CFI = .47; RMSEA = .17; SRMR = .13</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. $N = 44$ teams. **$p < .01$, * $p < .05$. 

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**Note:** The table presents the results of moderated latent growth curve analyses for different dependent variables. The results includes coefficients ($\beta$), standard errors (SE), and model fit indices such as the chi-square ($\chi^2$), Comparative Fit Index (CFI), Root Mean Square Error of Approximation (RMSEA), and Standardized Root Mean Residual (SRMR). The asterisks indicate the level of statistical significance: **$p < .01$, * $p < .05$. The table also notes the sample size ($N$) and provides the formulas for the model fit indices.
to idea generation activities over time (slope; T1-T5). Again, regression coefficients revealed this relationship \( (\beta = -0.31, p < .05) \). The more the teams were in a promotion focus, the less they engaged in the activity of idea generation over time, which was represented by a stronger decline in idea generation over time. Hence, Hypothesis 1b was supported too. Figure 2 displays the expected values of idea generation at T1-T5 for teams with average, high, and low promotion focus, the latter defined as two standard deviations above or below the mean, respectively. As can be seen, high promotion focus is associated with both higher idea generation at the beginning and a stronger decrease over time, and most of the change in idea generation occurs between T1 and T3.

To test Hypotheses 1c and 1d, we set up another model with originality as the criterion and the predictors' team promotion focus as well as intercept and slope for idea generation (see Figure 3). Fit indices reflected that the model we used fit the data reasonably well \( (\chi^2 [13] = 8.83, p = .79; \text{CFI} = 1.00; \text{RMSEA} = .00; \text{SRMR} = .06) \). Hypothesis 1c stated a positive indirect effect of team promotion focus on originality via a high level of idea generation activities at initial project stages. However, the analysis revealed a negative relationship between the team’s idea generation activities and originality \( (\beta = -2.01, p < .01) \). The indirect effect from team promotion focus on the originality of the outcome through idea generation activities was not statistically significant \( (\beta = -0.66, p = .08) \). Thus, Hypothesis 1c was not supported.

Finally, we assumed a negative indirect effect of team promotion focus on originality via a decrease of idea generation activities over time (Hypothesis 1d). However, the results revealed a negative relationship between the team’s idea generation activities over time and the originality of the outcome \( (\beta = -1.89, p < .01) \), which means that a strong decline of the idea generation curve is related to higher levels of originality. The indirect effect from the measured team promotion focus on the originality of the outcome through idea generation activities over time was not statistically significant \( (\beta = 0.58, p = .10) \). Therefore, Hypothesis 1d was not confirmed either (see Figure 3 for all results reported above).

To test hypotheses 2a and 2b, we set up a model with team prevention focus as the predictor and intercept and slope for idea implementation as the criteria. Unfortunately, the model showed poor fit \( (\chi^2 [9] = 18.84, p = .03; \text{CFI} = .60; \text{RMSEA} = .16; \text{SRMR} = .12) \). Hypothesis 2a stated that team prevention focus would be positively related to idea implementation activities at the beginning of an innovation project (intercept; T1). However, the effect was not significant \( (\beta = 0.15, p = .39) \). Hence, Hypothesis 2a was not supported. Hypothesis 2b stated that team prevention focus would be positively related to idea implementation...
activities over time (slope; T1–T5). However, results did not reveal this relationship ($\beta = -0.20, p = .32$). Thus, Hypothesis 2b was not supported either.

In Hypothesis 2c, we assumed a negative indirect effect of team prevention focus on quality via a high level of idea implementation activities at initial project stages. As H2a can be regarded as necessary condition for the analysis, it is not surprising that the indirect effect assumed in H2c was not supported either ($\beta = 0.10, p = .48$). Finally, we assumed a positive indirect effect of team prevention focus on quality via an increase of idea implementation activities over time (Hypothesis 2d). Again, as the condition for the analysis (H2b) was also not met, Hypothesis 2d was not supported either ($\beta = -0.14, p = .46$).

**DISCUSSION**

In this study, our purpose was to provide a comprehensive understanding of how team regulatory focus and the temporal trajectories of innovative activities are linked to innovative performance, contributing to an emerging research on team trajectories (e.g., Larson et al., 2020) and team innovation dynamics (e.g., Knight, 2015; Rosing et al., 2018). We used an experimental and dynamic research approach with external ratings of innovative activities and innovative performance and analyzed our data by means of growth curve models.

Our findings suggest that team promotion focus is related to idea generation activities, such that the more the teams are in a promotion focus, the more they engage in the activity of idea generation at the beginning of an innovative project. Interestingly, we found that these high levels of idea generation activities at the beginning of an innovative project were related to lower levels of originality. Concerning the temporal development of idea generation activities, the results showed a non-linear decline over time. We demonstrated that this decline was related to promotion focus; that is, the more the teams were in a promotion focus, the less they engaged in idea generation over time. Moreover, and contrary to our expectations, we found a negative relationship between idea generation activities over time and the originality of the outcome, indicating that a stronger decline of idea generation over time is related to higher levels of originality. As none of the assumed indirect effects were significant, all associations have to be interpreted independently and we cannot draw any conclusions about the association between team promotion focus and the originality of the outcome. Further, we did not find any significant relationships between prevention focus, idea implementation, and the quality of the outcome.

**THEORETICAL CONTRIBUTIONS**

Our study contributes to existing literature in several ways. First, our results underpin existing research dealing with the role and function of regulatory focus in innovative teams. Particularly, our results provide support for the link between team promotion focus and idea generation activities. In general, the motivational processes related to team promotion focus (i.e., collective motivation by accomplishments) appear to have the potential to foster idea generation. This is in line with existing research (e.g., Emich & Vincent, 2020; Rietzschel, 2011; Shin et al., 2016). However, building on research on time progress in teams (Chang et al., 2003; Gersick, 1988), our results also show that this positive relationship to idea generation is only true for the initial stage of an innovative project. Hence, our results stress that the association of team promotion focus with idea generation activities depends on whether idea generation is analyzed at the beginning of the project or with respect to its temporal development (i.e., analysis of intercept vs. slope). In contrast to the link between team promotion focus and idea generation, we did not find a relationship between team prevention focus and idea implementation. This is in line with team-level results provided by Rietzschel (2011), who emphasized that the realization of ideas is constrained by many factors outside the team members’ control. He argues that factors like organizational priorities and economic circumstances strongly impact idea realization, regardless of team regulatory focus. Nevertheless, similar to results provided by Rosing et al. (2018), our data revealed an increase of idea implementation activities over time. However, neither the initial level nor the trajectory of implementation activities was significantly related to team prevention focus or innovative performance. This might be due to the problematic operationalization of idea implementation in innovation research. Several researchers have emphasized the need to consider not only idea generation but idea implementation as well (e.g., Anderson et al., 2014; West, 2002a, 2002b). Particularly, West (2002a) explicitly mentioned the urgent need to understand the construct of idea implementation in detail. He stated that for teams, the implementation of new products, processes, or procedures is much more difficult than the generation of ideas. However, he mentioned that idea implementation is an under-researched phenomenon. This is still the case, and we thus suggest that future studies need to take
a closer look at idea implementation and identify its specific underlying behaviors and actions in order to better understand and study this innovative activity. As it is also possible that our experimental task did not involve enough authentic implementation activities, studying idea implementation in detail would also help to develop experimental tasks embracing all relevant innovative activities.

Second, we extend the existing line of research on team regulatory focus and innovation by also taking into account the impact of team regulatory focus on growth trajectories of innovative activities. Although theoretical accounts of team effectiveness as well as team innovation are increasingly dynamic, most empirical studies to date have focused on static relationships (Kozlowski, 2015). Thus, we not only examined the initial level of innovation activities, but also considered the trajectories of these activities over time. Specifically, our results reveal that the achievement motivation of team promotion focus boosts idea generation activities at the beginning of a project but is also related to a stronger decrease in these activities over time. At a first glance, this finding might be surprising as a high level of idea generation activities over time might be more likely for promotion-focused teams. However, we suggest that the achievement motivation that drives promotion-focused teams’ idea generation activities in the beginning of a project fosters a decrease in these activities over time. Specifically, concentrating on idea generation over the entire course of an innovation project is unlikely to lead to success (Rosing et al., 2018). Thus, time progress triggers the re-orientation of innovation activities over time (Gersick, 1988; Knight, 2015) and promotion-focused teams are likely to engage in more activities that are relevant to successfully complete a project. However, different from what we expected, our data revealed a non-linear decrease in idea generation activities over time. The decrease in idea generation was strongest in the first half of a project (between T1 and T3) and, moreover, stronger in teams with a high level of promotion focus than in teams with a medium or low level of promotion focus. Interestingly, the strong decrease in idea generation in the first half of a project differs from the punctuated equilibrium perspective (Gersick, 1988), which would locate the strongest decrease in idea generation (i.e., the transition) rather around the project’s midpoint and the second half of the project. (see also Knight, 2015). We suggest that this deviation might be due to the short time frame of the innovative task in our study. As teams only had 15 minutes to complete their task, they might have switched from a short and lively phase of idea generation to a stronger focus on implementing their ideas to get the task done within time limits. In general, these findings underline the importance of a dynamic perspective on creativity and innovation that considers the shifting of the relative weight of activities or other processes (e.g., affect) over time (e.g., Bledow et al., 2009; Bledow, Rosing, & Frese, 2013). Moreover, the findings stress that both linear and non-linear patterns need to be considered to understand the dynamics of innovation processes.

Third, we followed Montag, Maertz, and Baer (2012), who have argued for the need to distinguish between behaviors and outcomes in creativity research. Accordingly, we differentiated between innovative activities and performance ratings and offer an integrated and more complete perspective on the team innovation process. Our result that team promotion focus is relevant for innovative activities but not for innovative performance underlines this need to differentiate. Similarly, our findings reveal that high levels of activities may not necessarily be related to high-performance levels. Specifically, teams showing a high level of idea generation at the beginning of an innovative project do not work out strikingly original ideas. By contrast, in order to present an original idea, a strong decrease of idea generation activities over time appears to be beneficial. This is quite interesting, as it is not in line with the team-level results provided by Rosing et al. (2018), who found that high levels of creativity throughout an innovation project are positively related to team innovation (assessed as quality and novelty). However, a possible reason for this difference might be the method of assessing innovative activities. While in our study innovation activities were assessed based on an external rating, Rosing et al. (2018) used students’ self-reports to assess activities.

LIMITATIONS AND FUTURE RESEARCH

Our study has several limitations that need to be acknowledged. First, as the study is based on a relatively small team sample, statistical power is limited. Nonetheless, instead of relying on perceptions within the teams, we measured innovative activities as well as performance on the basis of different data sources (i.e., video ratings of innovative activities and external ratings of performance measures). As creativity measures based on self-perceptions should be evaluated with caution as they appear to be closely related to constructs like creative self-efficacy and not to creative performance measures (Reiter-Palmon, Robinson-Morr, Kaufman, & Santo, 2012), the external assessment of innovative activities and performance measures may strengthen the robustness of our study results. Consequently, as we obtained our measures from different sources, the risk for method bias is rather low (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003).
However, the small sample size reflects a common problem in the context of team research. As individual data need to be aggregated to the team level before the analyses, final team samples are commonly smaller than final samples at the individual level. Given the difficulties of recruiting large samples of teams, sample sizes of about 40-50 teams are quite typical in team research (e.g., Fairchild & Hunter, 2014; Gu, Chen, Huang, Liu, & Huang, 2018; Homan, Buengeler, Eckhoff, van Ginkel, & Voelpel, 2015) and often even smaller in studies taking teams’ trajectories over time into account (e.g., Jiang, Zhang, & Zhou, 2018), as our study does. Moreover, in experimental designs, many studies use 20-25 teams per condition (e.g., Gino, Argote, Miron-Spektor, & Todorova, 2010; Hoever, Zhou, & van Knippenberg, 2018; Homan et al., 2015). Thus, our sample size can be regarded as typical for team-level research. Nevertheless, small sample sizes come with various disadvantages. Specifically, in the case of our study, the sample size might have been too small to uncover effects with regard to the relationship between prevention focus, idea implementation, and the quality of the outcome. Future research is necessary to examine these relationships within larger samples.

Second, we based our results on the measured team regulatory focus, although the experimental design and the results of the manipulation check would have made it possible to use the manipulation of team regulatory focus and test the two conditions directly. However, the relatively small number of teams necessitated that we rely on a more differentiated and precise measure of team regulatory focus in our analysis. Hence, we decided to include the measures of team promotion and prevention focus as predictors of idea generation and implementation. This approach allowed us not only to cover the whole range of variance in promotion and prevention focus, but it also enabled us to study both variables separately. This is advantageous as promotion and prevention focus are not two ends of one continuum, but are typically conceptualized as two orthogonal dimensions and, therefore, can co-exist (Johnson et al., 2015). However, this approach also means that conclusions regarding causality cannot be drawn.

Finally, apart from studying the dynamics of innovative activities, it would also be interesting to take into account the dynamics of team regulatory focus. Thus, future research should explicitly explore the dynamics of team regulatory focus over time, for example, in terms of possible shifts or interactions of team promotion and prevention focus and their impact on innovative activities and outcomes. In general, this would be in line with Kozlowski (2015), who emphasized the need for treating team processes as dynamic in research. As innovation is characterized by tensions, conflicting demands, and conflicting activities (Bledow et al., 2009), team regulatory foci may also shift according to these changing requirements. Considering the simultaneous occurrence of team promotion and team prevention focus as beneficial for innovative activities and outcomes would also correspond to Gebert, Boerner, and Kearney (2010), who emphasized that a combination of opposing action strategies may foster team innovation. For example, Bledow et al. (2013) studied this issue at the individual level and provided support for the assumption that interactions of positive and negative affect foster creativity. As affect and self-regulation are closely related constructs, it would be a promising avenue for future research to study dynamic shifts of (team) regulatory focus and their relationship with innovative activities and outcomes.

PRACTICAL IMPLICATIONS

Regulatory focus in innovation teams is also of practical interest. With respect to the central role of teamwork in innovative contexts (Hülsheger et al., 2009), it is critical to know for both team members and leaders how team regulatory focus is associated with the activities in an innovation project. It will be helpful for team members to become aware of their regulatory focus and its specific impact on innovative activities at different time frames, as they will be able to reflect more effectively on strategies to reach their goals. Likewise, leaders will be able to motivate their team members in a goal-oriented manner, depending on the activities that have to be performed in a specific innovation project. However, our results also suggest that both leaders and teams who have to deliver original outcomes should be aware that generating a lot of ideas at the beginning of a project does not necessarily result in particularly original ideas. Rather, contrary to what one might expect intuitively, they should be aware that a decrease of idea generation activities over time is not necessarily detrimental for the originality of the outcome but can also be fruitful. These considerations will also have an effect on the team’s ability to consciously experience and reflect on the given situational requirements. As a result, regulatory fit (i.e., fit between goals and means; Higgins, 2000) will substantially improve.
REFERENCES


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**AUTHOR NOTE**

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### APPENDIX

**EXAMPLES FOR TEAM REGULATORY FOCUS MANIPULATIONS**

<table>
<thead>
<tr>
<th></th>
<th>Team promotion focus condition</th>
<th>Team prevention focus condition</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Brand names</strong></td>
<td>“Run&amp;Fun!”</td>
<td>“StormProtection”</td>
</tr>
<tr>
<td><strong>Slogans</strong></td>
<td>“Feel the pure energy!”</td>
<td>“Reliable protection – 365 days a year”</td>
</tr>
<tr>
<td></td>
<td>descriptions</td>
<td>“This high-quality running shoe impresses by its very light weight and its dynamic design.”</td>
</tr>
<tr>
<td><strong>Product details</strong></td>
<td>‘StayWarm’ coating prevents your body from cooling.”</td>
<td>“Water and wind repellent material”</td>
</tr>
<tr>
<td></td>
<td>“Ultralight midsole material”, “Flexible outsole”</td>
<td></td>
</tr>
<tr>
<td><strong>Customer opinions</strong></td>
<td>“Optimal for my personal best!”</td>
<td>“The jacket has reflective elements, so that I can walk around safely even during the winter months.”</td>
</tr>
</tbody>
</table>