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ORIGINAL PAPER

Envisioning, Planning and Innovating: A Closer Investigation of Proactive Goal Generation, Innovative Work Behaviour and Boundary Conditions

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Abstract
Purpose Building on goal-regulation theory, we examine a) whether the regulatory elements of proactive goal generation, namely envisioning and planning, can sequentially stimulate individual innovative work behaviour, with planning acting as a mediator in the envisioning–innovation relationship and b) whether the link between envisioning and planning can be strengthened by the joint contributions of psychological empowerment and team support for innovation (TSI).
Design/Methodology/Approach Data were collected from 268 employees of five Italian companies.
Findings Hierarchical linear modelling analyses indicated that planning was positively predicted by envisioning, and partially mediated its effect on innovative work behaviour. In addition, employees who were highly involved in envisioning activities reported the highest levels of planning when both psychological empowerment and TSI were high.
Implications The results of this research indicate that an effective means by which managers and practitioners can increase employees' innovative efforts is by encouraging their involvement in proactive goal setting and goal planning activities. Additionally, our findings highlight the importance of creating an innovation-supportive team environment and nurturing individual psychological empowerment to increase the odds that employees will translate their envisioned proactive goals into effective action plans
Originality/Value This is the first study to assess the envisioning–planning mechanism in relation to innovation, thus advancing our understanding of how individual and contextual conditions can amplify the effects of envisioning on planning activities.

Keywords Innovative work behaviour · Goal generation · Empowerment · Team support for innovation

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Introduction

Scholars have widely recognized the importance of investigating motivational factors that can enhance people's determination to exert creative and innovative efforts at work (e.g. Grant and Berry 2011; Vinarski-Peretz et al. 2011; Prabhu et al. 2008; Ng et al. 2010). Despite this, research on the motivational antecedents of workplace innovation is still relatively underdeveloped. Specifically, the functions of self-regulatory mechanisms other than intrinsic or extrinsic motivation have yet to be established in relation to innovative behaviour (Hammond et al. 2011), which is defined as the intentional generation, promotion, and implementation of new and useful ideas (Janssen 2000; Kanter 1988).

Building on goal-regulation theory, the present study examines whether the two key proactive goal generation

processes—envisioning and planning—can nurture innovative work behaviour (Parker et al. 2010; Bindl and Parker 2010). Envisioning and planning reflect, respectively, deliberative and implemental mindsets, which, according to the model of action phases (Gollwitzer 1990; Brandstätter et al. 2003), are responsible for the transition of wishes into goal-directed actions. Consistent with the model of action phases, we propose that envisioning will enhance innovative work behaviour through the mediating role of planning.

Furthermore, we identify psychological empowerment and team support for innovation (TSI) as joint moderators of the envisioning–planning relationship. Two key considerations influenced the selection of these factors. First, as suggested by goal-regulation theory, feasibility and desirability expectations regarding future goals, which are usually made in a deliberative mindset (i.e. envisioning), significantly affect subsequent decisions about whether or not to initiate goal-directed activities (i.e. planning) (Gollwitzer 1996; Webb and Sheeran 2007). Second, scholars and practitioners have widely pointed out that the effective development of goal-directed plans requires that people identify and use a range of key resources (Mumford et al. 2008; Hunter et al. 2012).

Based on these premises, we propose that employees who have envisioned proactivity goals—provided they regard such change-related outcomes as both valuable and feasible—will be more likely to develop effective change-oriented plans when they are equipped with adequate resources for change. In this regard, theory and research (e.g. Parker et al. 2010; Koestner and Losier 2002) suggest that high desirability and feasibility expectations for change-oriented outcomes can be reflected in a strong sense of psychological empowerment (Spreitzer 1995). Likewise, prior literature has indicated that the requisite resources for change are likely to be found in group environments that value and support innovative attempts by employees (Anderson and West 1998). Therefore, we expect that high-empowered employees who work in high innovation-supportive teams will have greater odds of translating the envisioned proactivity goals into corresponding action plans and strategies. Reflecting this logic, the present study predicts a three-way interaction effect of envisioning, psychological empowerment and TSI on planning.

Overall, by examining the proposed research model (Fig. 1), we make two novel contributions to the literature. First, this is the first study to integrate the envisioning–planning mechanism into the regulatory processes that nurture employee engagement in innovative courses of action. In doing so, we broaden current knowledge of the motivational routes through which individual innovativeness can be stimulated and nurtured. Specifically, by considering planning as a key mediating process that links envisioning to innovative work behaviour, this research offers a more comprehensive understanding of *how* goal setting may motivate people to generate, promote, and introduce new and useful ideas in the workplace. Second, empirical evidence demonstrating how personal and contextual moderators affect the goal setting–goal planning relationship is relatively scarce. Here, we explain the intervening factors (i.e. psychological empowerment and TSI) that can facilitate the progression of proactive envisioning to the formulation of effective change-oriented plans and strategies.

Envisioning, Planning and Innovative Work Behaviour

Despite increasing evidence that work motivation is a critical driver of employee creativity and innovation (Shalley and Gilson 2004), theory and research have largely disregarded the role exerted by regulatory factors other than intrinsic or extrinsic motivation in fostering individual involvement in innovative endeavours (Hammond et al. 2011). Specifically, very few studies to date have applied a goal-regulation perspective to the study of workplace innovation. This is surprising, considering that key goal-directed regulatory processes—such as goal setting and goal planning—have been extensively recognized

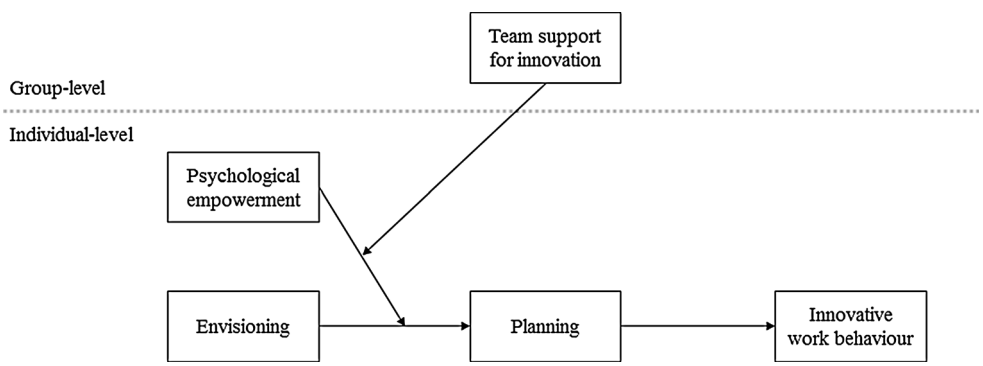

Fig. 1 Theoretical model

to benefit task performance in a wide range of domains (e.g. Locke and Latham 1990, 2012; Klein et al. 1999; Gollwitzer 1996; Vancouver and Day 2005).

To fill this void, we draw on goal-regulation theory (Gollwitzer 1990) to propose and test a motivational model of innovation that takes into account the impact of two proactive goal-regulatory mechanisms on individual innovative work behaviour, namely envisioning and planning. Taken together, they are referred to as proactive goal generation processes, whereby individuals allocate their time and energy across a range of tasks in order to change the self or the environment (Parker et al. 2010). Specifically, when envisioning, people imagine a different future by deliberating on proactivity-related goals. Such goals are anticipatory and self-initiated, and involve bringing about changes to work tasks or the broader organizational context (Bindl and Parker 2010).

As such, envisioning is conceptually different from the idea generation, which represents a component of innovative work behaviour (Janssen 2000). Envisioning involves cognitive efforts expended in thinking ahead to anticipate future outcomes that represent potential improvements to the status quo (Grant and Ashford 2008). Accordingly, envisioning serves to provide clear targets towards which the individuals can direct their subsequent innovative endeavours. However, this regulatory activity does not imply any additional effort to achieve the foreseen outcomes. In contrast, idea generation uniquely takes into account the amount of effort devoted by employees to the effective production of novel and potentially useful ideas that, once implemented, are meant to facilitate the accomplishment of the envisioned future states (Hammond et al. 2011). Accordingly, while envisioning is mainly focused on the selection of change-oriented goals, idea generation is primarily concerned with the performance of the actions needed to make the anticipated changes effective.

When planning, individuals develop mental simulations of actions and strategies that would facilitate successful achievement of proactivity goals (Frese et al. 2007). Envisioning and planning processes correspond to, respectively, deliberative and implemental mindsets, which, in the model of action phases, should play a critical role in enhancing goal-directed performance (Gollwitzer 1990). Indeed, consistent with a goal-regulation perspective, this model assumes that, in the deliberative mindset, people contemplate and select preferences among different goals, in order to decide which of them will be pursued. This action phase ends with the formation of a goal intention, which commits people to a given goal. In the implemental mindset, individuals plan when, where, and how to act in order to achieve the envisioned future (Gollwitzer 1996). In other terms, they prepare themselves to initiate goal-directed endeavours by creating specific plans for actions (i.e. implementation intentions).

As such, planning, which is the immediate determinant of behaviour, is supposed to be responsible for linking a desired goal to the enactment of goal-directed courses of action (e.g. Gollwitzer 1993; Van Hooft et al. 2005). These assumptions have received extensive empirical support from both research and laboratory studies, showing that goal setting stimulates planning and the development of effective goal-directed strategies, which in turn lead to better performance (e.g. Locke and Latham 2002; Durham et al. 2000; Van Hooft et al. 2005; Brandstätter et al. 2003; Ford et al. 1998; Seijts and Latham 2001).

Previous research suggests that the proactive envisioning–planning mechanism, which reflects the sequential relationship between the deliberative and implemental mindsets, may also represent a key goal-directed motivational route to innovative performance. First, consistent with a goal-regulation perspective, people who have envisioned change-oriented goals might be more involved in developing corresponding goal-oriented plans as part of their goal-striving efforts (Wood et al. 2012; Locke 2000). Most importantly, proactivity goals imply involvement in complex and dynamic tasks (Parker et al. 2010), which have been shown to activate search- and information-processing activities (Goodman et al. 2011). Thus, proactive envisioning can effectively set the stage for the exploration and identification of task-relevant knowledge, which is essential to the development of adequate goal-directed plans and strategies (Locke 2000).

Planning, in turn, is expected to enhance the development, promotion, and implementation of new ideas, thereby translating the envisioned change-related goals into corresponding goal-directed innovative courses of action. Most importantly, theory and research on goal regulation suggest that preparing a mental strategy can be particularly beneficial for goal-directed performance when people who are pursuing a goal are encountered with uncertain and out-of-the ordinary situations (Gollwitzer 1999). In such complex cases, once goals are set, planning can indeed enhance an individual's ability to recognize and capitalize on relevant opportunities that are expected to facilitate the enactment of goal-oriented behaviours (e.g. Gollwitzer 1996; Brandstätter et al. 2001; Orbell and Sheeran 2000).

Because innovation is by nature a highly uncertain and risky venture (Hunter et al. 2012), planning activities can thus play a key role in facilitating the enactment of this complex endeavour. In fact, proactive planning, in contrast to passive planning, implies that people anticipate future problems, demands, and opportunities (Frese et al. 2007). As such, proactive planning can direct an individual's attention towards change-related cues that, once recognized, will trigger the impulse to take innovative courses of

action and bring about meaningful changes and improvements (Hunter et al. 2012; Baughman and Mumford 1995). Likewise, this regulatory activity can provide individuals with guidance in uncertain and ill-defined situations, by preparing them with ready-made answers to unexpected obstacles or difficulties (Mumford et al. 2001; Diefendorff and Lord 2004). As a consequence, not only will proactive planning stimulate personal initiative in innovative endeavours, but it will also increase persistence in overcoming barriers, which is a necessary prerequisite for successful innovation (Martínez-Ros and Labeaga 2009). Overall, the points raised above led us to hypothesize the following relationships between proactive goal generation processes (i.e. envisioning and planning) and innovative work behaviour:

Hypothesis 1 Envisioning will be positively related to planning.

Hypothesis 2 Planning will be positively related to innovative work behaviour.

Hypothesis 3 Planning will mediate the relationship between envisioning and innovative work behaviour.

Psychological Empowerment and TSI as Moderators of the Envisioning–Planning Relationship

We further delineate moderators of the envisioning–planning link. This is theoretically relevant for two key reasons. First, as proposed by the model of action phases, the progression from a deliberative to an implemental mindset is highly contingent on a person's assessment of the feasibility and desirability of the anticipated goals (Gollwitzer 1990; Oettingen et al. 2004). In fact, the deliberative mindset generates a cognitive tuning towards feasibility and desirability-related information, whereby individuals weigh the expected value of the goals (i.e. desirability) and estimate the likelihood of achieving them (i.e. feasibility) (Gollwitzer and Bayer 1999). Hence, the higher the feasibility and desirability beliefs, the more likely it is that people will commit to the goals by investing their energy into planning the necessary goal-directed strategies and courses of action. Conversely, negative expectations may prevent the formation of a goal intention and subsequent involvement in planning efforts (Oettingen et al. 2004; Achtziger and Gollwitzer 2010).

Second, as many scholars have suggested, planning for change is a resource-intensive endeavour, since it inherently encompasses the execution of flexible and non-routine tasks (e.g. Mumford et al. 2008; Marta et al. 2005; Vancouver et al. 2008). As such, this regulatory process requires people to access key resources for change (Hunter et al. 2012). Specifically, planners need to be provided with adequate amount of time for deliberating about and evaluating the range of strategies needed to pursue the envisioned change-oriented outcomes (Nohari and Gulatti 1996). Likewise, resources in the form of expertise are necessary to further help people properly estimate the value and viability of alterative change-oriented strategies, and to guide and assist them in determining how plans can be successfully implemented (Hunter et al. 2012).

We, therefore, contend that for people to successfully proceed from envisioning proactivity goals to developing corresponding change-oriented strategies, they should be both 1) *willing* to invest their efforts in proactive goal striving—as a result of their positive feasibility and desirability considerations regarding proactivity goals, and 2) *enabled* to get the necessary resources for the effective execution of planning tasks. In this regard, psychological empowerment and TSI are thought to reflect, respectively, these two boundary conditions. As such, they are regarded here as joint moderators of the envisioning–planning relationship.

Psychological empowerment is defined as a multifaceted construct manifested in four cognitions that reflect an individual's active orientation to the work role: meaning, competence, self-determination and impact (Spreitzer 1995). As such, this psychological state can reflect both feasibility and desirability considerations regarding proactivity goals. In fact, empowered people feel competent about their abilities to effectively carry out work tasks (i.e. competence), as well as to positively affect the outcomes of their work through their own efforts (i.e. impact) (Spreitzer 1995). These feelings, which reflect positive feasibility expectations for proactivity goals (Parker et al. 2010), enhance effort and persistence in overcoming obstacles (Bandura 1997; Ashforth 1990), thus increasing proactive goal striving (Frese and Fay 2001). Consequently, they can potentially improve the odds that people who are deliberating on change-oriented outcomes will be more committed to proactive planning. Prior empirical research indirectly supports these assumptions, indicating that people with a higher self-efficacy (i.e. competence) are more likely to invest their efforts in developing goal-directed strategies (e.g. Latham et al. 1994; Wood and Bandura 1989). Likewise, individuals with high control orientation (similar to impact) have been found to more actively search for information and opportunities to act in order to achieve a given goal (Heckhausen and Schulz 1995; Ashford and Tsui 1991).

Furthermore, empowerment dimensions of meaning and self-determination can reflect desirability-related considerations, as they correspond to an autonomous (i.e. self-determined) form of motivation (Seibert et al. 2011; Sun et al. 2012; Menon 2001), in which individuals ascribe

value to achieving a behavioural goal (Ryan and Deci 2002; Battistelli et al. 2013a, b). Most importantly, theory and research have pointed out that people with a high autonomous motivation are more involved in proactive goal striving, as they recognize the importance of bringing about meaningful changes to the work environment (Koestner and Losier 2002; Fuller et al. 2012; Parker et al. 2010). Therefore, desirability considerations captured by psychological empowerment can also play a critical role in promoting employees' involvement in proactive planning.

Most importantly, owing to its properties, psychological empowerment differs in important ways from other related higher-order constructs, such as core self-evaluations and psychological capital. Like highly empowered individuals, those with high core self-evaluations may demonstrate greater confidence in achieving change-oriented goals (high feasibility expectations), because they a) perceive themselves as competent, successful and worthy (high self-efficacy and high self-esteem); b) believe in their own ability to control the environment (high locus of control); and c) feel capable of remaining calm when facing stressing events (high emotional stability) (Bono and Judge 2003). Likewise, people with high positive psychological capital could develop positive feasibility expectations related to proactivity goals, due to their perceived capacity to a) derive pathways to desired goals and initiate movement along those pathways (high hope and high self-efficacy), b) rebound from obstacles and failures (high optimism), and c) overcome the discrepancy between their goals and their current situation (high optimism) (Luthans et al. 2007).

However, such individuals may not necessarily see the value of achieving a different future (desirability expectations). Indeed, neither core self-evaluations nor psychological capital provide any information about the importance attributed to goals and purposes specific to the work domain. Consequently, these constructs may not adequately capture the expected value of bringing about changes and improvement at work. In contrast, as discussed above, psychological empowerment directly takes into account the extent to which the work is experienced as valued and worthy by the employee. This is crucial to detect the personal willingness to exert proactive efforts to pursue and accomplish change-oriented goals (Fuller et al. 2012; Parker et al. 2010). Therefore, compared to self-evaluations and psychological capital, psychological empowerment is expected to more thoroughly depict the expectations that people may have of proactivity outcomes. As such, it is more suitable to the context of planning for change.

Consistent with these premises, high-empowered employees should display a strong commitment to proactive goal striving. As a result, they are expected to be more determined to search for and gather those resources that are required to plan effective change-oriented strategies, such as time, assistance and guidance. Along with our earlier arguments, we contend that access to and use of such key resources can be facilitated if employees have the possibility to work in a team that is open to change and values the innovative contributions of its members. One relevant group-level construct that can represent this kind of environment is TSI, which is defined as "the expectation, approval and practical support of attempts to introduce new and improved ways of doing things in the work environment" (West 1990, p. 315).

To clarify this point, it is worth remarking that, as prior literature has documented, innovation-supportive teams, on the basis of their expectation levels for their members, direct more energy towards people they feel have the most potential (e.g. Chen and Klimoski 2003). Thus, innovation-supportive teams will be more likely to make resources available to team members who have the potential to initiate changes, rather than to team members who are oriented towards preserving the status quo. As previously discussed, people with high psychological empowerment, due to their positive desirability and feasibility considerations for proactivity goals, display a stronger commitment to bring about changes than those with low psychological empowerment. As a consequence, high innovation-supportive teams are expected to make their resources more readily available to such employees.

Specifically, as high innovation-supportive teams concede their members the time needed for executing change-oriented tasks, they will buffer high-empowered employees from undue time pressures (Amabile et al. 2002). They will provide such people with the necessary amount of time to carefully orchestrate the strategies to pursue the envisioned change-oriented outcomes, which is necessary for effective plan development (Mumford et al. 2008). Additionally, innovation-supportive groups are extensively involved in innovation-related activities, such as cooperating to help develop new solutions or providing assistance in idea implementation (West and Anderson 1996). As such, unlike teams that ascribe little value to innovative activities, high innovation-supportive groups are expected to possess more appropriate expertise for facilitating the development and execution of change-oriented plans. More precisely, such teams will be likely to share their expertise with high-empowered employees (Anderson and West 1998), by providing guidance to plan formation, and by helping them scan and identify the opportunities and threats that may impact successful plan implementation. Likewise, innovation-supportive teams always search for alternative answers to problems. Hence, they will be more likely to stimulate high-empowered planners to develop an open and skeptical approach to decision-making. This will allow the flexibility required to refine and adjust change-

oriented strategies, which is essential to successful plan formulation (Mumford et al. 2008). Finally, team members who provide practical support to change-oriented endeavours will be further disposed to assist empowered employees in evaluating different plans and in making decisions as to which are worth pursuing (Mumford and Hunter 2005).

Overall, the discussion above suggests that when provided with extensive support for innovation from their group, empowered individuals will be enabled to devote the necessary amount of time to planning tasks, as well as to access and capitalize on their teammates' expertise and assistance to effectively develop and execute change-oriented strategies. An innovation-supportive team will, therefore, help empowered employees address the challenges implied by planning tasks, which will result in more effective decision-making processes and improved plan formulation. It is thus the combination of a strong sense of psychological empowerment and a high TSI that is expected to improve the odds of envisioned proactivity goals being translated into valuable change-oriented plans.

In contrast, when the team is averse to changes at work (i.e. low TSI), high-empowered individuals may encounter more difficulties in developing plans, as they would have less access to adequate resources for change from their colleagues. Accordingly, when psychological empowerment is high and TSI is low, the positive relationship between envisioning and planning is expected to be less strong than when both moderators are high. Likewise, low psychologically empowered employees may be less likely to capitalize on the support and assistance provided by their group to change-oriented planning tasks (i.e. high TSI). Indeed, such people may have negative expectations about change-oriented outcomes, which would refrain them from committing to proactive actions. Accordingly, the combination of low psychological empowerment and high TSI should results in a weaker relationship between envisioning and planning than the combination of high psychological empowerment and high TSI. Hence, these premises further lead us to suppose that the positive envisioning–planning link will be the weakest when both psychological empowerment and TSI are low. In this condition, not only are people less motivated to invest time and effort in proactive endeavours, but they are also embedded in a work environment that privileges the status quo and that, consequently, does not provide any input to developing change-oriented action plans. Therefore, the following hypothesis is proposed:

Hypothesis 4 Envisioning, psychological empowerment, and TSI will interact to affect planning, such that employees who are highly involved in envisioning activities will exhibit the highest levels of planning when psychological empowerment and TSI are both high.

Method

Research Context

Employees from five companies located in Central Italy participated in this study. The organizations were in two industries (i.e. Pharmaceutical and Information Technology Services). Employees in information and technology (IT) industries were mainly required to design and implement engineering products customized to clients' needs. Their job was characterized by high time pressures to meet fixed production deadlines and continuous demands for problem solving and innovation. Employees in pharmaceutical industries were mostly involved in the fabrication of therapeutic drugs for the management of pain, and of medications to treat addiction. The job in this industry sector required performing more routine tasks than that in the IT sector, and employees were subject to fewer demands for problem solving and innovation.

At the time the survey was conducted, the organizations were involved in an action-research process which involved employees' participation in the development and implementation of innovative work projects. Specifically, these projects would have been designed to improve organizational processes and outcomes (e.g. internal communication flow, effectiveness of group decision-making processes, or quality of services to customers) through the application of creative solutions. To this end, participants were required to a) identify strengths and weaknesses in the current work practices, methods, and procedures; b) set change-oriented objectives; and c) identify and apply innovative problem-solving strategies aimed at changing and improving dysfunctional work-related processes. Thus, this context was particularly suitable for the purposes of our study.

Participants and Procedure

A letter from the human resources department invited 390 employees (the total of all organizations) to participate in a paper-and-pencil survey. A total of 377 employees from 40 work teams provided usable responses. For aggregation purposes (see Measures section below), we eliminated eight teams with less than three respondents, as is common practice in multilevel studies (e.g. Zhang et al. 2010; Lam et al. 2010). The final sample comprised 268 employees (response rate = 68.62 %), nested within 30 work teams (mean team size = 8.93 members). In terms of sample characteristics, most participants were female (52.2 %), reported an age between 36 and 45 (37.3 %), and had an undergraduate degree or higher (80.7 %). Additionally, 32.8 % of the respondents had fewer than eight years of organizational tenure, and 29.5 % also had fewer than eight years of team tenure.

Furthermore, the distribution of each of the five organizations differed from the total sample as follows. In the first organization, the final sample (65 employees out of 79 invited to participate; response rate = 82.28 %) had the same distribution as that of the whole sample, except for age, as most participants (63.1 %) were between 26 and 35 years. In the second (44 participants out of 47 invited to participate; response rate = 93.62 %) and the fourth firm (19 participants out of the 53 invited; response rate = 35.85 %), the final samples differed from the total sample in the gender distribution, as the majority of participants were male (81.8 % in the second organization; 68.4 % in the fourth organization). In the third organization, the final sample (128 participants out of 169 invited to participate; response rate = 75.73 %) was distributed in the same way as the total sample, except that most participants reported an organizational tenure between 8 and 14 years. Finally, in the fifth firm, the final sample (12 participants out of the 42 invited; response rate = 28.57 %) differed from the total sample in the distribution of gender (83.3 % of participants were male), as well as in organizational and team tenure (50 % of participants had more than fourteen years of organizational tenure, and 41.7 % also reported more than fourteen years of team tenure).

Measures

Proactive Goal-Regulatory Processes

To assess envisioning and planning processes, we used two subscales of three items each, which were taken from the proactive goal-regulation scale developed by Bindl et al. (2012). Employees were asked to indicate how much time and effort they had spent, over the last four months, in the following endeavours: 1) Envisioning—"Thinking about ways to improve services to customers," "Thinking about ways to save costs or increase efficiency at work," and "Thinking about how to better perform your tasks"; and 2) Planning—"Going through different scenarios in your head about how to best bring about a work change," "Getting yourself into the right mood before trying to make a change or put forward a suggestion," and "Thinking about a change-related situation from different angles, before deciding how to act." Items were rated on a scale ranging from 1 ("not at all") to 5 ("a great deal"). Empirical support for the distinctiveness between the two constructs has been provided by a number of authors (i.e. Bindl et al. 2012; Bindl and Parker 2010; Battistelli and Boudrias 2012). Reliability scores for envisioning and planning were .72 and .80, respectively.

Psychological Empowerment

We used Spreitzer's (1995) twelve-item scale to measure employees' psychological empowerment. The scale comprised four three-item subscales assessing the following interrelated dimensions: competence (e.g. "I am confident about my ability to do my job"), meaning (e.g. "My job activities are personally meaningful to me"), self-determination (e.g. "I have considerable opportunity for independence and freedom in how I do my job") and impact (e.g. "I have significant influence over what happens in my department"). The validity of psychological empowerment as a unitary construct has been supported by Seibert and colleagues' (2011) meta-analytic study. Responses ranged from 1 ("completely disagree") to 5 ("completely agree") ($\alpha = .85$).

Team Support for Innovation

We measured TSI with the three-item subscale from the short version of Anderson and West's (1998) Team Climate Inventory (Kivimäki and Elovainio 1999). Using a 5-point scale ranging from "never" to "always," participants were asked to rate items, such as "People in this team are always searching for fresh, new ways of looking at problems" ($\alpha = .81$). Consistent with Anderson and West (1998), TSI reflects group members' *shared perceptions* about the extent to which their group supports attempts to develop and implement new and useful ideas. As such, it is here regarded as a group-level construct. Therefore, we averaged team member scores into a group-level measure of support for innovation, based on a mean $r_{wg(j)}$ of .73, an ICC(1) value of .09 and an ICC(2) value of .46 (Bliese 2000; Glick 1985; Schneider et al. 1998).

Innovative work behaviour. Innovative work behaviour was assessed with Janssen's (2000) nine-item scale ($\alpha = .92$), which measures three interrelated behavioural processes: idea generation (e.g. "Creating new ideas for difficult issues"), idea promotion (e.g. "Acquiring approval for innovative ideas") and idea realization (e.g. "Introducing innovative ideas into the work environment in a systematic way"). The unidimensionality of innovative work behaviour has been confirmed in a number of studies (e.g. Battistelli et al. 2013a, b; Leung et al. 2011).

Control Variables

We controlled for several individual-level variables that might affect the results of our study. First, we controlled for gender, which has been shown to have significant associations with innovative behaviours (e.g. Holman et al. 2012; Janssen 2000). Second, we controlled for education and organizational tenure, because they reflect individual

knowledge and expertise, respectively, both of which have been related to creativity and innovation (e.g. Amabile 1983; Carmeli et al. 2006). Third, we controlled for team tenure, which was also shown to significantly affect workplace innovation (e.g. West and Anderson 1996; Kessler and Chakrabarti 1999). Finally, we created two dummy variables (i.e. organization 1 and organization 2) corresponding to the two industrial sectors (i.e. pharmaceutical and IT services), in order to assess whether employee engagement in innovative activities would be affected by the different organizational expectations and job requirements that characterized the two industries.

Results

Confirmatory Factor Analysis and Assessment of Common Method Variance

To begin with, we conducted a confirmatory factor analysis (CFA) with the maximum likelihood estimation method of Mplus, version 7.11 (Muthén and Muthén 1998-2012), in order to examine the distinctiveness of the five variables in our model (i.e. envisioning, planning, psychological empowerment, TSI and innovative work behaviour). The overall model Chi-square (χ^2), the comparative fit index (CFI), the root-mean-square error of approximation (RMSEA) and the standardized root-mean-square residual (SRMR) were used as key indicators of model fit. For the CFI, a value higher than .90 is regarded as indicative of a good fit (Hu and Bentler 1999). For the RMSEA and the SRMR, values lower than .08 should be acceptable (Browne and Cudeck 1993). The results of the CFAs indicated that our five-factor model fit the data reasonably well (χ^2 [809] = 1999.73, CFI = .91; RMSEA = .05; SRMR = .05) and significantly better than alternative, more parsimonious models (see Table 1). These results, therefore, supported the discriminant validity of our study variables.

Additionally, because all data were collected through self-report measures at one point in time, our results could have been inflated by common method bias. To address this issue, we used the unmeasured latent method factor approach, as recommended by Podsakoff et al. (2003). The advantages of this statistical approach, which has already been applied in prior studies (e.g. Liao 2007), are that it does not require specifying the source of method bias, and it controls for any systematic variance among the items that is independent of the covariance because of the constructs of interest (Podsakoff et al. 2003, 2012). Specifically, this method involves adding a first-order factor to the hypothesized measurement model with all of the measures as indicators. Accordingly, we tested our five-factor mode with an additional method factor. This model resulted in a better fit than the original five-factor model, as indicated by

Table 1 Fit indices for confirmatory factor analyses

Model	χ^2	*df*	$\Delta\chi^2$	Δ *df*	CFI	RMSEA	SRMR
Hypothesized five-factor model	322.49*	199	–	–	.95	.05	.04
Four-factor models							
Combining envisioning and planning	361.07*	203	38.58*	4	.94	.06	.05
Combining envisioning and innovative work behaviour	475.18*	203	152.69*	4	.90	.07	.07
Combining planning and innovative work behaviour	539.33*	203	216.84*	4	.87	.08	.07
Combining psychological empowerment and innovative work behaviour	429.06*	203	106.57*	4	.91	.07	.06
Combining envisioning and empowerment	474.45*	203	151.96*	4	.89	.07	.06
Combining planning and empowerment	505.98*	203	183.49*	4	.88	.08	.07
Three-factor models							
Combining envisioning, planning and innovative work behaviour	630.68*	206	308.19*	7	.84	.09	.07
Combining envisioning, planning and psychological empowerment	541.41*	206	218.92*	7	.87	.08	.08
Combining envisioning and planning, and psychological empowerment and innovative work behaviour	467.73*	206	145.24*	7	.90	.07	.06
Combining envisioning and innovative work behaviour, and planning and psychological empowerment	647.52*	206	325.03*	7	.83	.09	.08
Combining envisioning and psychological empowerment, and planning and innovative work behaviour	665.03*	206	342.54*	7	.82	.09	.08
Two factor model (combining envisioning, planning, psychological empowerment and innovative work behaviour)	734.40*	208	411.91*	9	.80	.10	.08
One-factor model	921.52*	209	599.03*	10	.73	.11	.09

$N = 268$. *CFI* comparative fit index, *RMSEA* root-mean-square error of approximation, *SRMR* standardized root-mean-square residual

* $p < .01$

Table 2 Descriptive statistics and correlations

Variables	*M*	*SD*	1	2	3	4	5	6	7	8	9	10	11
1. Organization 1	–	–	–										
2. Organization 2	–	–	–.25**	–									
3. Gender	–	–	.28**	–.30**	–								
4. Education	–	–	–.47**	.03	–.16**	–							
5. Organizational tenure	–	–	.03	–.06	.01	–.26**	–						
6. Team tenure	–	–	.00	–.10	.11	–.23**	.64**	–					
7. Envisioning	3.59	.91	–.21**	.20**	.08	.19**	–.08	–.11	(.72)				
8. Planning	3.54	.91	–.11	.19*	.12*	.10	–.02	–.10	.59**	(.80)			
9. Psychological empowerment	3.84	.60	.12*	–.01	.18**	–.13	.24**	.11	.32**	.39**	(.85)		
10. Team support for innovation	3.27	.91	–.05	.01	.01	.05	.06	–.03	.26**	.26**	.41**	(.81)	
11. Innovative work behaviour	3.13	.91	–.06	–.01	.09	.09	–.00	–.04	.47**	.42**	.50**	.39**	(.92)

$N = 268$. Internal consistency coefficients (Cronbach's alphas) appear along the diagonal in parentheses

* $p < .05$, ** $p < .01$

the fit indices: χ^2 (231) = 234.17, $\Delta\ \chi^2$ (32) = 88.32, $p < .01$, CFI = .98; RMSEA = .04; SRMR = .04. However, the method factor added to the hypothesized measurement model accounted for 27 % of the total model variance, which is only marginally above the average percentage (26 %) reported in self-report studies (Williams et al. 1989; Podsakoff et al. 2003). This suggests that common method bias is unlikely to be a problem in our study.

Hypothesis Testing

Table 2 presents the descriptive statistics, reliabilities and correlations among the study variables. Given the multilevel nature of our data, we used hierarchical linear modelling (HLM) with the maximum likelihood estimation method of HLM version 6.08 (Raudenbush et al. 2004). The strengths of this statistical procedure are that it takes into account the non-independence of observations, and it provides the opportunity to test cross-level effects (Raudenbush and Bryk 2002). Individual-level (Level 1) variables in this study comprised envisioning, planning, psychological empowerment, innovative work behaviour and the control variables (organization 1, organization 2, gender, education, organizational tenure and team tenure). TSI was included as a team-level (Level 2) variable. To test our hypotheses, we used intercept-and-slope-as-outcome models and grand-mean centred Level 1 variables. This centring approach is often recommended, since it facilitates the interpretation of results from HLM analyses, ensures that the effects of Level 1 variables are controlled for in testing Level 2 effects, and reduces potential multicollinearity problems (Hofmann et al. 2000; Raudenbush 1989).

Hypotheses 1–3 predicted that envisioning would be positively related to planning, and that planning, in turn, would be positively associated with innovative work behaviour, thus mediating envisioning's effects on employee innovation. Our results indicated that envisioning was positively related to both planning ($\gamma_{70} = .57$, $p < .01$; Table 3, Model 2) and innovative work behaviour ($\gamma_{70} = .39$, $p < .01$; Table 3, Model 8). Further, planning was positively associated with innovative work behaviour ($\gamma_{80} = .42$, $p < .01$; Table 3, Model 7). Finally, when the planning–innovative work behaviour path was controlled for, the effects of envisioning on innovative work behaviour were significantly smaller ($\gamma_{80} = .22$, $p < .01$; Table 3, Model 7), thus indicating that the relationship between envisioning and innovative work was partially mediated by planning.[1]

[1] Although envisioning and the idea generation component of innovative work behaviour are conceptually distinct constructs, empirically they are nonetheless highly interrelated. Indeed, the items of the envisioning scale are similar in content to those of the idea generation subscale of innovative work behaviour, and the Pearson correlation between the two measures was considerably large in our study: r = .48, $p < .01$. Accordingly, it was meaningful to examine whether the envisioning–planning-innovative work behaviour mediating relationship would be still significant after removing the three idea generation items from the innovative work behaviour scale. Results effectively indicated that, when omitting the idea generation items, innovative behaviour was significantly positively associated with both envisioning ($\gamma = .17$, $p < .05$) and planning ($\gamma = .35$, $p < .01$). Additionally, the effect of envisioning on innovative work behaviour was significantly partially mediated by planning (indirect effect = .20; 95 % CI .11, .30). Taken together, these findings suggest that the idea generation items, despite being related to the envisioning items, did not significantly affect the relationships of envisioning and planning to innovative work behaviour.

Table 3 Results of moderated hierarchical linear modelling analysis predicting innovative work behaviour

Variables	Planning						Innovative work behaviour		
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9
Level 1 control variables									
Intercept	3.57**	3.58**	3.60**	3.59**	3.56**	3.17**	3.16**	3.17**	3.16**
Organization 1 (γ_{10})	–.01	.00	.02	.06	.01	–.20	–.10	–.01	–.44
Organization 2 (γ_{20})	.55**	.22**	.17**	.06	.10	–.11	–.27	–.32**	–.39
Gender (γ_{30})	.36**	.20**	.12	.07	.13	.22	.03	.11	.06
Education (γ_{40})	.07	–.00	.00	.04	.01	.04	–.00	–.02	–.03
Organizational tenure (γ_{50})	.13	.05	–.09	–.08	–.08	.13	.06	.06	.01
Team tenure (γ_{60})	–.22	–.12	–.11	–.11	–.10	–.07	.04	.03	.09
Level 1 independent variables									
Envisioning (γ_{70})	–	.57**	–.79	–.87	.56	–	–	.39**	.22**
Planning (γ_{80})	–	–	–	–	–	–	.42**	–	.31**
Psychological empowerment (γ_{90})	–	–	–1.29	–1.38	.10	–	–	–	–
TSI (γ_{100})	–	–.04	–1.96	–2.04	–.35	–	–	–	–
Envisioning × psychological empowerment (γ_{110})	–	–	.29	.32	–.03	–	–	–	–
Envisioning × TSI (γ_{120})	–	–	.36	.38	–.01	–	–	–	–
Psychological empowerment × TSI (γ_{130})	–	–	.48	.51	.08	–	–	–	–
Envisioning × psychological empowerment × TSI (γ_{140})	–	–	–.08	–.09	.01	–	–	–	–
Level 2 independent variables									
Aggregate TSI (γ_{01})	–	–	–	.19*	.13	–	–	–	–
Cross-level interactions	–	–	–	–		–	–	–	–
Envisioning × aggregate TSI (γ_{71})	–	–	–	–	2.11**	–	–	–	–
Psychological empowerment × aggregate TSI (γ_{91})	–	–	–	–	2.48**	–	–	–	–
Envisioning × psychological empowerment × TSI (γ_{111})	–	–	–	–	–.56**	–	–	–	–
Total R^2	.14	.44	.59	.59	.60	.14	.32	.37	.41
ΔR^2	–	.30	.15	.00	.01	–	.18	.05	.04
Deviance	665.86	562.64	502.43	500.66	496.26	662.61	607.85	606.93	587.65

$N = 268$. Total R^2 value indicates the amount of total variance (i.e. between and within-group variance) in the dependent variable accounted by all the variables in the model (see Snijders and Bosker 1999). Unstandardized coefficients are reported. TSI = team support for innovation

* $p < .05$, ** $p < .01$

As recommended by Preacher et al. (2010), the Monte Carlo method was further used to calculate confidence intervals for the hypothesized indirect effect of envisioning on innovative work behaviour via planning, in order to determine its significance. We therefore conducted parametric bootstrapping to estimate the hypothesized indirect relationship (Preacher et al. 2010). Based on 20,000 Monte Carlo replications, the results demonstrated that the indirect effect was statistically significant (indirect effect = .18; 95 % CI .10, .25). Taken together, these findings yielded total support for Hypotheses 1 and 2, and partial support for Hypothesis 3.[2]

Hypothesis 4 stated that the relationship between envisioning and planning would be jointly moderated by psychological empowerment and TSI, such that planning

[2] Note that Preacher et al. (2010) suggest testing multilevel mediation with multilevel structural equation modelling, rather than through the standard multilevel modelling procedure (which was used in the present study). Indeed, the latter procedure does not completely separate between-group and within-group effects without introducing bias. Therefore, we replicated the mediation analyses by applying the multilevel structural equation modelling technique (Preacher et al. 2011). Results effectively paralleled those obtained through the traditional multilevel modelling procedure, indicating that a) envisioning was significantly positively related to planning ($\gamma = .56$, $p < .01$) and innovative work behaviour ($\gamma = .25$, $p < .01$); b) planning was significantly positively related to innovative work behaviour ($\gamma = .26$, $p < .01$); and c) planning significantly partially mediated the relationship between envisioning and innovative work behaviour (indirect effect = .15; 95 %, CI .06, .23).

would be highest when employees who are highly involved in envisioning activities score high on both psychological empowerment and TSI. Because TSI represents a team-level construct, this hypothesis can be best considered as a cross-level three-way interaction. In testing this hypothesis, we entered the hypothesized three-way interaction term into equations after lower order terms, consistent with Cohen and Cohen (1983). Additionally, to partial out the effects of individual perceptions of TSI, we also included this variable in Level 1 equations, along with its interactions with envisioning and psychological empowerment.

In this regard, it is worth noting that our choice of controlling for individual perceptions of TSI is grounded on the fact that, as theory and research have consistently documented, people can respond either to the individual or to the shared perceptions of the situation (e.g. James and Sells 1981; Reichers and Schneider 1990). Indeed, across the literature on the perceptions of the work environment, two competing approaches have been traditionally distinguished: the cognitive schema approach and the shared perceptions approach. The former approach emphasizes the individual's cognitive representation of their work environment, which is regarded as more powerful than the shared perceptions in affecting attitudes, motivations and behaviours (James et al. 1977). In contrast, the latter approach emphasizes the importance of shared perceptions as a representation of the external environment and, consequently, emphasizes aggregation of individual data (Reichers and Schneider 1990). Empirically, while there is consistent evidence that shared perceptions of innovation-supportive climate affect motivation factors related to employee engagement in innovative behaviours (e.g. Chen et al. 2013), research has shown that individual-level perceptions of supportive team and organizational environments can also have a significant impact on change-oriented regulatory processes (e.g. Choi 2004; Yuan and Woodman 2010). Therefore, consistent with our theoretical model, the inclusion of individual-level TSI allowed us to verify that the shared perceptions of the team context affected the envisioning–planning relationship above and beyond the individual perceptions.

Accordingly, the equations for Level 1 variables included all control variables; the main effects of envisioning, psychological empowerment and individual-level TSI; three individual-level two-way interaction terms (envisioning X psychological empowerment, envisioning X individual-level TSI and psychological empowerment X individual-level TSI); and the individual-level three-way interaction term (envisioning X psychological empowerment X individual-level TSI). Instead, the equations for Level 2 variables comprised the main effect of the aggregate team support for innovation, two cross-level two-way interactions terms (envisioning X aggregate TSI and psychological empowerment X aggregate TSI), and the hypothesized cross-level three-way interaction term (envisioning X psychological empowerment X aggregate TSI). Thus, a significant value associated with the cross-level three-way interaction, along with a pattern of results consistent with those predicted, should yield support for Hypothesis 4.

HLM analyses indicated that none of the Level 1 interaction terms or cross-level two-way interaction terms were statistically significant.[3] In contrast, team support for innovation significantly interacted with envisioning and psychological empowerment, predicting planning ($\gamma_{111} = -.56$, $p < .01$; Table 3, Model 5).[4] To interpret the nature of the cross-level three-way interaction, we plotted the simple slopes of the envisioning–planning relationship at high (1 *SD* above the mean) and low (1 *SD* below the mean) levels of individual psychological empowerment and aggregate TSI (Aiken and West 1991; Preacher et al. 2006). As Fig. 2 indicates, for employees who were highly involved in envisioning endeavours, planning scores were highest when both psychological empowerment and aggregate TSI were high, thus providing initial support for Hypothesis 4.

Then, we conducted a slope difference test (Dawson and Richter 2006) to confirm the hypothesized patterns. Results showed that there was a significant difference between the simple slope for high psychological empowerment-high aggregate TSI and the simple slopes for the other

[3] However, when the cross-level three-way interaction term was included in equations, the cross-level two-way interactions became significant: $\gamma_{71} = 2.11$, $p < .01$, for the envisioning X aggregate TSI interaction term; $\gamma_{91} = 2.48$, $p < .01$, and for psychological empowerment X aggregate TSI. A subsequent simple slope test indicated that planning was highest when aggregate TSI was high and when either envisioning or psychological empowerment was high.

[4] We further replicated analyses using group-mean centering, in order to test for the cross-level interactive effects, as separated from between-group interaction (Hofmann and Gavin 1998). Indeed, group-mean centering allows an accurate estimation of within-group slopes and minimizes the possibility of spurious cross-level interaction (Aguinis, Gottfredson, & Culpepper, 2013). Results confirmed the hypothesized cross-level three-way interaction effect of envisioning, psychological empowerment, and aggregate TSI on planning ($\gamma = -.61$, $p < .01$). Additionally, a test of slope differences indicated that the simple slope for high psychological empowerment-high TSI was significantly different from two out of the three alternative conditions: 1) high psychological empowerment-low TSI ($t = 2.72$, $p < .05$); and 2) low psychological empowerment-low TSI ($t = 3.25$, $p < .01$). Conversely, the difference between the combination of high psychological empowerment and high TSI and the combination of low psychological empowerment and high TSI was significant only at the .07 level ($t = -1.88$, $p < .07$). Overall, these results were generally consistent with those obtained from analyses with grand-mean centered predictors."

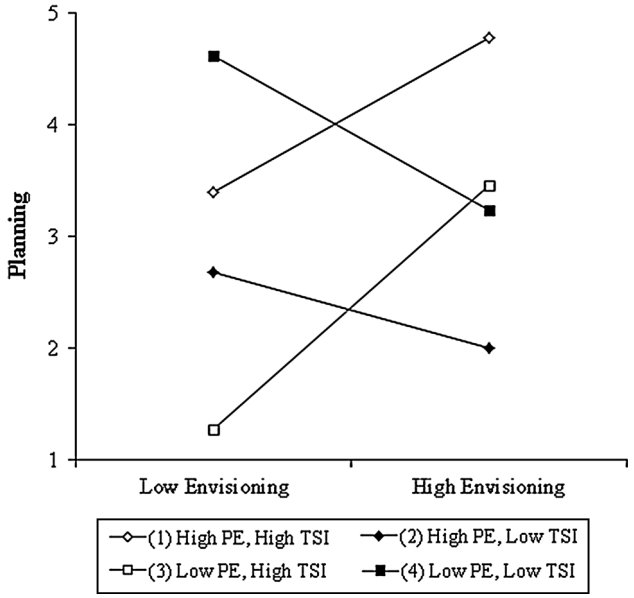

Fig. 2 Interaction among envisioning, psychological empowerment (PE) and aggregate team support for innovation (TSI) in predicting planning

conditions.[5] Taken together, these findings supported Hypothesis 4. Nonetheless, unexpectedly, the relationship between envisioning and planning was slightly more positive when only aggregate TSI was high than when both moderators were high. Results from the slope difference test further showed that the combination of low aggregated TSI and low psychological empowerment was significantly different from the combination of high aggregated TSI and low psychological empowerment ($t = 18.04$, $p < .01$): in the latter condition, envisioning was positively linked with planning, whereas in the former condition, the relationship was negative. Finally, the combination of low aggregated TSI and low psychological empowerment was also significantly different from the combination of low aggregated TSI and high psychological empowerment ($t = 3.42$, $p < .01$).

Discussion

Our study advances the literature on goal-regulatory processes affecting workplace innovative behaviour by examining the goal setting–goal planning relationship as a motivational mechanism that can enhance employees' engagement in innovative activities. Supporting our hypotheses, and in accordance with the model of action phases (Gollwitzer 1990), contemplation of proactivity goals enhanced personal involvement in the development of goal-directed action plans, which in turn fostered innovative performance. These findings suggest that, beyond being motivated by extrinsic or intrinsic reasons, innovative behaviours can be further triggered by visualized goals and action plans, which provide guidance and support for change-oriented efforts. Additionally, our study helps address an important and relatively unexplored question: *why* do goals facilitate innovative performance? Indeed, the few studies that have investigated the relationship of goals to innovation have only supported a general positive effect of creativity goals on creative performance (Shalley 1991, 1995), thus leaving unresolved the processes that can explain goal setting effects on employee innovativeness (De Dreu et al. 2012). By providing evidence for proactive planning acting as a mediator of the envisioning–innovative performance relationship, our study broadens current understanding of the regulatory mechanisms that link goals and innovative activities.

However, planning only partially mediated the effects of envisioning on innovative work behaviour. On the one hand, this finding suggests that other mechanisms can be involved in the motivational process linking goal setting and innovativeness. On the other hand, this result is consistent with theory and research on goal regulation and goal pursuit, indicating that goal setting, beyond facilitating the development of goal-directed strategies, also directly increases performance by guiding individuals' attention and effort towards goal-relevant activities (Locke and Latham 2002). From a goal-setting perspective, proactivity goals would thus cause people to focus their attention on trying to generate and apply new and potentially useful ideas in order to bring about significant changes and improvements within the work environment. As a result, individuals would spend more time and effort thinking about a variety of possibilities of how to achieve the desired change-related outcomes, which would stimulate innovative thinking and subsequent innovativeness.

Furthermore, our results revealed that psychological empowerment and team support for innovation jointly moderated the relationship between envisioning and planning. Most importantly, consistent with our predictions, individuals who were highly involved in envisioning proactivity goals exhibited the highest levels of planning when they felt a strong sense of psychological empowerment, and their team was highly innovation supportive. This finding adds to the literature on goal regulation in two important ways. First, it supports the key theoretical tenet that feasibility and desirability considerations for the selected goals are essential in fostering goal-striving efforts (Gollwitzer 1990). Yet, to date, this motivational

[5] Simple slopes: high psychological empowerment-high aggregate TSI: 1.20, $p < .01$; high psychological empowerment-low aggregate TSI: -.12, $p < .01$; low psychological empowerment-high aggregate TSI: 1.49, $p < .01$; low psychological empowerment-low TSI: -.32, $p < .01$.

mechanism has been poorly examined in relation to proactive goal planning. This study moves a step further by suggesting that people who value change-oriented outcomes and have positive expectations for achieving them—as reflected in high psychological empowerment—are more likely to invest their efforts in corresponding planning tasks.

Second, and of most importance, our study also stresses that feasibility and desirability deliberations are not sufficient, per se, to trigger goal-directed efforts. In fact, our results indicate that high-empowered people are more involved in planning activities only when they are provided with extensive support for innovation from their team. This finding suggests that, in the context of change, both personal and situational factors are necessary to enhance the likelihood that people will turn change-oriented future states into binding proactivity goals, and will strive to accomplish them by being involved in planning activities.

Linked to this is another important finding: when empowered employees work in a group that is adverse to change-oriented initiatives, the odds of proactivity goals being translated into effective action plans and strategies are significantly reduced, as reflected in a negative relationship between envisioning and planning. This result could be explained if we take into account the fact that change-oriented endeavours require people to invest demanding efforts into handling barriers inherent to change processes. In this regard, empowered people would display enhanced persistence in spite of such obstacles, but this may not guarantee that such difficulties will be effectively addressed (Ito and Brotheridge 2003). In contrast, high innovation-supportive teams can ensure concrete help and assistance that would enable empowered individuals to face potential change-related obstacles. This may insulate people from feelings of anxiety and worries about their future challenges, which would otherwise deplete their self-regulatory resources and inhibit the transition from proactive envisioning to concrete planning (Bindl et al. 2012; Hobfoll 1989).

Results further indicated that when only TSI was high, the relationship between envisioning and planning remained significantly positive, and was also marginally stronger than when both moderators were high, which, as previously mentioned, was not expected by our model. This finding may indicate that TSI is more salient for low-empowered individuals, but in a positive sense. More precisely, high innovation-supportive teams might exert a compensatory effect for the negative feasibility and desirability beliefs associated with a low sense of psychological empowerment, thus enhancing employees' change-oriented goal-striving efforts. Supporting this possibility, indeed, theory and research have indicated that individuals ascribe meaning and value to diverse aspects of the social environment, and this process can significantly affect their motivation to perform specific tasks (James and James 1989; James et al. 1990). This suggests that, when working in a group that is open to change and prizes innovative contributions of its members, low-empowered employees would be more likely to internalize values relevant to change. As a consequence, they would also be more disposed to invest their efforts in striving to achieve proactivity goals by developing change-oriented plans.

Likewise, supportive social contexts have been suggested and found to reinforce people's confidence about successfully attaining work-related outcomes (Bandura 1997; Choi 2004). Thus, individuals with low psychological empowerment may develop more positive feasibility beliefs for proactivity goals if their team supplies extensive support and help for change-oriented endeavours. This, in turn, would stimulate a stronger commitment to goal-directed planning activities. These explanations may also account for the effects of the cross-level two-way interactions between TSI and either envisioning or psychological empowerment. However, because such effects emerged only when the effect of the cross-level three-way interaction term was also accounted for, this finding should be taken with caution. The significance of the cross-level two-way interactions may, in fact, be affected by the co-variation among variables (Seijts and Crim 2009).

Finally, when psychological empowerment was high but TSI was low, envisioning was negatively related to planning. However, the slope difference test indicated that the relationship between envisioning and planning was significantly more negative when both moderators were low than when only TSI was low. This finding, hence, reveals that, under conditions of low TSI, a strong sense of empowerment is not sufficient per se to translate the envisioned proactive goals into effective action plans, but it may still be effective in attenuating the detrimental effects of an innovation-averse team on the envisioning–planning relationship. A similar pattern of results was obtained by Choi et al. (2009), who found that creative ability alleviated the negative impact of an unsupportive climate on employee creativity, such that the relationship was less negative when creative ability was high.

Taken together, our results from moderation analyses also contribute to the literature on cognitive psychological states, social support and employee innovative behaviour. Indeed, prior studies have mainly regarded psychological empowerment and team support for innovation as mediating processes linking distal antecedents to creative or innovative performance (e.g. Chen et al. 2011; West et al. 2003; Sun et al. 2012; Eisenbeiss et al. 2008). We extend this line of research by showing that psychological empowerment and TSI can also act as key moderators of the relationship between goal-regulatory factors relevant to individual innovativeness.

Limitations and Future Research

Despite the theoretical contributions of our study, we also recognize several limitations that point to directions for future research. First, a relevant measurement issue is the use of self-reported measures of innovative work behaviour. Generally, self-report ratings of individual behaviour may lead to misleading interpretations of results due to common method bias (Podsakoff et al. 2003). Accordingly, observer scores of employee behaviour, such as supervisor ratings, are highly recommended. However, we found that, though common method errors may exist, they were unlikely to have inflated the hypothesized pattern of results. Additionally, in the case of innovative work behaviour, this recommendation might not necessarily apply because employees have more information about the backgrounds of their work activities (Janssen 2000), as well as about the extent to which they have developed or proposed their ideas to others in the organization (Shalley et al. 2009). Moreover, supervisors may fail to capture some of their subordinates' ideas, by noticing only those acts intended to impress them (Organ and Konovsky 1989). Research has also shown that self-report ratings of innovation-related behaviours are consistent with other ratings as well as with firm-level outcomes. For example, Janssen (2000) found that self-ratings of innovative work behaviour were positively associated with supervisor ratings, while Moneta et al. (2010) provided evidence on the convergent validity among self-ratings, peer ratings and supervisor ratings of creativity. Likewise, Eschleman et al. (2014) indicated that self-ratings of creative activity had positive direct effects on supervisor ratings of job creativity, and Baron and Tang (2011) reported a significant positive relationship between self-ratings of creativity and firm-level innovation. Accordingly, it is reasonable to suggest that the use of self-report ratings of innovative work behaviour was not invalid in our study.

However, other scholars have also shown that employees are more likely to bias their self-ratings of creative and innovative performance relative to other ratings. For example, Potočnik and Anderson (2012) found that individuals underrated their innovative performance compared to the ratings of peers and supervisors. Such undervaluation may reflect an erroneous self-insight into one's own level of innovativeness on the side of false modesty. Conversely, Janssen and van der Vegt (2011) showed that employees rated their creative performance more positively than their supervisors. This may in part be due to the fact that the standards of creative performance are less clear than those of established task performance. Accordingly, when rating their own creativity level, employees might be more subject to overestimation.

Furthermore, research has indicated that personal and contextual factors are more strongly related to self-ratings of creativity and innovation than to non-self-report ratings. For example, Ng and Feldman (2012) demonstrated that the effect size of creative self-efficacy on self-ratings of creativity was significantly higher than the effect size for non-self-report measures. In a similar vein, Hülsheger et al. (2009) showed that the relationships of team processes (i.e. support for innovation, vision, task orientation, and external communication) to innovation were considerably stronger if self-ratings of innovation were employed compared to independent ratings or objective criteria. Consistency motif may cause these inflation biases among respondents (Ng and Feldman 2012). For instance, individuals who have strong beliefs in their creative skills would experience greater cognitive dissonance if they viewed their own creativity as poor. Likewise, individuals who work in a team that supports innovation may inflate their self-ratings of innovative performance in order to achieve cognitive consistency among their perceptions. Hence, taken together, these findings point to relevance of including both self-report ratings and objective measures of individual innovativeness in future research, in order to reduce the threat of biases that may affect the validity of research results.

Second, given the cross-sectional nature of our research, we cannot draw any causal inferences about the relationships among variables. In particular, goal-regulatory factors and innovative behaviour should be measured at different points in time. This would allow ascertaining more accurately the hypothesized causal path from cognitive contemplation of proactivity goals to innovation-related behaviours via the development of change-oriented planning strategies. Additionally, because motivational processes are subject to variations over time (Kanfer and Ackerman 2004), it would be interesting to assess how changes in goal-regulatory efforts affect subsequent innovative endeavours, which are also expected to fluctuate over time (Tierney and Farmer 2010; Ng et al. 2010).

Third, we focused solely on the moderators of the envisioning–planning relationship, thus disregarding potential boundary conditions associated with planning effects on innovative work behaviour. Addressing this issue in future research would be particularly relevant, considering that planning may not always be beneficial for innovation. Indeed, theory and research have pointed out that commitment to planning tasks inherently implies a set of constraints, and this could restrain flexibility in goal pursuit (Masicampo and Baumeister 2012; Mumford et al. 2008), which is a necessary prerequisite of creativity and innovation (Hunter et al. 2012). Thus, the relationship between planning efforts and innovative behaviours may vary, depending on the extent to which employees are provided

with internal or external resources that would enable them to follow predefined goal-directed paths in a flexible manner. This warrants future exploration of moderators of the planning–innovative performance relationship.

Fourth, despite shedding light on how the relationship between goal setting and goal planning can be amplified, an important research question still remains unanswered: what provides motivation to initiate proactive goal-regulatory activities? Addressing this issue implies identifying the individual and contextual factors that may prompt employee determination to self-initiate constructive changes by deliberating about proactivity goals and by defining accurate action plans. The pursuit of such a research avenue would be particularly meaningful, as it would allow developing and testing a more comprehensive motivational model of innovation, whereby the effects of distal antecedents on innovative behaviour can be explained in light of their impact on goal-directed regulatory processes.

Practical Contributions

Our findings also have important practical implications for human resource management. First, it is essential that managers be aware of the importance of the proactive goal setting–goal planning mechanism in eliciting innovative performance. Thus, to promote effective involvement in such goal-regulatory activities, employees' goal setting and planning skills should be enhanced through specific training programs. For example, it might be particularly useful to teach trainees how to identify and select meaningful goals on the basis of specific needs for change, as well as to provide them with practical guidelines and tools for successful plan development (i.e. identifying opportunities for change, producing solutions, evaluating viability of generated solutions and defining how to implement action plans) (Mumford et al. 2008; Hunter et al. 2012).

Second, considering their critical role in facilitating the progression from proactivity goals into more concrete plans and strategies, psychological empowerment and TSI should also represent key targets of human resource management interventions. Specifically, employees need to see the subjective value of proactivity goals and to feel capable of achieving them. To enhance such feelings, managerial practices should be oriented towards increasing the level of autonomy, as well as fostering supportive and trusting interpersonal relationships, thus promoting a psychologically empowered workforce (Seibert et al. 2011). Likewise, people who are committed to proactivity goals need to be supported by a work team that is ready to supply adequate resources and assistance for change-oriented planning tasks. Interventions should thus be aimed at developing innovative work groups (e.g. innovative project teams), by promoting the establishment of shared norms for innovation, by increasing collective creative problem-solving skills and by enhancing mutual help on the development and implementation of new ideas.

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